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A STUDY ON ASSET AND LIABILITY MANAGEMENT IN PUBLIC SECTOR BANKS

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ABSTRACT
An essential instrument for financial institutions to manage risk and return is asset and liability management (ALM), which is the process of developing, putting into practice, and administering risk management plans in the owners' best interests. Important participants in the Indian economy, public sector banks face issues such as fluctuating interest rates, regulatory requirements, and an imbalance between assets and liabilities. The banks can reduce these risks and maintain a solid financial position by developing effective ALM procedures. We'll look at how ALM helps banks maintain their financial stability by managing liquidity, maximizing profitability, and resolving asset-liability mismatches.

KEYWORDS: *Asset And Liability Management, Liquidity Management, IRR, Public Sector Banks, Profitability, Financial Stability, Banking Sector, India.*

INTRODUCTION

Public sector banks (PSBs), which control over two-thirds of the Indian banking sector, are critical for economic growth in India due to mobilization of savings, allocation of credit and funding of infrastructure projects. But they have to manage the risk of rising and falling interest rates, regulatory constraints, and balancing assets and liabilities. Sound ALM practices allow banks to reduce these risks and ensure they hold a well-balanced structure.

The primary concern of ALM is to make sure that the operations behind the products are sustainable from both a liquidity and risk management perspective while to balance the return on investment required by the business lines. The objective of Liquidity management is to make sure that the company maintains sufficient cash or liquid assets in reserves, enabling banks to cover their short-term debts and to allow the banks finance their lending and investment operations. Enhancing the management of interest rate risks is crucial since changes in market interest rates may affect a bank's net interest margin and income. Banks also have to manage asset-liability mismatch, long term assets are financed by short term liabilities, which makes the bank more unstable.

OBJECTIVES OF THE STUDY

- A measure of how effectively a bank derives income from its interest bearing assets.
- To measure the level of efficiency of banks after deducting all expenses.
- To determine the financial power of a bank through its Capital Adequacy.

INDUSTRY PROFILE

Banking industry is the backbone of the financial system in India and has been playing an important role in economic growth by mobilization of savings, credit generation and the smooth circulation of money. The RBI, founded in 1935, is the country's apex banking organisation responsible for framing banking policies and regulating the banking sector, so as to maintain banking stability and ultimately manage the overall monetary policy. Indian banking system is categorized into Commercial Banks, Cooperative Banks, and Development Banks, and Commercial banks are categorized into Public sector banks, private sector banks, foreign banks, and regional rural banks (RRBs). Conversely, the Indian banking industry, despite its expansion, has its share of challenges, including non-performing assets (NPAs), cybersecurity, regulators compliance, and financial frauds.

The RBI has been undertaking reforms to improve governance, risk management and cyber security at the sector level. Banking in India The future of Banking in India There is going to be a lot of transformation in the realm of

banking in India with the merger of public sector banks, stronger regulations on loan dispersal and a lot of focus on green banking and sustainable finance.

REVIEW OF LITERATURE

Dash and Pathak (2008) A study carried out on Asset-Liability Management (ALM) in Indian banks where canonical correlation technique was used for the study. They find a large role for public and foreign, while owner managed private banks do manage liabilities. The study brings out that private banks are quite aggressive in their effort to have a perfectly managed asset-liability mix for maximization of profit whereas the nationalized banks are committed towards liquidity. Foreign banks also have a significant relationship between fixed assets and deposits suggesting good resource usage but liquidity risk.

Ms. Pragathi K.M. and Dr. Veena K.P. (2018) in "An Analysis of Asset-Liability Management in Banking Sector: A Case Study of Kotak Mahindra Bank" concluded that ALM is very important for profitability and financial soundness. The analysis cited that the coefficient of KMB's credit deposit ratio, quick ratio and interest spread is significant and increasing. But the ratio of interest paid to interest received increased as well, meaning interest expenses were rising. The research stresses on the importance of monitoring of liquidity risk and profitability in todays environment for successful ALM.

Roshini S Rupareliya (2020) A Study on Asset Liability Management of Selected Public Sector Banks in India was conducted with purpose of Appraisal of the Effectiveness of Asset & Liability Management on Profitability . This study is based on secondary data. She relied on financial ratios for the analysis. It shows that the Asset- Liability management affects the profitability of Indian banks.

