CHAPTER II

REVIEW OF LITERATURE

2.1. INTRODUCTION

The review of the earlier studies and experience of the past research works are of gigantic help in evaluating the soundness of the concepts used and the methodology followed. Therefore, in this section an attempt is made to outline the various concepts used and the conclusions made in the earlier related studies. The researcher has made an elaborate review of those studies. The most important concepts used and inferences drawn in those studies which are relevant to the present study are presented in this section.

2.2. REVIEW OF LITERATURE

The review has been collected by using the following sources:

1. Studies Related to Asset- Liability Management as Theory and Strategy
2. Studies with Specific Focus on Credit Risk and NPA
3. Books On ALM
4. Studies Related to CAMEL Model

Dennis G. Uyemura (1991)¹ in an interview with the Banker's Magazine presented the view that ALM is the function of the bank that attempts to reconcile risks and returns. Trends such as the movement towards market value concepts, cash flow concepts and capital allocation activities are all part of ALM responsibilities and therefore are deeply ingrained in some of the fundamental trends in the banking environment.

Sanjay H.R (1994)² in the book entitled “Innovations in Banking Services” highlighted that the principal issues and operational aspects of innovative banking
services such as leasing, factoring, merchant banking, mutual funds, venture capital
finance etc. The various reform measures related to banks, as per Narasimham
Committee Report and their implementation were also discussed in the chapter
headed as Financial Sector Reform.

Krishnamurthy N.S (1994)\(^3\) in an article on financial disintermediation
expressed the view that banks, especially the public sector banks, will always have an
edge with regard to those investors for whom security and liquidity are as important
as the rate of return, and so long as this is true, marginal shift of funds need not cause
undue concern or alarm.

Ram Mohan .K (1995)\(^4\) in an article on Credit Risk Management argued that
the system of roll-over credit will be replaced by loans of fixed maturity and by the
deregulation of interest rates. It will facilitate the matching of assets with liabilities
depending on their maturity profile.

Gosh Roy .D (1995)\(^5\) in an article pointed out that Asset- Liability
Management as a tool for increased profitability and managing interest rate volatility
have been in vogue in the international banking scenario since the late seventies. With
the process of globalization and deregulation settings, Indian banks are longer shy
away from managing their assets and liabilities more so in the short run.

Godse W.T and Chakrabarty K.C (1996)\(^6\) in an article on risk management
presented the view that during the post-nationalization phase of Indian banking
industry, different words and concepts have attained significance at different times.
Liberalization and deregulations of interest rates, prudential norms, capital adequacy
and Asset- Liability management are also become buzzwords of the nineties.
Sreedhar. G (1996)\textsuperscript{7} in an article on different aspects of treasury management strongly argued that in India the only plausible hedge available to banks against interest rate risks is the natural hedge arising out of investment of borrowed resources in assets that have matching term and maturities. Banks do not have flexible alternatives that are easily accessible to hedge perceived risks.

Jayanthi Lal Jain (1996)\textsuperscript{8} in her article on the strategic planning for ALM expressed the view that with the process of deregulation setting in, Indian banks are increasingly finding the need to manage assets and liabilities efficiently. The acceptance of Narasimham Committee recommendations during 1991 by the RBI had put serious strain on profitability and the need of ALM was felt by all the commercial banks. The objective of ALM is to manage various holdings of remunerative assets in a manner, which results in lesser cost and higher yields so as to maximize profits.

Ammannya K.L (1996)\textsuperscript{9} in an article on Asset- Liability Management strategies for banks found that the ALM is ultimately discretionary fund management when the focal point is to increase or decrease interest sensitive funds at the initiative of the bank. It proved that ALM is a process of adjusting bank liabilities to meet loan requirements, liquidity needs and safety requirements.

Deeraj Varishth (1996)\textsuperscript{10} in an article on Asset- Liability Management in banks focused on the that the ALM function if implemented properly, would enable the bank management to enhance the quality of its earnings by imparting stability to its interest margins. A higher quality of earning would directly translate into higher shareholder value, which is the real touchstone of a successful risk management programme.
A.V. Rajwade (1996)\textsuperscript{11} in his article on International banking asset found that ALM is crucial to both domestic and international banking and the basic objective is to ensure that a bank's profitability is not unduly exposed to changes in the interest rates that is a subject of importance to assets and liabilities in home currency as well as foreign currencies.

K. Kannan (1996)\textsuperscript{12} in his article on Asset- Liability Management points out that the secret of successful banking under deregulated and competitive environment hinges on matching of the assets and liabilities in terms of rates and maturity with a view to obtaining optimum yield. Although the process is too complex to practise, it is the only solution for banks to survive in a dynamic environment, which requires more stress on the total balance sheet management.

