CHAPTER 2
REVIEW OF LITERATURE

It is imperative to review the earlier studies done in the area of investigation as these form the basis for any researcher to understand the different research trends and practices. The experience of others always paves the way to understand the new realities and challenges in a better way and it enables us to find proper solutions to our problems. The survey of related literature is a requisite and crucial aspect of actual planning. For execution of any research project the time spent in such a survey invariably is a wide investment. The review of literature is an exciting task calling for deep insight and clear perspective of the overall field. It promotes a greater understanding about the problems and their crucial aspects and also ensures the avoidance of unnecessary duplication. It also provides comparative data and basis to evaluate and interpret the significance of one's findings.

This chapter relates to the review of literature. It reviews the important studies related to Growth & Performance, Productivity, Profitability and Efficiency of Banks in India as well as abroad. Moreover, reports of important committees constituted by Reserve Bank of India have also been reviewed in this chapter. This chapter is divided in three parts on the basis of below mentioned parameters on Indian Banking: (a) Studies related to Growth and Performance of Banking; (b) Studies related to Productivity and Profitability of Banking; and (c) Studies on Bank's Efficiency (Technical, Allocative and Total Efficiency).

2.1 Studies related to Growth and Performance of Banking

Charavarka (1993) in his study "Foreign Banks in India- The New Drain" pointed out that the foreign banks are earning higher profits from genuine banking operations because of their superior operational efficiency. Moreover Indian banks have to shouldered heavy responsibilities like rural banking, priority sector advances including differential rate of interest, special employment schemes, integrated rural development programmes, schemes for minorities, scheduled cast, tribes and women, and many others. As at the end of March 1992, the non-performing advances of public sector banks have been estimated at 14.5 percent of their total outstanding advances. Apart from receiving no interest income from such and other non-performance advances, these banks have to make sizeable provisions for bad debts and this has placed an adverse effect on profitability of Indian Banks.

Patel, I.G (1994) in his study "Some Reflections on Financial Liberalization" examined the credit need of priority and neglected sector. He stressed the need for redefining the relationship between grass root level agency and financial institutions. He has suggested the formulation of an action plan and its implementation to the credit needs of the various priority and neglected sectors of the economy and at the same time protecting the interests of lending institutions.

Bhatnagar (1995) in her dissertation "Challenge of Banking in 1990s: Need for Upgrading Banking Technology" critically evaluated the trends and progress of commercial private sector banks in India and made comparison with the performance of public sector banks. The study was based on the financials situation of 28 public and 22 private sector banks covering the period from 1989-93. For analysis of data the researcher used three ratios, i.e., spread ratio, burden ratio and profitability ratio. Analysis of data revealed that spread and burden ratios showed dissatisfactory performance whereas profitability ratio was found satisfactory except for small private sector banks. The researcher concluded that Indian Private Banks was performing well with respect to the quantitative parameters studied with the exception of spread ratio but public sector banks had not performed well despite govt. support. Finally, the study suggested accepting of deposits from non banking companies, diversification of activities, attracting deposits, computerization of branches, and upgradation of technology in order to provide prompt service to their clients.

Athma, Prasantha (1997) in his doctoral dissertation, "Performance of Public Sector Commercial Banks- A Case Study of State Bank of Hyderabad," has evaluated the performance of SBH by selecting various parameters like deposit mobilization, analysis of advances, credit deposit ratios, interest spreads, employee productivity, customer services, profit as a percentage of working funds etc. One major conclusion drawn by him is that the profits of SBH showed an increasing trend indicating a more than a proportionate increase in spread, than in burden. He has stated that there is a gradual increase in the percentage of profit on the working funds over the study period showing the efforts made by the bank (1980-94) in increasing the profits by recovering the operational costs. According to him, there is a decline in operational costs, responsiveness of the State Bank of Hyderabad during the study period which is a clear symptom of cost effectiveness which has resulted in a profit.

The Narasimham Committee (1998) constituted by RBI in 1998 in order to examine the various issues related to the technological up gradation in the banking sector. The committee consisted representatives from the Government, Reserve Bank of India, other banks and academic institutions associated with the information technology. The committee dealt with the issues of technical up gradation and observed that the most of the technology that could be considered suitable for India in some form or the other has been introduced in some diluted form or as a pilot project, but the desired success has not been achieved because of the reasons inter-alia lack of clarity and certainty on legal issues. The committee also suggested implementation of the necessary legislative changes. The need for addressing the following issues was also emphasized:

• Encryption of Public Switching Telephone Network (PSTN) lines
• Admission of Electronic files as evidence
• Treating Electronic Fund Transfers at par with crossed cheques / drafts for purposes of Income Tax etc.
• Electronic record keeping
• Introduction of Data protection measures
• Implementation of digital signatures
• Clarification on payment finality in case of EFT

Considering the recommendations by various committees appointed by RBI and guidelines of RBI, banks have started using IT to automate banking transactions and processes.

Padmanabhan K. (1998) in his article titled “Financial Sector Reforms and the Performance of Commercial Banks” is of the opinion that the need for toning up the banking sector operations began to be felt particularly in the context of liberalization and structural reforms initiated in 1991. He referred to the recommendations of Narasimham committee which aimed at improving the productivity, efficiency and profitability of the banking system on the one hand and providing it greater operational flexibility and functional autonomy in the decision–

making on the other. So, various constraints caused by external factors having a bearing on the profitability of the banking system, were eased. As a result, the operating profits of 27 Public sector banks improved from Rs. 3,135 crores in 1992-93 to Rs.7, 569 crores in 1995-96. The chief merit of the reform process was cautious sequencing of reforms. The second part of Narasimham committee (submitted on April 23, 1998) set for the second phase of banking sector reforms. The profitability of the banks suffered as a result of huge backlog of NPAs. Other factors affecting the profitability include a large number of unremunerative branches, low productivity, over staffing and archaic methods of operations. With increasing competition from Indian and foreign private banks, margins have come under pressure and productivity and efficiency has come to focus. According to him, professionalism in the bank management should be encouraged in order to increase the profitability of the banks.

Scholten Bert (2000) in his paper, 'Competition, Growth and Performance in the Banking Industry' examined profit performance of the banking industry in the international context, using a sample of 100 international banks over the year 1981-1997. The analysis of market structure of the banking industry in the main industrialized economies showed that there was a very weak association between bank profitability and bank concentration. This suggested that, on a national level, bank concentration did not result in monopoly profits in the banking sector. Further, the results clearly confirmed the relevance of individual bank characteristics for profit growth. He found that profit growth is positively associated with the size of bank's tier-1 capital. However, profit growth is inversely related to size, when bank size is measured by bank assets or pre-tax profits. These results were strong and statistically significant.

Kapoor, G.P (2004) in her book entitled "Commercial Banking" analyzed the performance of domestic banks and foreign banks in India from 1981-1982 to 1999-2000 and revealed that financial deregulation in the economy has affected the absolute and relative performance of these banks. She took comprehensive study of pre- reform and post- reform period by taking thirty one indicators of these banks in India. The study revealed that the deposits, advances, total business, income, expenditure, net interest margin, working funds, branches and employees of the entire

PSBs registered lower rates of growth in the post- reform period as compared to the pre- reform period.