Madhushani W. I. and Perera, K. H (2022) conducted study on "The Influence of Assets Liability Management on the Financial Performance: A Study on Licensed Commercial Banks in Sri Lanka." The study revealed that NPLR, liquidity, and operational efficiency had negative relationships with ROA and ROE, while income diversification was positively related. Capital adequacy was negatively related to ROE and had no meaningful effect on ROA. Their insights are valuable for those involved in the banking industry of Sri Lanka including policy makers, regulators and investors.

Mishu Tripathi (2024) in "A Critical Assessment of Selected Private and Public Sector Banks Through Asset Liability Management," asset-liability management (ALM) is essential for managing financial risks in banks. Public sector banks like SBI and PNB showed lower mismatch ratios, indicating better short-term liquidity management. The study concluded that private banks manage long-term maturity gaps effectively, while public banks focus on short-term stability.

RESEAR CH METHODOLOGY

Research methodology serves as a structural framework for the research process so that the research is chemically consistent in nature and logical in abstracting, which further deviate the hypothesis in to law; it does so in a way that stays firm, when one tries to make it reference of some underlying complexity; it enables to make research well-grounded, solid, convincing, systematic and valid. It contributes to clarifying how and why such study was performed in such a manner.

RESEARCH DESIGN

Research design is the overall plan or blueprint of how the research study is to be conducted. It describes how the research will be conducted, method and procedure for gathering, measuring, and analyzing data. A clear research design serves to provide for a confidence level that the data collected will allow the investigation of the research problem or questions with precision or accuracy.

The present research uses descriptive research design and secondary data which that are obtained from published financial statements, annual reports, and official banking sources.

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SAMPLE POPULATION

India is the largest sector of banking in the Asia – Pacific region and the analysis is limited for Indian banks and the study specifically focused on the 10 public sector banks out of the India. The scope of data is national in nature as it covers banks functioning across the country.

1. State Bank India
2. Punjab National Bank
3. Bank Of Baroda
4. Canara Bank
5. Union Bank Of India
6. Bank Of India
7. Indian Bank
8. Central Bank Of India
9. Indian Overseas Bank
10. UCO Bank

SOURCES OF DATA COLLECTION

We focus on the 10-year period, 2015-2024. The time period was chosen to examine the trends of financial performance of Indian Banking Sector over a longer span of time. The project uses the secondary data collected from the annual reports of the banks, company websites, business magazines, bank prospectus, financial newspapers and websites of Indian banking associations (IBA).

HYPOTHESIS OF THE STUDY

- **H_0 (Interest Spread Ratio)**

There is no significant difference in the Interest Spread Ratio among the selected public sector banks over the ten-year study period.

- **H_0 (Net Profit Margin Ratio)**

There is no significant difference in the Net Profit Margin Ratio among the selected public sector banks over the ten-year study period.

- **H_0 (Capital Adequacy Fund Ratio)**

There is no significant difference in the Capital Adequacy Fund Ratio among the selected public sector banks over the ten-year study period.

DATA ANALYSIS AND INTERPRETATION

INTEREST SPREAD RATIO

This ratio shows how cost effectively a bank can turn interest-bearing assets (like loans) into income compared with what it pays on deposits. The greater the ratio, the better the core banking performance. An interest spread is calculated as follows**: Interest Spread= (Interest earned – Interest expense) / Average total Asset.**