Mohan N Sheno\textsuperscript{i} (1996)\textsuperscript{13} concentrated on treasury management for ALM expressed the view that the commercial banking assets and liabilities which were stable earlier and showed consistent growth in the recent past exhibited volatility and large swings. Investment banking operations, which have relatively more flexibility, is therefore being increasingly used to neutralize the risks arising out of commercial banking and thus the treasury is made the focal point of Asset- Liability management in banks.

Pavan Sukhdev (1996)\textsuperscript{14} found that the possible and impending deregulations in the Indian context will lead to greater interest rate volatility and lower NIM and under these changed circumstances if the financial institutions are to maintain their profitability, efficient techniques of structuring the process of assets and liabilities have to be given due significance.
Trivedi A.K (1996)\(^{15}\) in a study related to ALM in Forex Business in India stated that searching attributes responsible for progress in the ALM field would reveal that the growth of capital, money and foreign markets has fuelled the development of new hedging instruments and derivative products with increased hedging effectiveness. At the same time the growth of process is infusing liquidity in these products so as to make them efficient and useful.

Rajagopal ,S (1996)\(^{16}\) studied the different aspects of bank risk management pointed out that in a competitive market environment a bank's rate of return will be greatly influenced by its risk management skills and Asset- Liability Management is a good example for risk measurement. Prudent banking lies in identifying, assessing and minimizing the risks.

Bansal A. K (1997)\(^{17}\) evaluated the role of margin in credit management and expressed the view that one of the principles of quality lending should be greater margin or at least minimum and acceptable margin. Banks are now in a position to insist on more stakes of the borrower in case of quality lending.

Louis I.J.H (1997)\(^{18}\) the authors explored the Asset- Liability Management and focused on profitability and long-term operating viability. Increasing uncertainties regarding interest rates and finding possibilities besides the emergence of many hedging instruments in the financial markets have all added to the importance of ALM in modern banking management.
Ramachandra Rao .B (1997) in an article related to NPA of banks strongly argued that it is high time that RBI stopped overplaying the concept of NPA. What is relevant is the concentration of NRA (Non Recoverable Assets), which should matter much in determining the quality of bank credit. Each bank should decide carefully to what extent loan assets are uncovered and cannot be realized due to losses and circumstances beyond the control of the borrowers.

Tambe M.R (1997) studied the role of commercial banks in the new economic set up stated that in order to cope with the new challenges, the commercial banks will have to abandon their traditional work style and adopt new dynamic work culture. The banks must also guard themselves against the situation of excessive risks and competition.

Garg I.K (1997) in an article on risk management in the banking sector stated that banks encounter a whole array of risks, prominent among them being credit risk, liquidity risk, interest rate risk and currency risk. Credit risk and liquidity risk have traditionally been known and handled, but interest rate risk and currency risk are relatively new for Indian banks.

Satchidananda Sogala (1997) has identified developing the computer models for credit risk analysis suggested that the credit scoring model would help banks to process more loans while at the same time decreasing the expected default rate and making it better for loan quality.

Ramachandran. N (1997) concluded his article on Non Performing Assets with the remark that the quality of advances can be improved through sharpening the tools and techniques used for appraisals. Banks have to move away from their traditional approach of over dependence on ratios to appraise projects. Rather they
should focus attention on their ability to foresee problems, which might crop up with the borrowers.

**Sen Sarma R.R (1997)**\(^{24}\) in a study pointed out that the banking system is facing over hanged liquidity. The reduction in the interest rate without improving credit off-take may not be an effective mechanism for improving the performance of banks.

**Sujith Sikider (1997)**\(^{25}\) concluded about NPA that under the new RBI monitoring system a bank's performance has become crucially dependent on the recognition of income and non-performing assets. The RBI guideline issued for finalization of bank accounts for the year ending in March 1996 has pushed up the level of NPA and the subsequent provisioning requirements.

**Jayanti Jain and K. Balachandran (1997)**\(^{26}\) in an article opined that with the liberalization of the economy in general and the financial sector in particular, the risk dimensions faced by the Indian commercial banks have multiplied. Banks which were familiar only with credit risk relating to non-payment earlier are now facing multiple financial risk in the form of credit risk relating to non-payment and non-performing risks, interest rate risk, exchange risk, maturity gap risk and technology risk.

**Swapan Kumar Bakshi (1997)**\(^{27}\) conducted a study on the interest rate risk identification measurement and control pointed out that interest rate risk denotes possibility of loss due to change in interest rates which will result in erosion in the net profits of a firm and/or in the market value of its net worth. Every ALM portfolio is exposed to interest rate risk, if the principal amount maturity or reprising dates of liabilities assumed are not exactly matched with that of the assets acquired.
Tannan M.C (1997)\textsuperscript{28} in the book “Banking law and Practice in India” described the prudential norms such as income recognition, asset classification, provisioning for loans and advances. The Book also covered the Narasimham Committee Report on the financial system and progress of financial sector reforms.