Chakrabarti (2005) in his study titled "Banking in India: Reform and Reorganization" has examined that since the beginning of liberalization, the banking industry in India is undergoing a transformation. It has been observed that interest rates have declined considerably but there is evidence of under lending by the banks. He has found that over time the performance of banks improved slightly, while the public sector banks are doing the worst among all banks. He has also investigated that the banking sector as a whole, particularly, the public sector banks are still struggling from considerable NPAs, but the situation has improved over time. The study revealed that, the Indian banking industry has become more competitive and less concentrated. He has concluded that the new private sector banks are the most efficient though the recent collapse of Global Trust Bank has raised issues about efficiency and regulatory effectiveness.

Anju and Arora (2005) in their research paper titled "Financial Sector Reforms: A Study of Financial Performance of Public Sector Banks: A Comparative Study of Canara Bank and Indian Bank " has evaluated the post impact of financial sector reforms in banking sector by comparing the financial performance of public sector banks. For the purpose of study, two public sector banks viz. Canara Bank and Indian Bank were taken and a comparative analysis was made on the basis of deposits, advances, profits, operating profits and financial ratios for the period 2001 to 2004. The study found that both Canara Bank and Indian Bank have improved their financial performance during the period of study. The growth of deposits, advances, average working funds of Canara Bank are better than Indian Bank. In case of net profit and operating profits, in absolute terms the Canara Bank has outperformed the Indian Bank during the period of study. However, in terms of growth rates Indian Bank turned out to be better than Canara Bank. The productivity analysis revealed that both business and operating profits per branch and per-employee of both banks have been rising but these are much higher in case of Canara Bank.

Arora Sangeeta and Kaur Shubpreet (2006) in their study titled, "Financial Performance of Indian Banking Sector in Post Reforms Era" attempted to review the performance of banking sector in India during post reforms period due to financial sector reforms. The study conducts a comparative appraisal of financial performance of Public, Private and Foreign Banks in India. For this purpose banks have been broadly classified into four categorizes i.e. Foreign Sector Banks, Private Sector, Nationalized Banks and State Bank of India & its Associates. A comparative appraisal of banks has been undertaken on the basis of seven key indicators of financial performance namely Return on Assets (ROA), Capital Assets Risk weighted Ratio, NPA to Net Advance, Business Per employee, Net Profitability Ratio, Non-Performing Assets (NPA) level and Off- Balance Sheet operations of Scheduled commercial banks from the period of 1994 to March 2005. This study found that the Indian financial system has witnessed very dynamic changes based on economic and financial sector reforms. It also stated a remarkable development in the performance of public sector banks; however public sector banks still lag behind in many areas such as profitability, Business per Employee, capital adequacy requirement and asset quality. The study highlighted the need of improvement in some areas of concern such as NPA reduction, operating cost, rationalization of staff cost, HRD, Deployment of funds in quality assets, instance relationship management, technological up-gradation, credit delivery mechanism etc.

Tondon (2006) in his article, "Globalization: Impact on Indian Banking" studied the impact of globalization on Indian banking. The management of financial sector has been oriented towards gradual balancing between efficiency and stability and the changing shares of public and private ownership. The development of financial market has been by and large healthy. The author highlighted the challenges in the banking sector and the roadmap ahead. The banking sector in India is getting redefined - it is faced with challenges and opportunities, especially beyond 2009 when they would be fully exposed to competition. The author mentioned that banks should pull their socks for strengthening the capital base to become Basel II compliant and should work for the reduction of NPA and should also try to reduce operational cost through adoption of newer technology and customer centric approach. He also mentioned that Indian banking sector needs to move toward a small number of large banks from a large no. of small banks through mergers and acquisition. Author also compared Indian banking system with China and rest of the world. He also raised the curtain from the great potential of Indian Banks in serving Indian companies and serving the multinational companies for their local banking needs. The author believed that the structure of Indian banking system is expected to undergo a transformation, led by consolidation, convergence and technology. Not-withstanding intense competition, the expansionary phase of the economy is expected to provide ample opportunities for the growth of the banking industry.

Bindra and Dubey (2007) in their study titled, "Performance of Public Sector Banks: An Econometric Analysis" reviewed the performance of public sector banks viz other bank groups for example Private Sector Banks and Foreign banks present in India. They worked on the hypothesis that govt. ownership makes public enterprises inefficient. They majorly used two profitability measures Return on Assets and Operating Profit ratio. It is obvious that two banks with identical operating profit ratio may have different returns on Assets. They also used various statistical techniques like Ordinary Least Square Method and Bounded Influence to analysis the data. They concluded with the results that the public sector banks are at par with private sector banks and foreign banks in any of the performance indicators such as return on assets, operating profit ratio and operating expenses ratio. They also concluded that public sector banks scored well against the bench-mark as well as against other bank groups in India in terms of profitability (ROA), Non-performing loans (Gross NPA) and capital adequacy requirement etc. To sum up, they mentioned that Indian banks were well prepared for the challenge of 2009 when Indian Banking sector opens it doors for the foreign players.

Bharathi (2007) in his article titled, "Indian Bank: Banking on Growth" revealed that as the banking sector is on the threshold of exponential growth, consolidation, reforms and compliance remain the dominant factors for the Indian bank's boardroom agenda. She mentioned that India is the second fastest growing economy in the world, truly so a robust banking system would be instrumental for enhancing the levels of activities of the economy. The author highlighted that due to liberalization, improving economic conditions, changing consumer demographics and growing market opportunities; the Indian banking sector is growing at a steady pace and has been currently ranked among the most preferred banking destinations in the world. This sector has emerged as a key facilitator for sustaining the growth momentum of the Indian economy. According to the Analyst 500 ranking based on net sales, SBI topped the league chart by improving from the 6th position from the previous year. India's top private sector bank, ICICI, has moved up three places from 12th to 9th position. Besides this, Punjab National Bank and Canara Bank have climbed by one position each and occupied the 24th and 27th position respectively. The author highlighted that the banks are gearing up for number of challenges confronting the IBS to extend financial services to all sections of the society like financial inclusion, Capital Adequacy (Basel-I and Basel-II) Standard requirements, to effectively compete with foreign banks and Consolidation movement to achieve global competitiveness.

Mitra, D. (2007) in his article, "Effect of Reforms Process on Financial Performance: A Case Study of Indian Banking Sector" claimed that financial sector reforms have brought tremendous changes in the banking sector. He revealed that the essence of financial liberalization lies in three sets of measures: firstly, to open up a country to the free flow of international finance; secondly, to remove controls and restrictions on the functioning of domestic banks and other financial institutions so that they get properly integrated as participants in the world financial markets; and thirdly, to transfer of autonomy from the government to central bank (RBI) so that its supervisory and regulatory role vis-à-vis the banking sector is disassociated from the political process and hence, from any accountability to the people. The author mentioned that the financial sector reforms have stimulated higher competition, convergence and consolidation in Indian banking industry. The author measured the performance of the banking sector in the post-reform period on the basis of profitability and provision, return on assets, net non-performing assets as a percentage to net advances and business per employee. For this, he broadly categorized the banking sector into Indian Private Sector Banks, Nationalized Banks, and State Bank of India & its associates. The author concluded that the financial sector reforms have brought tremendous changes in the banking sector of our country. The changed financial scenario has provided our banks with ample opportunities to expand globally through self-expansion, strategic alliance etc. The financial sector reforms have brought Indian financial system closer to global standards, but Indian banking sector has still a long way to go to catch up with their counterparts.