INTEREST SPREAD RATIO

BANKS	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015	MEAN	STD
SBI	2.73	2.63	2.41	2.56	2.57	2.48	2.43	2.44	2.64	2.88	2.58	0.15
PNB	2.65	2.03	2.19	2.91	2.18	2.23	2.01	2.16	2.41	2.87	2.36	0.33
BOB	2.94	3.02	2.68	2.49	2.83	2.49	2.19	1.98	1.84	1.92	2.44	0.44
CB	2.58	2.44	2.22	2.56	1.85	2.21	1.99	1.74	1.77	1.86	2.12	0.32
UBI	2.94	2.65	2.23	3.04	2.19	1.93	0.2	2.08	2.11	2.3	2.17	0.79
BOI	2.67	2.61	1.93	2.06	2.38	3.04	1.7	1.91	1.91	1.9	2.21	0.44
IB	3.1	2.93	2.58	3.35	2.58	2.63	2.66	2.44	2.24	2.35	2.69	0.34
CBI	1.47	4.76	4.49	4.04	3.19	2.06	1.98	2.06	2.29	2.41	2.88	1.17
IOB	2.64	2.69	2.2	2.21	2.08	2.12	2.09	1.87	1.92	2.21	2.20	0.27
UCO	2.59	2.58	2.51	2.24	2.18	1.93	1.4	2.38	2.61	2.87	2.33	0.42

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SBI is the most consistent (mean of 2.58, standard deviation of 0.149). For CBI, the standard deviation (1.168) indicates that it has the highest volatility, and its average value is 2.88. At other extreme end Indian Bank (IB) gives high mean value of 2.69 with moderate standard deviation of 0.344 and UBI has high standard deviation 0.785 with mean 2.17.

Anova Table

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	8.154296	9	0.906033	3.383817	0.001288	1.985595
Within Groups	24.09792	90	0.267755			
Total	32.25222	99				

The ANOVA F-value calculated is 3.3838 which is greater than the critical F-value 1.9856 at 5% level of significance. Since p-value is less than 0.05 we reject the null hypothesis and we accept the alternate hypothesis. It validates the fact that there is statistically significant difference in the Interest Spread Ratio across the selected public sector banks during the study period.

NET PROFIT MARGIN RATIO

The Net Profit Margin Ratio is used to find the percentage of net profit a bank makes on its total income. It shows the net profitability of the bank after incurring all its expenses, interest, tax and operational expenses. A higher ratio is a strong indication of profit-earning capacity. The formula for calculating

Net Profit Margin Ratio = Net Profit/Total Income*

NET PROFIT MARGIN RATIO

BANKS	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015	MEAN	STD
SBI	13.08	13.63	10.33	6.61	4.79	0.31	-2.47	4.97	5.19	7.49	6.39	5.11
PNB	6.85	2.38	3.96	2.16	0.68	-17	-21.6	2.36	-7.32	5.86	-2.17	9.86
BOB	13.23	14.17	8.94	1	0.63	0.77	-4.83	2.82	-11	7.17	3.29	7.84
CB	11.4	10.28	6.61	3.2	-3.94	0.65	-8.1	2.29	-5.75	5.59	2.22	6.59
UBI	14	0.88	0.46	0.36	-0.68	-13.57	-13.57	1.48	3.77	2.35	-0.45	8.07
BOI	9.46	7.35	7.41	4.5	-6.03	0.36	-13.8	-3.38	-13.4	3.58	-0.40	8.48
IB	12.7	10.14	8.62	6.65	3.05	1.53	6.45	7.7	3.95	5.84	6.66	3.35
CBI	7.19	18.99	16.35	26.7	7.2	-22.52	-19.15	-8.86	-5.1	2.35	2.32	16.24
IOB	9.44	8.93	7.9	3.69	-41.07	-28.85	-29.08	-29.62	-13.01	-1.74	-11.34	19.36
UCO	6.58	9.24	5.14	0.92	-13.53	-27.26	-29.3	-10.04	-13.89	5.32	-6.68	14.21

SBI shows consistent performance with a mean of 5.11 and moderate fluctuations. CBI has the highest mean (16.24) but also the highest volatility. IOB and UCO suffer from extreme volatility and poor overall performance, with negative means of -11.34 and -6.68, respectively.

ANOVA TABLE

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	6678.161	9	742.0179	9.375846	6.31148E-10	1.985595
Within Groups	7122.729	90	79.14144			
Total	13800.89	99				

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The calculated value of the ANOVA 'F-Test' is 9.3758, which is greater than the table (critical) value of 1.9856. Hence, the null hypothesis is rejected and the alternative hypothesis is accepted. This result indicates that there is a significant difference in the Net Profit Margin Ratio among the selected public sector banks during the ten-year study period.

