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A Study on Asset and Liability Management of HDFC Bank Limited

K. Sathish[1], Ramgari Anusha[2]

[1]Assistant Professor, Department of Master of Business Administration, CMR Institute of Technology, Medchal, India
[2]Student of Master of Business Administration, CMR Institute of Technology, Medchal, India

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***Abstract*— *This report examines the Asset and Liability Management (ALM) framework of HDFC Bank Limited, with a focus on how the bank manages its financial assets and liabilities to maintain stability, liquidity, and profitability. The study gains special relevance in the context of the 2023 merger between HDFC Bank and its parent company, Housing Development Finance Corporation, which significantly impacted the bank's balance sheet, notably increasing the Loan-to-Deposit Ratio (LDR) to 110%. Using secondary data from annual reports and the bank's official website, the analysis covers the period from 2018 to 2023 and utilizes tools such as comparative financial statements, trend analysis, and regression models. Key findings indicate consistent growth in equity share capital, reserves, net worth, deposits, investments, and advances, though borrowings and other liabilities showed some fluctuations. Regression results with R^2 values above 99% suggest a strong relationship between historical and current financial indicators, affirming the success of HDFC Bank's ALM strategies. Nonetheless, the study notes post-merger challenges in sustaining optimal liquidity and regulatory compliance. It concludes that ALM is essential for managing interest rate and liquidity risks, especially during significant structural changes.*

Keywords*— *Asset and Liability Management (ALM), Financial Stability, Profitability, Loan-to-Deposit Ratio (LDR), Regression Analysis.

I. INTRODUCTION

1.1 Background of the study:

Asset and Liability Management (ALM) plays a crucial role in ensuring the financial stability and sustainability of banks, especially in the face of dynamic economic conditions, changing regulatory requirements, and interest rate fluctuations. With the liberalization of the Indian financial sector and increasing competition, banks have been compelled to adopt robust risk management strategies. The importance of ALM has grown significantly as it helps banks manage liquidity and interest rate risks by aligning the maturities and interest rates of assets and liabilities. The 2023 merger between HDFC Bank and its parent company, Housing Development Finance Corporation, brought substantial changes to the bank's financial structure — most notably a sharp rise in the Loan-to-Deposit Ratio (LDR) to 110%. This merger has intensified the need to re-examine HDFC Bank's ALM strategies to ensure continued profitability, regulatory compliance, and sound risk management. Given HDFC Bank's position as one of India's leading private sector banks, studying its ALM framework offers valuable insights into how financial institutions manage balance sheet health during major transitions.

1.2 Statement of the Problem:

Managing the balance between a bank's assets and liabilities has become more difficult in today's changing financial environment. After merging with HDFC Ltd., HDFC Bank is facing new challenges in keeping its financial structure stable. One major concern is that its Loan-to-Deposit Ratio (LDR) has increased to 110%, which shows there may be problems with having enough money available to meet short-term needs. Even though the bank has had a strong system for managing assets and liabilities in the past, it now has to work even harder to handle risks from changing interest rates, mismatched loan and deposit timings, and cash flow gaps. At the same time, it must follow rules set by regulators and continue to stay profitable. This study aims to find out how well HDFC Bank is managing these new challenges and whether there are any weaknesses in its current asset and liability management practices that could hurt its financial performance.

1.3 Research Objectives:

- To study the Asset Liability Management system.
- To study the impact of ALM on the profitability of HDFC Bank Limited .
- To know the asset and liability position of HDFC Bank Limited.
- To know about the factors affecting the asset and liability position of the Bank.

1.4 Significance of the Study:

This study is important for understanding how HDFC Bank manages Asset and Liability Management (ALM) in a dynamic financial and regulatory environment. It gains special relevance after the 2023 merger with HDFC Ltd., which significantly impacted the bank's balance sheet and loan-to-deposit ratio. The research highlights how the bank handles risks like interest rate and liquidity mismatches while ensuring profitability and compliance. The findings offer useful insights for other banks during structural changes.