G.H Deolarlkar in his study titled "Indian Banking Sector on the Road to Progress" started from RBI in the banking sector later he highlights the issues concerning NPA. He mentioned that 70% of Gross NPA is locked up in hard core doubtful and loss assets which are getting accumulated year by year. He also talks about assets-liability management and revision of interest rate every few year time period which causes maturity transformation in assets and liability and the need of their re-pricing frequently. He mentioned that RBI and government should work on bank balance sheet to improve the effect of NPA in form of government guaranteed loans. It could be done by issuance of special govt. bank for converting such Non-performing assets into govt. debt. During the study the level of the data was collected for a sample for 27 Public Sector Banks operating in India (20 Nationalized and 7 SBI and its Associates). The data was considered for the year 2008 & 2009 and the result showed that 95.7% banks were found technically efficient and it was also observed that the productivity of same banks could be increased up to 1.045 times as much as output from the same inputs.

Uppal R.K and Kaur Rimpi (2007) in their studied titled, "Indian Banking: Changing Pattern of Employment and Issue of Employee's Efficiency in Global Era-Challenges and Opportunities" is of the opinion that, Economic reforms have the optimistic views about the growth of banking Industry in terms of branch expansion, deposits mobilization or generation of employment. To achieve the objectives of the study the five major bank groups have been selected i.e. SBI & its Associates Banks, Nationalized Banks, Foreign Banks, Regional Rural Banks and Other Scheduled Commercial Banks. The authors used various Employment Ratios such as: 1. Female Employees of a Bank Group as percentage of Total Employees of that Bank Group 2. Total Officers as percentage of Total Employment of that Bank Group 3.Total Subordinates as percentage of Total Employment of that Bank Group 4.Total Female Officers as percentage of Total Female Employment of that Bank Group to check the changing pattern of employment during 1999-2002. They found that in the total employment, the share of the foreign bank is negligible and Public Sector Banks dominate as far as employment, in the banking sector is concerned. The share of the females in the total employment in all the groups is increasing, particularly; the growth rate is higher in the foreign banks. The share of female officers in case of foreign banks is greater as compared to clerks and subordinates whereas in Public Sector Banks, clerks dominate in the total employment. There has been a marked slowdown in the growth rate of employment in the banking sector in India during the post second banking sector reforms. However, labour efficiency has increased due to the downsizing in employment. They suggested that Public Sector Banks should use technology in the best possible way to compete with the global competition. The

Public Sector Banks, in order to enhance the overall efficiency, to live smartly in the highly dynamic global world should adopt the new effective methods, policies and strategies.

Rao Suryachandra, D (2008) in his article titled, "Reforms in Indian Banking Sector: Evaluation Study of the Performance of Commercial Banks" found that by the beginning 1990, the social banking goals set for the banking industry made most of the PSBs unprofitable. The resultant 'Financial repression' led to the declining in productivity and efficiency and erosion of profitability of the banking sector in general. The researcher revealed that financial sector reforms were initiated in the country in 1992 with a view to improve the efficiency in the process of intermediation, enhancing the effectiveness in the conduct of monetary policy and creating conducive environment for the integration of domestic financial sector with the global financial system. In his study, the researcher studied the procedure adopted for Performance Evaluation by ICRA Ltd., commissioned by the IBA in 2002 with certain modifications. He used various indicators for measuring the performance of Indian commercial banks. The study covered a period from 1992-93 to 2002-03. The researcher made number of observations like the response of the banks to the reforms has been impressive; the reforms have not only enhanced the opportunities for the banks but at the same time threw challenges as well; as a result of entry of new generation private sectors banks, the competitive pressures are constantly on the increase; there is a shift of focus from process-based management to risk-based management; the interest rate spread has exhibited a decline over the years; the level of NPA of public sector banks remained high, but a noteworthy development has been their significant reduction in relation to net advances in the recent years; the expectations of consumers have been growing; the non-interest income of both public and private sector banks exhibited an increase during the period under study and the financial health of banks improved due to prescribed prudential norms. Almost all banks improved their Capital Adequacy and Asset Quality during the period of study.

Shyamala (2008) in her paper "Special Features of Financial Sector Reforms in India" presented at the inaugural address at 18th Annual National Conference on Forex Association of India on April 6, 2007 at Bangkok. She said that reforms were introduced as a part of structural adjustment and have had a profound impact on the functioning of the financial institutions, especially banks. The principal objective of financial sector reforms was to improve the allocative efficiency of resources, ensure financial stability and maintain confidence in the financial system by enhancing its soundness and efficiency. At the same time, reforms were also undertaken in various segments of financial market to enable the financial sector to perform its intermediatory role in an efficient manner. She also highlighted the impact of reforms in the banking sector. Various measures initiated over the last decade and a half have significantly strengthened the commercial banking sector in terms of profitability, asset quality and capital position. The recent initiatives like supervision of financial conglomerates, new capital instrument, procyclical prudential provisioning, credit information of companies and financial inclusion have been taken under the umbrella of reforms. She also put forth the future work programme on Draft guidelines on Accounting Aspects, Derivatives; Stress testing and Basel I-II to undertake self assessment.

Kaur Varinder and Kaur Rajinder (2009) in their study "Financial Performance of Banks: A Comparative Study of Different Bank Groups" they mentioned that the purpose of the reform process was to improve productivity and efficiency of the financial system and to provide a highly competitive environment for different bank groups i.e. new generation private sector banks, old private banks, public sector banks and foreign banks, which are working in India. The paper carried out a comparative study of the performance of different bank groups on the basis of important financial parameters: Operating profit, Net profit, Wage bill, Spread and operating Expenses. The data for all the banks from 1995-96 to 2007-08 has been taken into consideration for different financial parameters. All these parameters were analyzed as a percentage of total assets. For analysis of the data following tools have been used: - Mean, Standard Deviation, Coefficient of Variation. He found that new private sector banks are performing better so far as financial parameters of operating profits, Net profits, Wage bill and operating expenses are concerned. On the other hand public sector banks have also adopted the financial sector reforms positively. Public sector banks are competitive enough, so for as the financial parameters are concerned. It is clear from the fact that public sector banks have depicted considerable growth in net profits. He also found that in present day scenario the competition among the banks is very severe. Although new private sector banks are performing better yet public sector banks and old private sector banks are not lagging behind.

Thus, it is hard to say that new private sector banks have outperformed other bank groups.