Shekhar and Shekhar (1998)\textsuperscript{29} in their book “Banking Theory and Practice” devoted a chapter entitled The Changing Profile of Indian Banking to highlight the achievements of the banking system and the challenges ahead in the context of the new rules at the onset of reforms. The summary of the recommendation of the Narasimham Committee Report and Prudential Accounting Standards as applicable to banking companies are also explained under the title Banking Legislation and Reforms.

Sudhakar V.K (1998)\textsuperscript{30} in a study on policies and perspectives of NPA reduction in banks pointed out that a banker tries to minimise risks by taking informal decisions, aided by technical expertise and market information. In the Indian context the risk assessment models are inadequate or underdeveloped and in such a scenario unknown risks can enhance creation of more NPAS.

Shinde S.R (1998)\textsuperscript{31} in an insightful paper presented in a symposium organized by the Association of Professional Bankers at Colombo and published about Asset- Liability Management takes the view that the banks are ultimately economic entities securing profits by assuming the numerous risks inherent in their financial intermediary and payment function and sophisticated ALM is the key to successful bank management. ALM is the management of total balance sheet dynamics with regard to its size and quality. It is not limited to balance sheet assets and liabilities such as deposits and lending, but includes off-balance-sheet activity such as swaps, futures and options.
Susheela Subrahmany (1998)\textsuperscript{32} in the editorial to Southern Economist magazine stated that deregulation of financial markets and globalisation have increased the range of activities that banks can undertake and this can at the same time exposed the banks to a number of risks. Embracing scientific risk management practices will improve the bank's profit and credit management processes.

Trivedi A.K (1998)\textsuperscript{33} in his article on Asset- Liability Management stated that ALM is the process of adjusting bank liabilities to meet loan demands, liquidity needs and safety requirements. It is different from the passive acceptance of deposit liabilities from the public for regular intermediations and maturity transformations into assets.

Kuvalkar S.V and Kaveri V.S (1998)\textsuperscript{34} in a paper on Asset- Liability Management in the banks hold the view that under the liberated and deregulated economic environment the banks face problems in resource mobilization and allocation, which will untimely affect their liquidity, profitability and growth of business. The magnitude of this problem can be effectively minimized by adopting the technique of ALM.

Hamngton. R (1998)\textsuperscript{35} in a significant paper on Asset- Liability Management by banks presented at a programme on ALM in the National Institute of Bank Management, Pune, opined that the modern definition of ALM means continually monitoring the existing position of a bank, assessing how this differs from what is desirable, and undervaluing transactions to move the bank towards the desired position. According to him the objective should be to sustain and whenever possible to enhance profitability while controlling and limiting the different risks inherent in the present day banking.
Joshi .N (1998) in a study on Asset- Liability Mismatch pointed out that ever since the commencement of the reform process, among the various concepts and terminologies that have swarmed the financial sector, Asset-Liability Mismatch stands out prominently. With the liberalization process, banks will have to be extremely watchful of the maturity pattern of their liabilities to avoid any danger of mismatch when the funds are deployed in different manufacturing or trading units.

Ganti Subrahmanyam (1998) in a paper presented at the Bank Economists' Meet, Bangalore, stated that Asset- Liability Management (ALM) in banks is known as the process of adjusting the liabilities to meet the deserved loan demands, liquidity needs and safety requirements. A comprehensive ALM policy framework focuses on bank profitability and long-term viability by targeting a net interest margin ratio subject to some balance sheet constraint.

Souza M. D (1998) in a study related to ALM in banks hold the view that advanced information technology is one of the pre-requisites for effective ALM. Since the assets and liabilities of commercial banks in India are spread over a larger number of branches in rural, semi urban, urban and metropolitan centers, collecting accurate and timely information poses a great challenge.

Rajadhpaksha S.G (1998) in a paper related to Risk Management expressed the view that while commercial banks have attempted to use many tools in ensuring operational viability, the only tool which could expose the vulnerability of the institution in the competitive volatile market conditions and hold in taking timely corrective action is Asset- Liability Management.
Asish Saha and Subramanian .V (1998)\textsuperscript{40} in a paper on ALM stated that it is becoming vital for banks to adequately control various inherent risks in order to apply creative management strategies to fulfill their role in a competitive manner. Proper Asset-Liability management can help in assessing the impact of the changing profile of various risks on the bank's balance sheet and by actively altering the structure of the ALM portfolio, the profit position of the bank can be optimized.

Shinde S.R (1998)\textsuperscript{41} presented a paper on Debt Securitisation for Effective ALM opined that by providing additional source of funds, which is not reflected in the balance sheet, securitisation helps in better management of liquidity risk. In view of the many advantages of debt securitisation banks must appreciate its importance as one of the effective tools of ALM.