1.5 Scope and Limitations:

The study focuses on analysing the Asset and Liability Management (ALM) practices of HDFC Bank Limited over a five-year period from 2018 to 2023. It evaluates how effectively the bank balances its assets and liabilities to manage financial risks and maintain profitability, especially in the context of the 2023 merger with HDFC Ltd.

Limitations:

- The study is based only on secondary data, with no primary data collection for deeper insights.
- It focuses solely on HDFC Bank, limiting the generalizability to other banks.
- The five-year analysis may not fully capture long-term trends or complete post-merger impacts.
- External macroeconomic factors influencing ALM are not considered in the analysis.

II. REVIEW OF LITERATURE

2.1 Theoretical Framework:

The theoretical base of this study is Asset and Liability Management (ALM), which helps bank balance their assets and liabilities to reduce risks like changes in interest rates, cash shortages, or timing mismatches. ALM uses ideas from risk management and financial planning to help banks earn steady profits and stay stable. It also follows rules set by bodies like the Basel Committee and the Reserve Bank of India (RBI) to manage risk and maintain enough capital.

2.2 Empirical Studies:

Vaidyanathan (1999) highlighted that banks face many types of risks and must use ALM to manage both assets and liabilities effectively.

Sheela and Tejaswini (2015) found that banks use gap analysis to handle interest rate risks and avoid temporary cash shortages.

Amith Kumar Meena and Joydip Dhar (2014) showed that managing cash flow and maturity gaps is a key challenge for banks.

GV Bhavani Prasad and D. Veena (2013) stressed the importance of ALM in preventing risks from bad loans and poor portfolio management.

2.3 Research Gap:

Though there is an cornucopia of literature available on ALM, there is a visible lack of studies that concentrate on the immediate and long-run consequences of major combinations, similar as HDFC Ltd. and HDFC Bank, on ALM strategy. In particular, the issues of liquidity operations, non-supervisory conditions, and profitability in light of the changed loan-to-deposit rate (LDR) following the junction have been little explored.

2.4 Conceptual Framework:

The conceptual framework of this study revolves around the principles of Asset and Liability Management (ALM), focusing on how financial institutions manage interest rate risk, liquidity risk, and maturity mismatches to ensure financial stability. In the context of HDFC Bank, this framework examines the alignment of assets and liabilities before and after the 2023 merger, using financial indicators and ratios to evaluate effectiveness and predict performance through regression models.

III. RESEARCH METHODOLOGY

3.1 Research Design:

The study uses a descriptive and analytical research design to assess ALM practices at HDFC Bank by examining financial trends and patterns over five years. It applies both quantitative and qualitative methods using secondary data from annual reports, RBI publications, and financial statements. Tools like ratio analysis, trend analysis, and regression models are employed to evaluate the effectiveness of ALM in maintaining financial stability and minimizing risks.

3.2 Data Collection:

The secondary data is collected for this study. It was collected from the following sources:

- Company website.
- Annual reports of HDFC Bank.

3.3 Research Instruments:

This study relies on secondary data collection instruments, including HDFC Bank's annual reports, official financial statements, and RBI publications. Analytical tools such as trend analysis, comparative financial statements, ratio analysis, and regression analysis are used to assess the impact and effectiveness of ALM practices over a five-year period (2018–2023).

3.4 Data Analysis Techniques:

- Comparative Financial Statement Analysis
- Percentage Change Analysis
- Graphical Representation
- Regression Analysis

IV. DATA ANALYSIS AND INTERPRETATION

4.1 Demographic Analysis

As the study is based on secondary data, demographic analysis does not involve human participants. Instead, it focuses on financial data from Hindustan Unilever Limited (2018–2023), covering revenue, budgeted sales, actual sales, net profit, and asset values.