Kullura Shiva Reddy (2009) in his study titled, “Ownership Structure, Performance and Risk in Indian Commercial Banks” is of the opinion that Indian banking Industry consists of different ownership structures: State-owned Banks (SOBs), Domestic Private Banks (DPBs) and Foreign-owned Banks (FBs). Although their ownership is different, they are not apparently different in terms of the kind of services they provide. They provide full-fledged banking services under the same regulatory conditions and enhance competition in the market. The paper examines the effect of ownership on performance and risk of commercial banks in India during the period 1995-2007. The study employed ‘T-test’, ‘The Fixed Effects Model’ and ‘The Random Effects Model’ to test for any significant difference in Indian bank’s performance. The study consists of 87 banks in India: 28 State-Owned Banks, 28 Domestic Private Banks and 31 Foreign Banks. He used various indicators such as: Ratio of profits before tax to total Assets, Ratio of Non-performance loans to total loans, Ratio of equity capital to total assets and Ratio of loans to total assets. The findings reveals that there was a significant difference in the performance and risk and FBs seems to be more profitable and more risk-taking both DPBs and SOBs. Bank capital and demand deposits are positively associated and loans are negatively associated with bank profitability, whereas size of banks and growth rate of economy are negatively associated with bank risk. Regression results reveal that increasing size of the banks and higher growth rate of the economy reduce non-performing loans, and increasing demand deposits increase risky loans.

Sharma Nishi (2010), in her article, “Impact of Ownership on Performance of Banking Sector in India” reviewed that Indian banking sector enjoys the privilege of mixed ownership pattern by public sector, private sector and foreign sector banks. The main objective of this study was to analyze the impact of ownership on the profitability as well as on the efficiency of different Indian scheduled commercial banks. These two are treated as two strong drivers to ensure the sustainability of any business. The present study interpreted the profitability of banks by using their return on assets as well as return on advances. The study covers the period of five years from 2005-06 to 2009-10. It covers all the Indian scheduled commercial banks, which have been divided into four groups viz, the State Bank of India (SBI) group, the

Nationalized Bank group, the private bank group and foreign bank group. For analyzing she used simple statistical tools of averages and standard deviation and for testing the null hypotheses, one way ANOVA has been used. The study reveals that the performance of different scheduled commercial banks operating in India significantly differ from each other. The profitability and efficiency of foreign sector banks is comparatively higher to other banks. Public sector bank's profitability is the lowest in the group. The reason for this low performance may be attributed to its commitment to social responsibility and stringent directives for channelizing the advances, growing burden of non-performing Assets.

Lehal Ritu & Mann Nimarta (2011) "Banking Sector Employee's Morale" highlighted the importance of highly effective team and appropriate manpower to run the financial Institution smoothly. Employee moral represents the attitudes of the Individuals and groups in an organization towards their work environment and full extent of their capabilities for the fulfillment of the organizational goals. The main objective of the present study is to make a comparative analysis of three banks on the basis of employee morale along with a gender based comparison. For analysis they have chosen the most profitable bank out of each category on the basis of Business Standard as on 21st Aug, 2008. The banks were: State Bank of India out of Public Sector Banks, ICICI Bank out of the Private Sector Banks, Citibank out of the Foreign Banks. The present study is restricting to banking sector executives in Punjab including Chandigarh and choosing an appropriate sample from three banks. The study is mainly based on primary data. They found that on the basis of Employee Morale there is insignificant difference between the three banks. Total employee morale is higher for females as compared to males in SBI and ICICI while, total employee morale is higher for males as compared to females in Citibank and the rest.

Ibrahim M. Syed (2011) in his study titled "Operational Performance of Indian Scheduled Commercial Banks-An Analysis" tried to evaluate the operational performance of the commercial banks in India with special reference to the scheduled commercial banks since 2000. The indicators selected to study were Aggregate deposits mobilized by these banks, loans and advances, credit- deposit ratios, investment deposits ratios. The study covered ten year period starting from the year 2000 to the year 2009. In order to analyze the data and draw conclusion the author used various statistical tools like 'Descriptive statistics', 'T-test' and 'Correlation' have been done using EXCEL and SPSS Software. He found that during the study period operational performance of Indian scheduled commercial banks has improved.

1. It was found that there is a positive correlation between demand deposits and time deposits.
2. Credit deployed and investments made by Scheduled commercial banks have shown significant performance.
3. The Indian scheduled commercial banks have been more efficient in maintaining the Credit-Deposit Ratios as well as Investment-Deposit Ratios in an increasing trend over the period of the study the finding may help to banking institutions and policy makers to improve the operational efficiency as well as profitability of Indian scheduled commercial banks.

Uppal, R. K. (2011) in his study "Indian Banking Sector Reforms: Rationale, Efficacy and Necessity of Third Reforms" the author analyzed the ongoing banking sector reforms and their efficacy with the help of some ratios. He categorized the Indian Banking sector into five major groups: 1. SBI & its Associates 2. Nationalized Banks 3.Old Private Sector Banks 4.New Private Sector Banks 5.Foreign Banks from 1998-1999 to 2003-2004. He used five ratios to analyze the efficacy of the banking sector reforms, these are Gross NPAs as percentage of Gross Advances, Net NPAs as percentage of Net Advances, Interest Income as percentage of Total Income, Non-Interest Income as percentage of Total Income and Interest paid as percentage of Total Expenses by using 'SPSS Version 10'. The study revealed that all the bank groups had fluctuating trend with regard to share of interest income in the total income but it decreased in 2003 & 2004. The study reflects Non-interest income to total income, Interest expanded to total Expenditure and various other issues like making the banking sector competent. He emphasized on the points such as rationalization of interest rate by evolving a Reserve Bank reference rate of interest and by adopting a cautious approach. He emphasized on the need of reduction in loans for housing & infrastructural development activities. He called for the development of rural banking, new credit assessment skills.

Yadagiri, M. and Srinivas, N. (2012) in their study, "Performance Analysis of Public Sector Banks in India" analyzed that public sector banks have been playing an important role in the development of India economy. The main objective of this study is to evaluate the financial performance of Public Sector Banks in India with reference to Deposits, Advances Business per Employee, Profit per Employee, Return on Assets and capital Adequacy Ratio. The study includes 28 Public Sector Banks operating in India. The period for evaluating the performance ranges from 2003-04 to 2007-08. For analyzing the data, he used arithmetic mean of each parameter for each bank, Growth rates were calculated for expressing the change in return on assets and capital adequacy ratio of each Public Sector Bank. The data reveals that the State Bank of India stood in first place with the highest contribution of 21.9 percent, followed by PNB with 6.78 percent and Canara Bank with 6.28 percent during the year 2007-08. The data also reveals that IDBI Ltd. has the highest business per employee with Rs. 1809.17 lakhs, followed by Oriental Bank of Commerce with Rs. 924.38 lakhs. He suggested that through there is a phenomenal development in the performance, still public sector banks lag behind on some major thrust areas. The performance of Public Sector Banks can be enhanced by introducing good corporate governance through articulating corporate values, codes of conduct, appropriate behavior and have systems and control to ensure compliance with them. To achieve technical efficiency and economic efficiency, Transparency of banking operations and public disclosure must be necessary to make accurate assessment of banks financial condition and performance.