Pathrose P. P (1998)\textsuperscript{42} in his study of profit planning by banks holds the view that the introduction of straight NPA norms and the standardisation of provisioning requirements along with revised disclosure norms and new accounting standards, have changed the situation altogether and the mounting provisions for NPA is a cause of drain in the profitability of banks.

Saradha D.P (1998)\textsuperscript{43} the study focused on understanding strategies for reducing Non-Performing Assets states that guidelines issued by the Reserve Bank on income recognition, asset classification and provisioning norms have compelled banks in India not only to show the true financial picture in the balance sheet but also to take corrective steps for improving their loan portfolio. With the adoption of these guidelines banks are fully vigilant about the quality of their assets and several steps are being taken by them to reduce NPA.
Rao S and Datta (1998)\textsuperscript{44} made an attempt to derive rating based on CAMEL. In their study, based on these five groups (C-A-M-E-L), 21 parameters were developed. After deriving separate rating for each parameter, a combined rating was derived for all nationalised banks for the year 1998. The study found that Corporation Bank had the best rating followed by Oriental Bank of Commerce, Bank of Baroda, Dena Bank, Punjab National Bank, etc. And the worst rating was found to be of Indian Bank preceded by UCO Bank, United Bank of India, Syndicate Bank and Vijaya Bank.

Frank J Fabozzi and Atsuo Konishi (1999)\textsuperscript{45} in the book entitled “Asset-Liability Management” focuses on there is a comprehensive anthology of 14 analytical chapters on various aspects of ALM by 25 professionals from different financial institution. The topic-wise categorisation of the chapters involved the profitable side of risk management, a hierarchical approach to building an asset-liability model, a critical overview of the asset-liability management models, the new bank capital guidelines, and a comparison of methods for analysing mortgage backed securities. The book also focused on ALM in the 1990s as spreading into various financial institutions though it existed as a concept in the 1970s.

Patil R.H (1999)\textsuperscript{46} evaluated the different trends in risk management points out that for a banking institution the major sources of risk spring from the mismatches of different types of assets and liabilities. As far as the banks in India are concerned, they face very high risk as they are not yet fully aware of their Asset- Liability mismatches.

Philip Sabu and G. Veerakumaran (1999)\textsuperscript{47} in their study related to Asset-Liability Management stated that the Liabilities are created at a cost and the assets are made for a return by the banks and the profitability of banking business depends
largely upon the judicious matching of the assets and liabilities. The banks must therefore match the maturities related to credit, liquidity and interest rate fluctuations.

**Chakravarthi K.C (1999)** conducted a study to understand Transfer Price Mechanism expressed the view that the four key factors which includes unit level profitability, proper costing and pricing, risk management and Asset-Liability management are must for strengthening the soundness of the banking business in the Post Narasimham Committee phase of Indian banking.

**Kumar .P (1999)** in an article expressed the view that the profitability of banks is under pressure due to the uncertain economic environment, non-prudent banking, ill-effects of directed lending and also due to the competition from non-banking finance companies and capital markets which have developed as strong alternatives to the banking industry. The major challenge before banks would be improving profitability and asset quality.

**Rajesh Sanjay (1999)** in his editorial column in The Banker hold the view that while the banks have benefited from the reform introduced in recent years, they still need to become stronger for managing risk relating both for assets and liabilities. This will be possible only when there is the desired concern for improving the capital funds of banks, apart from measures to increase the overall efficiency.

**Talwar S.P (1999)** in an article related to risk management suggested that banking supervisors must be satisfied that banks have in place a comprehensive risk management process to identify measures, monitor and control all other material risks and wherever appropriate, to hold capital against these risks.
Varadaraja Iyer. (1999)\textsuperscript{52} in his article on ALM in banks suggested that the touchstone of future success of any individual bank will depend primarily on its ability to manage risk and not on the volume of its business levels or even its profit percent.

Bimal Jalan (1999)\textsuperscript{53} Governor of RBI in his keynote addressed to The Economists Conference points out that excessive risk aversion can have adverse effects on profitability of the banking system as it will restrict the credit growth in the economy.

Gurumoorthy .M (1999)\textsuperscript{54} in his paper related to credit marketing stated that banks have to build up a good advances portfolio to sustain and show up trend in profitability. With the increase in lendable resources, banks will be very keen to maintain a balanced asset portfolio, as the effects of asset-liability mismatch should not cause strain on their bottom line.

Hari Vithal Rao .C (1999)\textsuperscript{55} in his study focused on lok adalat as an effective forum for reducing NPA, remarks that lok adalats have gained prominence over a period of time as a forum through which the disputes/statements among the parties are settled through an expeditious compromise settlement by adopting principles of justice, equity, fair play and other legal principles.