CAPITAL ADEQUACY RATIO (CAR)

CAR measures a bank's financial strength by comparing its capital to its risk-weighted assets. It ensures that the bank has enough capital to absorb potential losses. A higher CAR signifies a more stable and secure financial position.

CAPITAL ADEQUACY RATIO = TIER I CAPITAL+TIER II CAPITAL /RISK WEIGHTED ASSETS *100

CAPITAL ADEQUACY RATIO

BANKS	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015	Mean	STD
SBI	14.28	14.68	13.84	13.74	13.23	12.72	12.25	13.11	13.1	12	13.30	0.85
PNB	15.97	15.5	14.5	14.32	14.15	9.73	9.2	11.66	11.3	12.21	12.85	2.37
BOB	16.31	16.24	15.84	14.99	13.3	13.432	12.13	12.24	12.3	12.6	13.94	1.73
CB	16.28	16.68	14.9	13.18	13.65	11.9	13.22	12.86	11.1	10.56	13.43	2.04
UBI	16.97	16.04	14.52	12.56	12.81	11.78	11.46	11.84	10.6	10.22	12.88	2.26
BOI	16.96	16.28	17.04	14.93	13.1	14.19	12.94	12.14	12	10.73	14.03	2.21
IB	16.44	16.49	16.53	15.71	14.12	13.21	12.55	13.64	13.2	12.86	14.48	1.63
CBI	15.08	14.12	13.84	14.81	11.72	9.61	9.04	10.95	10.4	10.9	12.05	2.23
IOB	17.28	16.1	13.83	15.32	10.72	10.21	9.25	10.5	9.66	10.11	12.30	3.02
UCO	16.98	16.51	13.74	13.74	11.7	10.7	10.94	10.93	9.63	12.17	12.70	2.49

SBI shows consistent performance with a mean of 13.30 and a low standard deviation of **0.85**, reflecting stability. PNB has a solid mean of 12.85, but with higher volatility (standard deviation of **2.37**), indicating more fluctuations in performance. BOI and IB have strong means (**14.03** and **14.48**) with moderate volatility, while UBI also shows a high mean (**12.88**) but higher volatility (**2.26**). IOB and UCO show similar volatility, with IOB having a higher standard deviation (**3.02**) and UCO a mean of **12.70**, signaling variability in their results.

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	343.8712	9	38.20791	26.50953	1.03E-21	1.985595
Within Groups	129.716	90	1.441289			
Total	473.5872	99				

The ANOVA results show that the variation between groups (SS = 343.8712) is significantly larger than the variation within groups (SS = 129.716). The F-statistic of **26.51** is much greater than the critical F-value of **1.986**, indicating strong evidence to reject the null hypothesis. With a P-value of **1.03E-21**, which is far below the 0.05 significance level, we can confidently conclude that there are significant differences between the groups. This suggests that the factors being tested have a meaningful impact on the data.

FINDINGS

1. SBI shows the most stable interest income, while CBI and UBI are highly volatile.
2. CBI has the highest net profit margin but with extreme fluctuations; SBI is the most consistent.
3. ANOVA confirms significant differences in interest spread and profitability among banks.
4. SBI, BOI, IB, and PNB show financial strength through stable CARs; IOB and UCO are less stable.
5. Overall, SBI consistently outperforms, while UCO and IOB underperform across indicators.

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SUGGESTIONS

1. Volatile banks must strengthen risk and income management practices.
2. Banks should adopt SBI's stable ALM and profitability strategies.
3. Improve cost-efficiency to boost profit margins in weaker banks.
4. Ensure stronger capital planning to maintain healthy CAR levels.
5. Regularly monitor and adjust ALM strategies to maintain liquidity and profitability.

CONCLUSION

Assets and Liability Management (ALM) is crucial for the stability and growth of public sector banks. It helps in balancing risks and returns by effectively managing their assets and liabilities. Through strong ALM practices, banks ensure liquidity, profitability, and long-term financial stability. Although public sector banks face challenges like non-performing assets and market risks, improved ALM strategies, supported by technology and regulatory reforms, have strengthened their operations. By focusing on proactive risk management, financial planning, and innovation, public sector banks are building greater customer trust and ensuring sustained growth in a competitive financial environment.

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