2.2 Studies related to Productivity and Profitability of Banking

A number of studies have observed that the profitability of Public Sector banks though had started declining from the mid-sixties, but the decline was more prominent in the post-nationalization period.

The first attempt to examine productivity, efficiency and profitability of commercial banks was made by the **Luther Committee** appointed by the Reserve Bank of India which submitted its report in 1977. The Committee inter alia, recommended that the capital base of banks needs to be improved and the interest on additional cash reserves in excess of statutory minimum of 3 percent should be related to cost of funds for banks. The committee also recommended that the tax laws, in view of the social obligations cast on the banks, should be revised and the cost of various services and profitability of different activities of banks be regularly estimated. Further, according to the committee, to improve the productivity, efficiency and profitability of banks, a systematic, regular and prompt flow of information and its analysis was essential for banks to contemplate timely corrective actions.

Amandeep (1991) in her study titled "Profits and Profitability of Indian Nationalized Banks" expressed the opinion that Public Sector Banks have become an instrument to cater to needs of the economic development. Both, the profit and the profitability of bank operations have been adversely impacted by the total socio-economic transformation. She analyzed various factors that affect the profitability of commercial banks. For this she has chosen 11 factors affecting bank's profitability to identify the most significant variables affecting bank profitability. The author also tried to determine the share of each factor that determines the profitability of commercial banks. According to her, the profitability of a bank is determined and affected mainly by two factors: Spread and Burden. The other factors determining bank's profitability are credit policy, priority sector lending, deposit composition, massive geographical expansion and increasing Establishment Expenses etc. She adopted Trend Analysis, Ratio Analysis and Multiple Regression analysis to find out the profitability of commercial banks and tried to establish a link among various factors determining the profitability of commercial banks. She suggested that banks should give attention on the management of spreads, burden, establishment expenses and deposits composition. According to her, the banks should adequately charge for various non- fund services (like Merchant banking, consultancy and factoring services) with proper cost analysis, so as to earn maximum profitability.

Singh, Dr. Jagwant (1991) in his thesis entitled, "Productivity in the Indian Banking" is of the opinion that productivity is not an end in itself; in fact it is a mechanism for improving the material quality of life. He found that many economists have worked on agriculture and manufacturing sector to measure productivity, services sector has not gained much attention. In Banking being services industry, greater attention is needed on employee productivity. He used productivity measurement in place of profitability as it has lost its importance especially since nationalization, as emphasis to "Mass Banking" instead of "Class Banking". He used 17 indicators to analyze productivity trends such as Deposits, Credits, Business, Total Income, Total Expenditure, Spread and Establishment Expenses Per branch and per employee. These indicators have been divided into three categories: per employee Indicators (Labour Productivity), per branch Indicators (Branch Productivity), financial ratios measuring productivity. The study tried to measures the trends in productivity in 22 public sector banks, as well as to examine the intra-Group and inter-Bank differentials of productivity by classifying banks into two groups i.e. SBI Group and 14 major commercial banks (Nationalized in 1969). The study period (1969-85) was divided into four sub periods i.e. 1969-73, 1973-77, 1977-81 and 1981-85. The figures are at constant price of 1969 (base year). The productivity performance has been made on the basis of 'Average T- Scores' and ranking based on it. He concluded that:

1. In employee productivity Bank of Baroda moved ahead of Bank of India. BOI and BOB maintained their 1st and 2nd position.

2. The banks which made all round improvement in their productivity were Indian Bank, Bank of India, Canara and State Bank of Hyderabad. However, despite improvement, SBH had a declining ranking.

3. The bank which recorded maximum deterioration was UCO, which in terms of employee productivity was ranked 15th in 1985 as compared to its 4th position in 1969.

Robert, M. (1991) in his thesis abstract titled, "Profitability in Public Sector Banks in India" explained that prior to Nationalization of banks the performance of banking Industry was directed towards maximum profit and profit related ratios. After that commercial banks were expected to provide advances to the priority sectors. This objective was sought to be achieved through statutory reserve requirements and administered interest rates. These operations affected the profitability of nationalized commercial banks. He felt that the most common explanation given for declining profitability is that the funds available for free lending are limited and that the banks are forbidden to exploit the market forces. Hence, the bankers, economists and planners suggest that the rate of CRR and SLR should be reduced so that the amount available for free lending would increase which in turn would improve the profitability in Public Sector Banks. The study covers a period of 15 years from 1973 to 1987. The year 1973 was taken as the base year of study; a number of policy changes in the form of Cash Reserve Ratio, statutory liquidity Ratio became effective in 1973. To analyze the data; Analysis of Variance and Multiple Regression Analysis have been made to ascertain the behavioral relation between profit and the key variables affecting profits. The findings of the study was that all the 5 large-scale banks, all the 4 small scale banks and 3 of the 5 medium banks have been affected by declining profitability. Therefore it is clear that all banks, irrespective of scale of operations have faced declining profitability. This decline has been found to be due to mismatching of relative changes in earnings and relative changes in expenses.

Kaushik, Sanjay (1995) in his thesis entitled "Social Objectives and Profitability on Indian Banks", has discussed the effect of social obligations on the profits and profitability of the Indian commercial banking industry. He is of the opinion, that the nationalization of the banks had a more dampening effect on profitability. The profitability of nationalized banks is adversely affected by a lot of factors, including social objectives. So, to know their relative significance, he has used a multivariate approach *viz.,* Ratio Analysis, Per Annum Growth Rates, Correlation Analysis, Regression Analysis and Factor Analysis. Banks profitability has been taken as indicated by followed factors i.e. Net Profit as a percentage of working funds, Net Profit as a percentage of total deposits, Net Profit as a percentage of total business. He used the following measures to analyze the productivity: Deposits per employee, Loans per employee, Total business per employee, Deposits per branch, Loans per branch, Total business per branch.

To sum up the study the major conclusion drawn was that the social obligations had not contributed much to the profitability of banks. He suggested various measures to improve the profitability.

Garg, I.K (1997) in his study titled "Improving Productivity & Profitability in the Bank" measured productivity in terms of average business handled per employee. Average business was the sum of average deposits and average advances which was the output generated by the input of manpower. Profitability was measured as excess of income over expenditure. There were two kinds of income: one from funds based business in the form of interest and the other from non-funds business in the form of exchange on remittances, commission on guarantee, letter of credit and fees for services like consultancy. This income was adjusted against interest paid on deposits and borrowing transaction costs and establishment expenses, to calculate the net income at the corporate level. The study concluded that productivity and profitability could be improved by increasing the deposits and advances at a pace quicker than the pace of increase in the no. of employees and also by increasing income or decreasing expenditure.