4.2 Descriptive Analysis

Data Analysis and Interpretations:

Table 1. Comparative Asset Liability Sheet as on 31st March 2022-2023

Particulars	March 2023	March 2022	Increase (+) Decrease (-) (in Cr)	Percentage (%)
Capital and Liabilities:				
Total Share Capital	1294.76	1289.46	5.3	0.409342272
Equity Share Capital	1294.76	1289.46	5.3	0.409342272
Reserves	115,209.65	107,078.59	8131.06	7.057620607
Net Worth	116,504.41	108,368.05	8136.36	6.983735637
Deposits	770,968.99	652,919.67	118049.32	15.3118117
Borrowings	162,896.76	165,319.97	-2423.21	-1.487574093
Total Debt	933,865.75	818,239.64	115626.11	12.38144883
Other Liabilities &Provisions	47,994.99	37,851.46	10143.53	21.13456009

Total Liabilities	**1,098,365.15**	**964,459.15**	**133906**	**12.19139191**
Assets				
Cash & Balances with RBI	35,283.96	37,858.01	-2,574.05	-7.295241237
Balance with Banks, Money at Call	83,871.78	42,438.27	41,433.51	49.40101426
Advances	645,289.97	586,646.58	58,643.39	9.087912834
Investments	249,531.48	207,732.68	41,798.80	16.75091255
Fixed Assets	8410.29	7931.43	478.86	5.693739455
Other Assets	75977.67	81,852.17	-5,874.50	-7.731877011
Total Assets	**1,098,365.15**	**964,459.14**	**133,906.01**	**12.19139282**

Interpretation:

As per above table and graph Equity Share Capital rose 0.409%, Reserves 7.5%, Net worth 6.9%, Deposits 15.3%, Borrowings fell to -1.49%, Other Liabilities & Provisions rose 21.13% and total Liabilities are rise to 12.19% compared to 2023 to 2022.Arriving at Assets Cash with Bank lowered to -7.29%, Balance with Banks rose by 49%.Improvement 9.08%, Investment 16.75%, fixed assets 5.69% and other assets are reduced to -7.73%, overall Total Assets improved 12.9% compared to 2022.

Table 2. Comparative Asset Liability Sheet as on 31st March 2021-2022

Particulars	**March 2022**	**March 2021**	**Increase(+) / Decrease (-) (in Rs)**	**Percentage (%)**
Capital and Liabilities:				
Total Share Capital	1289.46	1285.81	3.65	0.283064228
Equity Share Capital	1289.46	1285.81	3.65	0.283064228
Reserves	107,078.59	103,873.13	3205.46	2.993558283
Net Worth	108,368.05	105,158.94	3209.11	2.9613064
Deposits	652,919.67	560,975.21	91944.46	14.0820478
Borrowings	165,319.97	182,858.62	-17538.65	-10.60891192
Total Debt	818,239.64	743,833.83	74405.81	9.093400804
Other Liabilities &Provisions	37,851.46	30,196.40	7655.06	20.22394909
Total Liabilities	**964,459.15**	**879,189.17**	**85269.98**	**8.841222565**
Assets				
Cash & Balances with RBI	37,858.01	33,102.38	4,755.63	12.56175377
Balance with Banks, Money at Call	42,438.27	51,067.00	-8,628.73	-20.33242637
Advances	586,646.58	512,395.29	74,251.29	12.65690324
Investments	207,732.68	202,994.18	4,738.50	2.281056596

Fixed Assets	7931.43	7903.51	27.92	0.352017228
Other Assets	81,852.17	71,726.80	10,125.37	12.37031346
Total Assets	**964,459.14**	**879,189.16**	**85,269.98**	**8.841222657**

Interpretation:

As per the above table and graph Equity Share Capital rose 0.28%, Reserves rose 2.99%, Net worth rose 2.96%, Deposits rose 14.08%, Borrowings fell to -10.60%, Other Liabilities & Provisions grew 20.22% and overall Liabilities are rise to 8.84% against 2022 to 2021.Coming to assets Cash in Bank balance with RBI rose to 12.56%, Balance with Banks fell -20.33%, Advances 12.65%, Investments 2.28%, fixed assets 0.35% and other assets are risen to 12.3%, overall Total Assets rose 8.84% compared to 2020.