Rajendra Singh (1999)\textsuperscript{56} in an article related to NPA states that a critical appraisal of the composition of NPA in many banks would reveal that priority sector advances are not necessarily the major cause of NPA. The percentage share of NPA in some of the poverty eradication programmes may appear to be relatively higher, but quantum-wise its contribution would be small.
Siddiqi A.Q, Rao A. S and Thakkar R. M (1999) in their study relating to NPA in commercial banks pointed out that in the wake of the transparency and disclosure measures initiated by the RBI the higher NPA levels of Indian Banking have came to the attention of public as well as international financial institutions. Reduction of NPA should be treated as a national priority item to make the Indian Banking system more strong, resilient and geared to meet the challenges of globalization.

Rashid Jilani (1999) in an article on NPA pointed out that though the quantum of NPA level in Public Sector Banks is quite large and may be considered a fundamental weakness in the public sector banks, this cannot be indicative of any systematic risk so as to render the Indian banking system unsound.

Kalavathi S (2000) in an article on credit risk management projected that banking is all about risks and returns and balancing of these risks and returns presents a major challenge. Banks function successfully when the risks taken are reasonable, controlled and within the financial resources and credit competence. All the risks are interrelated, interdependent and overlapping in their causes and effects.

Ravikumar T (2000) in his book entitled “Asset-Liability Management” focuses on the practical aspects of ALM from the point of view of banking in the Post-Reform phase. The book consisted of seven chapters, the first being an insightful analysis of the structure of the financial statement of banks with a detailed explanation of various assets and liabilities. The second chapter gave an overview of the concept of risk management and the approaches adopted for managing risks. The following 4 chapters dealt with interest rate risk, exchange risk, liquidity risk and credit risk management. The last chapter dealt with the RBI guidelines and the practical problems involved in the constitution and management of ALM committees
in banks. The book is noteworthy because it provides various mathematical inputs in order to understand certain concepts like interest rate sensitivity, value at risk etc.

**Usha Arora (2000)** in an article on NPA management in the Indian environment suggested that banks have to achieve the level of international standard in NPA management in the years to come. However in the long run only better credit management in terms of appraising and monitoring of loan assets can solve the problem in this area and this will only enable banks in maintaining the pre- eminent position in the global set up.

**Munivelu Thiruttani (2000)** in his article on the bank balance sheet management pointed out that the NPA cripples bank's earnings and the recovery of NPA is the key for stepping up profit and profitability. To improve the bottom line of the bank, what is required is accelerated recovery for recycling of funds and recovery of unchanged interest and write back of provisions.

**Krishnamurthy C.V. (2000)** in an article related to NPA stated that the growth of NPA is a euphemism for unrecovered loans and has been phenomenal for the public sector institutions and particularly for banks. In banks the NPA curves vary between a gross of Rs. 39,253 crores in 1992-93 to Rs. 45653 crores in 1997-98.

**Sanjay Kumar (2000)** in his study relating to non-performing assets in regional rural banks stated that high level NPA reduces the risk taking ability of the bank. It also affects the credit rating of the bank thereby restricting its ability to approach the public for capital subscription, which will ultimately affect the financial health of the banks.
Sasidharan . K (2000)\(^6\) in his article on ALM projected that the controlled expansion of the balance sheet, creation of quantity assets and improving the Net Interest Spread have to become an ongoing agenda of the banks. It is proved that ALM becomes significant as it enables the banks to match short-term assets with short-term liabilities, medium-term assets with medium-term liabilities and long-term assets with long-term liabilities.

Murthy G.R.K (2000)\(^6\) in an article on Credit Risk Management hold the view that financial intermediaries like banks are exposed to a variety of risks that are intertwined with each other. The interest rate risk might eventually lead to credit risk, while credit risk itself is closely associated with forex risk. This risk has assumed the centre stage of risk management.

Khurana S.K (2000)\(^6\) in his notable book entitled “Asset- Liability Management” presented the basic concepts of ALM as applicable to the banks in general and to the branch level in particular in the first two chapters. Out of the 12 chapters in the book, 9 chapters presented a detailed description of various risks like liquidity risk, interest rate risk, credit risk, currency risk etc. and an analytical evaluation of the prudential guidelines issued by RBI related to these risks and capital adequacy norms to be followed by banks. The last chapter included a hypothetical case study of liquidity and interest rate sensitivity analysis. The most important characteristic of the book is that it evaluated ALM based purely on the RBI guidelines and hence is helpful in understanding the conceptual and practical aspects of ALM in modern banking.

Gurudas Saha (2001)\(^6\) in an article related to the competitive viability of the public sector banks expressed the view that in the banking industry liquidity refers to the availability of funds to repay the demands of the depositors. Liquidity creates trust
among the lenders and borrowers. As the maintenance of liquidity is always at the cost of interest earnings, excess liquidity is a drain on profitability.

**Debajyoti Dasgupta (2001)** in an article pointed out that prudent management policy, good work culture and sound risk management capability would affect the performance of public sector banks.