Jain, P.K and Kumar, Manoj (1998) in their study titled "Profitability of Commercial Banks: A Comparative Study of Selected Banks" analyzed and compared the profitability of the selected Indian banks during liberalization and examined the various factors that contributed to the variation in their profitability. They restricted their study to five large banks in different categories at the time of initiation of the economic and financial sector reforms in 1991-92. The study opted traditional Three-Tire Return on Equity (ROE) Model. The Model was used to compare the performance of the largest bank in each group with the performance of all the other banks in a group. Trends and Cross-Section Analysis of Return on Equity, Analysis of Equity Multiplier, Analysis of Assets Utilization and Analysis of Profit Margin Techniques of ROE Model were applied to determine the profitability. The study revealed that Return on Equity and on Assets was negative for nationalized banks. While the other banks revealed a rising trend. State Bank of Hyderabad and State Bank of India were at the top in terms of equity multiplier though there was a steady decline for all the banks. In terms of Assets Utilization, the foreign banks were found topping and performance of nationalized banks in this regard was far from satisfactory. Regarding profit margin, foreign and private sector banks appeared to be better managed than nationalized banks.

Sangmi (2002) in his paper titled "Profitability Management in Commercial Banks: An Exploratory Study" he analyzed the profitability of ten public sector banks by grouping them in two groups class I and class II from 1991-92 to 1997-98. The banks were classified as class I banks (included Corporation Banks, Oriental Bank of Commerce, State Bank of India, Bank of Baroda, State Bank of Hyderabad) and class II banks (consisting of United Commercial Bank, United Bank of India, Punjab and Sind Bank, Bank of Maharashtra and Andhra Bank). The researchers analyzed the factors, viz. profit, spread, interest earned, interest expanded, non-interest income, total operating cost, establishment cost with the working funds by using Regression Model. The study found that the performance of class II banks was not satisfactory in case of spread and showed increasing operating cost due to high establishment and deposits costs, whereas class I banks performed well in case of income earned from non-fund activities and interest earned. Finally, the researcher recommended that class II banks should improve their profitability by exploiting market opportunities, reducing their costs with the use of technology and improvement in productivity per employee.

Kumar, Sanjeev (2004) in his thesis, “Impact of Liberalization on Productivity and Profitability of Public Sector Banks in India” studied the impact of liberalization on productivity and profitability of 27 public sector banks (SBI and its seven associates and nineteen nationalized banks) from the year 1991 to 2002. Mainly, the researcher used three methods i.e. Trends Analysis, Ratio Analysis, and Concentration Indices by using the indicators viz. Advances, Deposits, Total Assets, Expenditure, Spread, Burden Income, Net Profit, Interest Earned as percentage of working funds, Interest- Paid as percentage of working funds, non-interest-expenses as percentage of working funds. The productivity parameters used were Deposits per Employee, Advances per Employee, Business per Employee and Total Expenditure per Employee etc. It was concluded that in terms of employee productivity, the Oriental Bank of Commerce registered continuous improvement while Central Bank, Bank of India and Bank of Baroda performed well in branch productivity. In terms of overall profitability, the trend analysis showed that the net profits in absolute terms increased in majority of public sector banks but profitability of banks declined due to increased competition. The researcher concluded that public sector Banks should improve their Appraisal System, Operational Efficiency, Non-Performing Assets Management and Management Information System. The researcher also suggested to establish strategic alliances with overseas banking institutions, raise money from capital market, diversify their activities, upgrade their technology and to adopt timely SWOT Analysis.

Mohan Rakesh (2005) in his address to 21st Annual General Meeting and Conference of the Pakistan Society of Development Economists held at Islamabad titled “Reforms, Productivity and Efficiency in Banking: The Indian Experience” talked about the Indian banks getting listed on the stock exchange reflecting greater market discipline. It also reflects diversification in the ownership and qualitative difference in their functions. In India banks are governed on mixed ownership basis as an important institutional structure. The blend of efficiency and technological advancement can be called harbinger of banking Industry undergoing rapid changes due to the forces of deregulations and it may force the commercial banks finding more imaginative way-outs for increasing their income so as to raise the efficiency and productivity level.

Kaur Harpreet and Pasricha J.S. (2010) in their study titled "Management of Non-performing Assets: A study of Public and Private Sector Banks" mentioned the Non-performing Assets as a great hindrance to the growth of Banks. NPAs in absolute form have been a real cause of worry. The Study analyzed the growth of Banks in pre and post independence era covering the Prudential Norms of RBI and also analyzed various policies of public sector banks to manage the NPAs. They studied the view point of 120 bank managers and also studied the view point of 100 defaulters from Punjab and found that high level of NPAs in Bank's credit portfolio is a drag on their profitability which is already under strain. The study also highlighted the problem of NPAs is more serious in public sector Banks. They suggested that reduction of NPAs in banking sector should be treated as a national priority to make the Indian Banking System more strong and resilient. The Operational Efficiency of any bank depends on the method which they use in the recovery of NPAs. They constitute a real economic cost to the nation since they reflect the application of scarce capital and credit funds to unproductive uses. They also suggested that for effective handling of NPAs there is an urgent need for creating proper awareness about the adverse impact of NPAs on profitability amongst bank staff, particularly the field functionaries or bankers for creating better understanding and mutual trust so that borrowers keep their bankers informed of any problem being faced by them and need based facilities can be promptly provided.

Mahapatra Durga and Mohanty Ashok Kumar (2011) in their study titled, "NPA Management: Emerging Market Perspective with Indian PSBs Focus" explained NPA is an important parameter in the analysis of financial performance of banks. Almost fifteen years back Indian banking sector was liberalized with the entry of Private and Foreign banks in terms of competition and profits. They highlighted the view of various committees such as Tandon study group (1975), The K.B. Chore committee (1978), The Pendharkar Group (1981), The Report of CII (Confederation of Indian Industry) etc. which has been mainly formed to suggest measures to overcome the Problem of NPAs. They also highlighted the important causes of NPAs and classify these causes into three categories: (1) Factors related to units (2) Factors concerned with Banks and Financial Institutions (3) Some factor beyond the control of units and banks. They found that NPAs in Public Sector Banks are growing not only due to external factor like ineffective recovery tribunals, willful defaults, Industrial sickness, lack of demand, labour problems etc. but also internal factors like inappropriate technologies, credit appraisal systems, absence of regular industrial visits etc. which affected the bank liquidity and profitability adversely. In relation to NPA Management in international experience, the incidence of NPA ratio is lower in India i.e. 5.2 Percent in 2005-06, as compared to other countries during 2001-02 to 2005-06.

Dangwal, R.C. and Kapoor (2012) in their study titled, "Profitability of Commercial Banks after the Reforms- A Study of Selected Banks" is of the opinion that financial reforms have changed the very concept of traditional banking activities by being instrumental behind broadening and disseminating of financial information along with the cost of many financial activities. Due to financial sector reforms there has been a shift in the focus from quantitative to qualitative growth. The study tried to examine the profitability of four selected major banks in the post reforms period. For the in-depth analysis of the profitability four major banks, namely, Punjab National Bank (PNB), SBI Group, ICICI Bank (ICICI) and Federal Bank (FB) were selected, one each from different groups i.e. Nationalized Banks, SBI and its Associates, New Private Sector Banks and old Private Sector Banks, during the second phase of the banking- sector reforms period from the year 2004 to 2009. He selected ten ratios which affected the profitability of the Banks: Net profit as a percentage of total assets, Priority sector advances as a percentage of total advances, Total credit as a percentage of total deposits, Establishment expenditure as a percentage of total expenditure, Number of rural branches as a percentage of total branches, Spread as a percentage of total deposits, Savings deposits as a percentage of total deposits, Fixed Deposits as a percentage of total deposits, Current deposits as a percentage of total deposits and Burden as a percentage of total assets.