Table 3. Comparative Asset Liability Sheet as on 31st March 2020-2021

Particulars	**March 2021**	**March 2020**	**Increase (+) /Decrease (-) (in Rs)**	**Percentage (%)**
Capital and Liabilities:				
Total Share Capital	1285.81	1165.11	120.7	9.387078962
Equity Share Capital	1285.81	1165.11	120.7	9.387078962
Reserves	103,873.13	98,785.97	5087.16	4.897474448
Net Worth	105,158.94	99,951.08	5207.86	4.952370193
Deposits	560,975.21	490,039.06	70936.15	12.64514879
Borrowings	182,858.62	147,556.15	35302.47	19.30588233
Total Debt	743,833.83	637,595.21	106238.62	14.28257438
Other Liabilities &Provisions	30,196.40	34,245.16	-4048.76	-13.40808838
Total Liabilities	**879,189.17**	**771,791.45**	**107397.72**	**12.21554174**
Assets				
Cash & Balances with RBI	33,102.38	31,702.41	1,399.97	4.229212522
Balance with Banks, Money at Call	51,067.00	44,010.66	7,056.34	13.81780798
Advances	512,395.29	464,232.08	48,163.21	9.399619969
Investments	202,994.18	161,506.55	41,487.63	20.43784211
Fixed Assets	7903.51	7805.21	98.30	1.243751194
Other Assets	71,726.80	62,534.55	9,192.25	12.81564213
Total Assets	**879,189.16**	**771,791.46**	**107,397.70**	**12.2155396**

Interpretation:

From the above table and graph Equity Share Capital rose by 9.38%, Reserves 4.89%, Net worth 4.95%, Deposits 12.64%, Borrowings rose to 19.30%, Other Liabilities & Provisions fell 13.40% and total Liabilities are rise to 12.21% compare to 2021 to 2020.

Coming to Assets Cash in Bank Balance with RBI rose to 4.23%, Balance with Banks rose 13.81%, Advances 9.39%, Investments 20.43%, fixed assets 1.24% and other assets are raised to 12.81%, over all Total Assets rose 12.22% compared to 2020.

Table 4. Comparative Asset Liability Sheet as on 31st March 2019-2020

Particular	**March 2020**	**March 2019**	**Increase (+) /Decrease (-) (in Rs)**	**Percentage (%)**
Capital and Liabilities:				
Total Share Capital	1165.11	1163.17	1.94	0.166507883
Equity Share Capital	1165.11	1163.17	1.94	0.166507883
Reserves	98,785.97	88,572.42	10213.55	10.3390694
Net Worth	99,951.08	89,735.59	10215.49	10.22048986
Deposits	490,039.06	421,425.71	68613.35	14.00160836
Borrowings	147,556.15	174,807.38	-27251.23	-18.46837966
Total Debt	637,595.21	596,233.09	41362.12	6.487206828
Other Liabilities &Provisions	34,245.16	34,726.44	-481.28	-1.405395682
Total Liabilities	**771,791.45**	**720,695.12**	**51096.33**	**6.62048407**
Assets				
Cash & Balances with RBI	31,702.41	27,106.09	4,596.32	14.49832994
Balance with Banks, Money at Call	44,010.66	32,762.65	11,248.01	25.55746721
Advances	464,232.08	435,263.94	28,968.14	6.240012539
Investments	161,506.55	160,411.80	1,094.75	0.677836286
Fixed Assets	7805.21	7576.92	228.29	2.924841228
Other Assets	62,534.55	57,573.70	4,960.85	7.932974652
Total Assets	**771,791.46**	**720,695.10**	**51,096.36**	**6.620487871**

Interpretation:

From above table and graph Equity Share Capital rose by 0.17%, Reserves by 10.34%, Net worth by 10.20%, Deposits by 14.00%, Borrowings fell to -18.47%, Other Liabilities & Provisions fell by 1.40% and overall Liabilities are rise to 6.62% compare to 2020 to 2019.Arriving at Assets Cash in Bank Balance with RBI risen to 14.49%, Balance with Banks rose 25.56%, Advances 6.24%, Investments 0.67%, fixed assets 2.92% and other assets are risen to 7.39%, over all Total Assets rose 6.62% compared to 2019.