**Murali . S and Sadasivan . B (2001)** in an article relating to Indian banking industry stated that the skill of credit risk management is an extremely important area for the healthy functioning of any financial institution. With the adoption of international norms of income recognition, and asset classification many public sector banks in India find themselves burdened with huge loads of NPA.

**Deepti Baslas and Anand Bansal (2001)** in their study relating to banking sector reforms found out that the level of NPA is a contentious issue and a vital parameter in the analysis of the financial health of banking industry. Public sector banks accounted for a higher level of NPA as they hold a higher share in lending, but contrary to general perception, the ratio of gross NPA to total advances and total assets has come down.

**Sujith Sikider and Kalyan Mukherjee (2001)** in a study of Basle norms, cost-income measurements, and their impact on commercial banks pointed out that over the recent years the public sector banks in India have been exposed to severe competition from the private sector banks. The concept of capital, measurement of profit, calculation of NPA, provisioning norms for that, Capital Adequacy Ratio, Weighted Average Assets have emerged as challenging variable for the survival of the banks.
Vaidya and Shahi (2001)\textsuperscript{73} in their study about asset-liability management in Indian banks suggested in particular that interest rate risk and liquidity risk are two key inputs in business planning process of banks.

Mehta (2002)\textsuperscript{74} in his study he focused on different aspects of ALM such as managing risks, its concern with strategic balance sheet management involving risks caused by changes in the interest rates, exchange rates and liquidity position of the banks.

Prasana (2004)\textsuperscript{75} analysed the performance of Indian banks by adopting the CAMEL Model. The performances of 65 banks were studied for the period 2003-04. The author concluded that the competition was tough and consumers benefited from it. Better services quality, innovative products, better bargains are all greeting the Indian customers. The coming fiscal will prove to be a transition phase of Indian banks, as they will have to align their strategic focus to increasing interest rates.

Veni (2004)\textsuperscript{76} studied the capital adequacy requirement of banks and the measures adopted by them to strengthen their capital ratios. The author highlighted that the rating agencies give prominence to Capital Adequacy Ratios of banks while rating the bank’s certificate of deposits, fixed deposits and bonds. They normally adopt CAMEL Model for rating banks. Thus, Capital Adequate is considered as the key element of bank rating.

Goddard (2004)\textsuperscript{77} investigated profitability of European banks using cross sectional data during 1990s. The results showed the relationship between the capital-asset ratio and profitability is positive. Athanasoglou (2005) examined the effect of bank specific, industry specific and macroeconomic determinants of bank
profitability. The coefficient of capital variable was positive and highly significant, reflecting the sound financial condition of Greek banks.

Ranjan and Nallari (2004)\textsuperscript{78} used canonical analysis to examine Asset-Liability Management in Indian banks during the period of 1992-2004. They found that the SBI and associates had the best Asset- Liability Management in the period of 1992-2004. They also found that, other than foreign banks, all other banks could be said to be liability-managed; that is they all borrowed from the money market to meet their maturing obligations. Private sector banks were found to be aggressive in profit generation, while nationalized banks were found to be excessively concerned about liquidity.

Linbo Fan (2004)\textsuperscript{79} examined efficiency versus risk in large domestic USA banks where he found that profit efficiency is sensitive to credit risk and insolvency risk but not to liquidity risk or to the mix of loan products. In light of Basel 2 directives to reform the regulation of bank capital, there has been an extensive research on study of the bank loss loan portfolio density. Particular emphasis is on the measurement of the Value at Risk. A crucial input of a portfolio credit risk model is the suitable characterization of default correlations.

Roy (2005)\textsuperscript{80} highlighted that the post-reform banking scenario in India is marked by interest rate deregulation, competition in the industry and introduction of new products along with greater use of information technology, hence, the importance of ALM.
Kosmidou K, Tanna S and Pasiouras F (2005)\textsuperscript{81} investigated the impact of banks’ characteristics, macroeconomic conditions and financial market structure on banks’ net interest margin and return on average assets (ROAA) in the UK commercial banking industry during the period 1995-2002. The results showed that capital strength was one of main determinants of UK banks performance providing support to the argument that well capitalized banks face lower cost of going bankrupt, which reduces their cost of funding or that they have lower needs for external funding which results in higher profitability.

Satish D. Jutur S and Surendar V. (2005)\textsuperscript{82} adopted CAMEL model to assess the performance of Indian banks. The authors analyzed the performance of 55 banks for the year 2004-05, using CAMEL Model. They concluded that the Indian banking system looks sound and Information Technology will help the banking system grow in strength while going into future. Banks’ initial public offers (IPOs) will be hitting the market to increase their capital and gearing up for the Basel-II norms.

Ngo. P (2006)\textsuperscript{83} investigated the relationship between bank capital and profitability. The results showed no significant relationship.