In order to evaluate the trends in profitability, Karl Person's Correlation Analysis, Univariate Regression Analysis and T-test were applied. The study revealed that the overall profitability of SBI and Federal Bank (FB) during the study period was less than the profitability of ICICI Bank and Punjab National Bank. In case of PNB, saving deposits as a percentage of total deposits, fixed deposits as a percentage of total deposits, current deposits as a percentage of total deposits, 'burden' as a percentage of total assets, and 'spread' as a percentage of total assets had more impact on bank profitability. In case of SBI, establishment expenditure as a percentage of total expenditure, total credit as a percentage of total deposits, fixed deposits as a percentage of total deposits had more impact on profitability. In order to improve profitability of the banks, they suggested that in case of PNB, the bank should improve its credit-deposits ratio. Moreover, SBI should have a check on its operating expenditure and interest payments. ICICI Bank would do well to curtail its non-interest expenditure. FB should improve its spread and fetch more current deposits.

Mistry, Dharmendra S. (2012) in his Study titled, "A Comparative Study on the Profitability Performance in the Banking Sector: Evidence from Indian Public Sector Banks" tried to classify Indian Public Sector banks on the basis of their financial characteristics and to assess their financial performance. For this purpose he analyzes the financial data of eighteen Indian Public Sector Banks for the financial period 2003-04 to 2007-08. Financial performance is the dependent variable and is measured by return on Assets and interest income size and therefore they are the dependent variable of this study. The independent variables of study are as under: The Bank size, Assets Management and Operational Efficiency. To examine and compare the impact of independent variables on the dependent variables, Ratios Analysis, Correlations and Regression have been applied. Technique of Analysis of Variance has been used in testing the hypothesis. An attempt has also been made to rank the banks on the basis of their financial performance and measures. He concluded that State Bank of India is on the first position as far as its activities i.e. total deposits, total credit, total assets and total shareholder's equity are concerned. The study found that a bank with higher total capital, deposit, credit or total assets does not always mean that it has better financial performance. It also found that Assets size, Assets utilization and Operational Efficiency have impact on Return on Assets and Interest-income. It also depicted that Return on Assets and Interest-Income size has negative relationship with operational efficiency and positive relationship with Assets Management and Bank size.

2.3 Studies on Bank's Efficiency

Traditional production function models named as econometric models. The Models cannot simultaneously analyze several inputs and outputs (Farrell, 1957). It requires strict assumption about the functional form of the technology. Thirdly, they do not provide relative measure of productivity that could be used for decision making. Traditional models are useful when productivity analysis is to be used for post morterm of past for arriving at policy conclusions for the future. But as per business economics framework, a decision making unit needs analysis of alternative sets of inputs and outputs for getting relative measure of productivity that could be used in decision support systems (Berger and Humphrey 1997). For such problems, there is a deterministic non-parametric specification technique for estimating production technologies and hence measuring inefficiencies in production. It is known as Data Envelopment Analysis (DEA). Data Envelopment Analysis is a recent addition to the arsenal of quantitative techniques available for studying organizational performance. DEA was firstly applied by Sherman and Gold (1985) for assessing the efficiency of banks. It is a very promising tool for measuring the efficiency of banks (Berger and Humphrey, 1997). DEA is a preferred econometric approach of measuring efficiency because of its advantages over other techniques.

Bhattacharya (1997) in his study titled "The Impact of Liberalization on the Productive Efficiency of Indian Commercial Banks" examined the impact of liberalization initiated in mid eighties on the productivity efficiency among different categories of banks, using Data Envelopment Analysis. His study covered seventy banks for the period between 1986 to 1991. They measured technical efficiency of banks by using intermediation approach taking Interest Expenses and Operating Expenses as input. Considering these objectives, the study considers following Outputs: Net Interest Margin (Interest earned subtracted from Interest paid, reflecting the gain in financial intermediation process), Non- Interest Income (Commission, brokerage etc. reflecting revenues from other services), Credits and Investments (in Govt. Approved securities). The first two would reflect the profit goal, while the third one reflects the economic growth and safety objectives. During this time Indian public sector banks were pre dominant while new private sector banks were the new entrants. They found that Public Sector Banks had the highest efficiency among three categories with Foreign and Private Banks having lower efficiencies. However, Public Sector Banks started showing a decline in efficiency after 1987, Private Sector Banks showed no change and Foreign banks showed sharp rise in efficiency. The main findings are based on the general perception that in the Nationalization era, Public Sector banks were successful in achieving their main objective of deposits and loan expansion.

Das (1997) in his study titled "Technical, Allocative and Scale Efficiency of Public Sector Banks in India" analyzing the Overall Efficiency-Technical, Allocative and Scale of public sector banks for the various pre and post reforms years. He has found that among public sector banks, the State Bank of India & its Associates have been more efficient than Nationalized Banks. However, the nationalized banks have registered a decline in overall efficiency during post-regulation period. The main source of inefficiency has been technical in nature, rather than allocative. He has further showed that public sector banks improved their Allocative Efficiency significantly in the post- reform period but there is a fall in Scale Efficiency. This has occurred because there is a decline in Technical Efficiency, both pure and scale, which is not offset by an improvement in Allocative Efficiency.

Sarkar P.C and Das A. (1998) in his article titled "Development of Composite Index of Banking Efficiency: The Indian Case", compared performance across the three categories of banks- public, private and foreign in India, using two measures of profitability; Return on Assets and Operating Profit Ratio and four efficiency measures, namely, net interest margin, operating profit to staff expense, operating cost ratio and staff expenses ratio. The authors attempted these comparisons after controlling for a variety of non-ownership factors that might have an impact on performance: assets size, the proportion of investment in govt. securities, the proportion of directed credit, the proportion of rural and semi urban branches and the proportion of non-interest income to total income. They found that, in comparison between private banks and PSB's there was only a weak ownership effect. Private Banks were performed better than PSB's with respect to profitability measures but not with respect to efficiency measures.

Seiford, L.M and Thrall, R.M (2000) in his study titled "Recent Development in DEA: The Mathematical Programming Approach to Frontier Approach", evaluate the productivity efficiency and performance of U.S commercial banks. In their study, they used a constrained multiplier, input-oriented, data envelopment analysis (DEA) Model, to evaluate the productive efficiency and performance of U.S commercial banks over the 15 year period from 1984 to 1998. They found a strong and consistent relationship between efficiency and input & outputs, as well as independent measure of bank performance. Further, the result suggested that the impact of varying economic conditions was mediated to some extent by the relative efficiencies of the banks that operate in these conditions. Finally, they found that a close relationship exists between efficiency and soundness as determined by bank examiner ratings.