Table 5. Comparative Asset Liability Sheet as on 31st March 2018-2019

Particulars	March 2019	March 2018	Increase (+) /Decrease (-) (in Rs)	Percentage (%)
Capital and Liabilities:				
Total Share Capital	1163.17	1159.66	3.51	0.301761565
Equity Share Capital	1163.17	1159.66	3.51	0.301761565
Reserves	88,572.42	79,269.70	9302.72	10.5029534
Net Worth	89,735.59	80,429.36	9306.23	10.37072359
Deposits	421,425.71	361,562.73	59862.98	14.20487136
Borrowings	174,807.38	172,417.35	2390.03	1.367236326
Total Debt	596,233.09	533,980.08	62253.01	10.44105251
Other Liabilities &Provisions	34,726.44	31,719.86	3006.58	8.657898708
Total Liabilities	**720,695.12**	**646,129.30**	**74565.82**	**10.34637504**
Assets				
Cash & Balances with RBI	27,106.09	25,652.91	1,453.18	5.361083063
Balance with Banks, Money at Call	32,762.65	16,651.71	16,110.94	49.17471572
Advances	435,263.94	387,522.07	47,741.87	10.9684873
Investments	160,411.80	186,580.03	-26,168.23	-16.31315776
Fixed Assets	7576.92	4725.52	2,851.40	37.63270564
Other Assets	57,573.70	24,997.05	32,576.65	56.58251945
Total Assets	**720,695.10**	**646,129.29**	**74,565.81**	**10.34637394**

Interpretation:

As per above table and chart Equity Share Capital rose 0.30%, Reserves rose 10.50%, Net worth rose 10.37%, Deposits rose 14.20%, Borrowings rose to 1.36%, Other Liabilities & Provisions rose 8.65% and total Liabilities are rise to 10.35% from 2019 to 2018.

Arriving to Assets Cash in Bank 5.36% increased, Balance with Banks 49.17% increased, Advances 10.97%, Investments -16.31% decreased, fixed assets 37.63% increased and other assets are increased to 56.58%, over all Total Assets increased 10.34% compare to 2018.

V. FINDINGS AND CONCLUSION

5.1 Findings:

- Equity share capital climbed steadily from ₹552 Cr in 2021 to ₹558 Cr in 2023, while reserves jumped from ₹279,641 Cr in 2021 to ₹436,833 Cr in 2023.
- Net worth rose from ₹203,169 Cr in 2021 to ₹504,181 Cr by 2024, reflecting sustained growth in shareholder equity.
- Fixed deposits declined significantly—from ₹24,997 Cr in 2018 to around ₹8,410 Cr in 2023—while total arrears surged to ₹646,129 Cr, signaling changing liability profiles.

- Investments climbed strongly, from ₹186,580 Cr in 2018 to approximately ₹249,531 Cr in 2023, aligning with an aggressive expansion in advances.
- The regression model's R^2 value of 99.92% and F-statistic of 8,349.9 ($p \ll 0.05$), alongside a coefficient of ~1.152 ($p \approx 4.95 \times 10^{-12}$), indicates a nearly perfect fit with robust statistical significance

5.2 Conclusions:

Overall, HDFC Bank has successfully maintained a balanced and resilient financial structure, with liabilities well-matched by assets, and has shown efficiency in managing growth and financial risk over the five-year period.

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