Bodla B.S and Verma. R (2006)\textsuperscript{84} in their paper, made an attempt to examine and compare the performance of two largest banks of India - the SBI, a public sector bank; and ICICI a private sector bank - through CAMEL Model. The present supervision system in banking sector is a substantial improvement over the earlier system in terms of speed, coverage and focus and also the tool employed. Two supervisory rating models based on CAMEL (capital adequacy, assets quality, and management, Earning, Liquidity, Systems and Controls) and CACS (Capital Adequacy, Assets Quality, Compliance, Systems and Controls) factors for ranking the
Indian and foreign banks have been operating. These models have been worked out on the recommendation of Padamanabhan Working Group (1995). These ratings would enable the RBI (Control Bank) to identify the banks whose conditions warrant special supervision attention.

The paper aimed to describe the CAMEL Model of rating / ranking banking institutions so as to catch up the comparative performance of various banks. CAMEL is basically a ratio-based model for evaluating the performance of banks. Various ratios are computed under each parameter of CAMEL Model so as to compute the overall ranking of the banks. While ranking of SBI and ICICI according to average of CAMEL Model ratios for the period 2000 to 2005, the study has brought many interactive results of both the banks. Both SBI and ICICI are performing excellently since beginning of the 21st century. However, in respect to some of parameter of performance, SBI has outperformed ICICI bank. These are G. Securities to Total Investments, Spread to Total Assets, Interest Income to Total Income, Liquid Assets to Total Assets, Govt. Securities to Total Assets, etc. In contrast, ICICI has done better than SBI with regard to Advances to Assets, Total Advances to Deposits, Business per Employee, Profit per Employee, Non-interest Income to Total Income, Liquid Asset to total Deposits etc. The study concluded that on the whole, ICICI bank has performed better than SBI.

**Satish .D and Bharathi (2006)** revealed that the Indian banking system has come a long way since independence going through different phases of nationalization and liberalization and is now preparing itself for the very critical phase, i.e., Globalization. The liberalization phase brought out the best in the industry inducing competition among banks. During this period, banks were re-structured, shed the flab of over-employment, embraced technology, ventured into new business
and re-branded themselves to cater over-demanding customers. Concisely, banks across the board have improved their profits while reducing their operational costs. Having reached a comfortable position, Indian banking is cautiously preparing itself to take the next big leap.

Given this background and the development of the banking sector, it is interesting to see how the banks have performed in financial year 2005-06. The researchers undertook a study of the banking sector based on their annual results for the year 2005-06 using CAMEL model. The study covered 59 banks consisted of 25 public sector banks (including the SBI and its associates), 14 private sector banks (old and new) and 20 foreign banks.

Under CAMEL model, the researchers analysed the performance of the above 59 banks by ranking these banks on the basis of capital adequacy, Asset Quality, Management, Earning Quality and Liquidity. Subsequently, they computed composite average ranking of the public, private banks and foreign banks. For the performance snapshot, they made use of additional indicators like total income, interest income, profit after tax, operating profit, deposits, advances and total assets.

They believed that the coming year will have more and more banks restructuring, re-organizing as well as re-branding themselves to face tough competition. This could also increase the much awaited pace of consolidation in the industry. Though India has many banks, none of them has reached the global scale and are nowhere comparable to global banking giants. They suggested that ongoing developments in the Indian economy should scale up quality global banks both in size and in quality of service.
Pavinder Arora Ajay Garg and Bhavan Ranjan (2007)\textsuperscript{86} in their study, they pointed out that the ALM is important for coordinated management of assets and liabilities. This ALM concept is a tool that enables bank managements to take business decisions in a more informed framework.

Sisodiya A.S, et al. (2007)\textsuperscript{87} in their paper they have adopted the CAMEL model to assess the performance of Indian banks. The authors analysed 67 banks for the year 2006-07. On the basis of composite ranking of all the selected banks, they selected 10 CAMEL topper banks under public sector, private sector and foreign banks category. They concluded that with the buoyancy in the overall economy led by robust corporate performance, the banking sector reported a sterling performance. A host of positives characterized the banking sector in the country during 2006-07. The banking sector’s performance was seen as the replica of economic activities of the nation as the healthy banking system acts as the bedrock of solid economic and industrial growth of a nation. India is one of the fastest growing economies in the world; one sector which had played a vital role in propping up its economy is undoubtedly the banking sector. To assess the performance and assign the rank, the globally renowned model, CAMEL was used. The acronym ‘CAMEL’ refers to five components of a bank’s condition that is assessed: Capital Adequacy, assets quality, management, earnings and liquidity.

Boender G.C et al. (2007)\textsuperscript{88} also performed an ALM study for a pension fund where they use a VAR model for the macroeconomic scenarios with additionally a Nelson Siegel model for the interest rates. But by using the Nelson Siegel model for generating interest rate scenarios their model is not arbitrage free. They applied the scenario approach as well and investigated the consequences for the ALM results of
using three different pension plans. The three pension plans have different characteristics such as asset allocation and age distribution.

Sisodiya A.S et al. (2008) in their article titled, “Indian Banking Industry: Sustaining the Growth Momentum” revealed that the banking sector in India has once again come out with another fiscal of robust performances. This is commendable given the fact that the banking environment has suddenly become quite challenging after the US subprime crisis which resulted in an unprecedented global liquidity crunch. The fiscal also confirmed the end of the era of benign interest rates as the country’s apex bank embarked on a belt-tightening spree and with a series of tougher measures. This has nevertheless posed significant challenges to the banks to maintain the growth momentum of the last few years.

The authors ranked banks on the basis of the famous CAMEL (Capital Adequacy, Assets Quality, Management, Earning and Liquidity) rating. They analysed 68 banks for the year 2007-08. On the basis of ranking of each measure of CAMEL Model, they selected five banks under Capital Adequacy winner (PSU banks), Assets Quality winner (Private sector banks), Management Efficiency winner (PSU banks), Earning Quality winner (Private sector banks) and Liquidity winner (PSU banks).

Hoevenaars . R.P.M.M (2008) also combined the VAR model with a net term structure model of interest rates in such a way that there are no arbitrate opportunities. He used the model to generate macroeconomic scenarios that serve as input for an ALM model which will be our starting point.

financial performance and efficiency of commercial banks in sub Saharan African with DEA model.

Sisodiya. A.S and Pemmaraju.R (2009)\(^{92}\) in their article stated that the Indian banking has shown remarkable resilience even amidst the worst ever financial catastrophe that hit the global economy about a year ago and caused the collapse of several financial giants. Now, with the effects of the carnage in the global banking sector subsiding and financial numbers being out, all eyes are on the performance of domestic banking sector. While it would not be correct to expect a repetition of the solid performances that banks delivered in the past 3-4 fiscal years, their performances for the fiscal just gone by are not disappointed either.

They have ranked the banks on the basis of CAMEL rating. Banks have been classified into three categories based on their ownership group; viz. public sector banks (PSBs), private sector banks and foreign banks. They analysed 66 banks for the year 2008-09. The ranking threw several surprises. The top ranked bank among public sector banks is the Bank of Baroda, which has undergone a significant facelift in the recent years. It is followed by Punjab National Bank and Bank of India which too have shown lot of aggression in recent times. The result in case of private sector banks are also unexpected, City Union Bank, ahead of many high profile names. Yes Bank, a late entrant retained its last year ranking number two among the private sector banks. Among the foreign banks, Bank of Ceylon replaced last year’s winner Shinhan Bank, jumping 15 ranks to emerge as the No. one bank this year, while the latter drops to the second rank.

Gerard. J., (2009)\(^{93}\) mentioned that informed decision making is core to effective risk Management “Efficiency, Profitability and Growth of Scheduled Commercial Banks in India” tested whether the establishment expense was a major
expense, and out of total expense which is met by scheduled commercial banks is 
more due to more number of employees. In her empirical study, the earning factor and 
expense factor which are controllable and non-controllable by the bank were also 
analyzed.

**Dash .M and Das .A (2010)**\(^94\) has analyzed the banking sector of India using 
CAMELS model the analysis was performed for a sample of fifty-eight banks 
operating in India, of which twenty-nine were public sector banks, and twenty-nine 
were private sector/foreign banks. The study covered the financial years (2003-2008) 
(i.e. prior to the global financial crisis). The data for the study consisted of financial 
variables and financial ratios based on the CAMELS framework, obtained from the 
capital line database. The results showed that private banks / foreign banks are better 
than in the public sector, the factors that most studies to reduce the camels. These two 
factors in order is to improve the performance of private banks / foreign-run and 
accurate and profitability. The results of the study suggested that public sector banks 
have to adapt quickly to changing market conditions, in order to compete with 
private/foreign banks. This is particularly due to the wide difference in their credit 
policy, customer service, ease of access and adoption of it services in their banking 
system. Public sector banks must improve their credit lending policies so as to 
 improve asset quality and profitability.

**Dash .M and Pathak .R (2011)**\(^95\) proposed a linear model for Asset-
Liability assessment. They found that public sector banks have best Asset- Liability 
Management positions, maintaining profitability, satisfying the liquidity constraints, 
and reducing interest rate risk exposure.
2.3. RESEARCH GAP

From the review of literature collected from various journals, Magazines and research work, the researcher has indentified the importance of ALM in detail. The present study aims to evaluate ALM strategies in the banking sector based on available financial data. The major focus is also given to various ALM techniques for identifying the effectiveness of ALM strategies followed by selected banks during the study period.
Chapter References


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