Ram Mohan (2002-2003) in his study titled "Deregulation and Performance of Public Sector Banks" measured the comparative performance among commercial banks by using physical quantities of inputs and outputs to compare revenue maximization efficiency of banks during 1992-2000 by employing Data Envelopment Analysis. He considered Constant Return Scale Technology and Intermediation Approach with interest cost and operating cost as input and loan income, non-interest income and income from investment as output. The study found that the gap in performance of private sector banks and public sector banks in India shrunk during the post-reform period due to deregulation and improvement in public sector bank's performance in relative and absolute terms. Public sector banks were found more efficient as compared to private sector banks. More over these banks did better on the productivity front as well.

Abhiman Das (2005) conducted a study titled "Liberalization, Ownership and Efficiency in Indian Banking – A Non-Parametric Analysis", analyzed various efficiency scores of Indian Banks between 1997-2003 using Non-parametric method of DEA. The banks which had at least three branches during the study period were considered and those foreign banks serving mainly to their service clients worldwide were removed from the study. The study observed that in terms of input or output oriented technical efficiency and cost efficiency there is not much difference in Indian banks however on the basis of profit efficiency and revenues remarkable differences can be observed. Various factors such as ownership, size of the bank and bank's getting listed on stock exchange were found to have a positive impact on profit efficiency and revenue efficiency scores. During the post reform period the Median Efficiency Scores of big Indian Banks show improved results. It was also mentioned that just by adopting industry's best practices a bank can improve its productivity remarkable. Finally it was found that Median Efficiency Scores of Indian banks especially for bigger banks improved during the later period of the study.

Sinha Ram Pratap (2008) in his article titled, "Profit Efficiency of Indian Commercial Banks: A Non-Parametric Approach" tried to compare the Indian commercial banks (for the reform period) in respect of their ability to generate operating profit & find out the ownership effect by comparing the position of public and private commercial banks. For the commercial banks operating in India, improvement of assets quality has become an important factor in the reform years. The study excluded the foreign commercial banks for the analysis. The period of analysis was from 1998-99 to 2002-03. In all he has taken 30 Indian Commercial Banks (20 Public Sector and 10 Private Sector) for the analysis. For this, the study considers the following efficiency indicators: - (1) Operating profit in absolute terms (2) Operating profit in terms of operating expenses (3) Operating profit in terms of total assets (4) Operating profit per branch and (5) Operating profit per employee by using the Data Envelopment Approach of Technical Efficiency and Scale Efficiency under both Constant and Variable Returns to Scale. He found that the observed commercial banks have diverged in terms of Technical and Scale Efficiency in 2000- 01 as compared to 1998-99. However, the trend has been somewhat reversed in 2002-03. During the study period most of the commercial banks exhibited decreasing returns to scale. The observed private sector banks have higher Mean Technical Efficiency Scores as compared to their public sector counterparts. On the other hand the study indicates that for 1998-99 and 2002-03, the observed public sector commercial banks have higher Mean Scale Efficiency Score than the observed private sector commercial banks.

Pal, Ved and Bishnoi, N.K. (2008) in their study titled, “Trends in the Productivity of Indian Banking Sector” observed that lowering of economic barriers by many countries also expected to increase the competition and affect the Industry’s operations. The study aims to analyze the productivity of commercial banks for the period 1985-2005. For the purpose of productivity analysis they have taken only schedule commercial banks as they are working in the similar type of environment. For measuring productivity inputs and outputs of the banking sector are selected on the basis of Intermediation approach. Capital expenditure, wages and salaries, Interest expenses taken as inputs and Interest Income & other income were taken as outputs. The result suggested that there is almost a similar type of productivity indices computed by using Torhqvist and Fisher productively indexes. Therefore, for interpretation of the results, we will rely on the values derived from Torhqvist Productively index. He concluded that Productivity of Indian Commercial banks at aggregate level moved in upward direction during post economic liberalization period, which seems to be the result of competitiveness in Indian banking sector. Commercial banks were forced to cut the costs and diversify their activities along with strengthening their core business. Among bank groups, the foreign banks had registered highest growth in total productivity. They suggested that Public Sector Banks should adopt a number of cost cutting measures like reducing the over-staffing through VRS (Volunteer Retirement Scheme) and also modernizing their branches through the introduction of computerization and information technology in their system.

Jayaraman A.R. and Srinivasan M.R. (2009) in their study titled, “Relative Efficiency of Scheduled Commercial Banks in India (2001-08): A DEA Approach” attempted to measure the scale efficiency of scheduled commercial banks in India using Data Envelopment Analysis. The study listed out the number of efficient banks on the basis of relative performances using efficiency scores. It was found that the general performance of scheduled commercial banks under study was relatively high during the study period 2001-08 and the average efficiency score was ranging between 0.92 and 1. More than 60 per cent of the scheduled commercial banks under study were above the average efficiency score for each study period except for the year 2006, where it was around 53 per cent. The results show that ICICI Bank, Indus Ind Bank, ABN Amro Bank, Calyon Bank and Citibank were efficient for all years during study period. In addition to above banks, efficiency scores of State Bank of Travancore, Vijaya Bank, Bank of Maharashtra, and Oriental Bank of Commerce, Axis Bank, Federal Bank and Yes Bank were above the average efficiency scores for all the years.

Tiwari, Shefali (2009) in her thesis abstract titled, “A Study of Factors Affecting Efficiency of Selected Commercial Banks” explained that the growth in efficiency is one of the most important factors that have contributed to the advancement of nations. Efficiency rise means all round prosperity, waste reduction and efficient utilization of resources accounts for higher profitability of the Industrial units. Efficiency leads to efficient utilization of human material and technological resources. This calls for an indepth study of efficiency in the banking sector, the factors responsible for success and failure of banks. The study aims, to study the relationship between factors influencing efficiency with deposits, assets and advances separately of Public Sector Banks, Private Sector Banks and Foreign Sector Banks as well as to study the influence of types of banks on different efficiency factors related to employees per branch, operations, liquidity, ultimate profits, deposits, assets and advances. A sample of 15 banks were selected representing 5 Public Sector Banks, 5 private sector banks and 5 foreign sector banks on the basis of size of deposits for the year 2005. The data was collected for a period of five years 2001-2005. The study calculated twenty three ratios separately for each bank and for each year. Simple mean or average for five years was calculated for the computed ratios for each bank. The study used Product Moment Correlation Technique and One-Way Analysis of Variance, Duncan's Multiple Range test for Data Analysis. The Variables of the study were classified into independent and dependent variables. The first category of independent variables is deposits, assets and advances. The second category of independent variables is types of banks classified as Public Sector Banks, Private Sector Banks and Foreign Banks. Dependent variables are classified into five categories namely, Efficiency factor related to employees, Efficiency factor related to per branch, Efficiency factor related to operations, Efficiency factors influencing liquidity and Efficiency factors influencing ultimate profits. She found that in case of public sector banks out of the five factors, only one factor i.e. efficiency factors influencing ultimate profits is significantly correlated. Analysis of Variance showed that foreign sector banks were highly efficient in comparison to private and public sector banks.

Chauhan Parveen and Pal Ved (2009) in their studied titled, "Relative Efficiency of Indian Commercial Banks" is of the opinion that in the 1990s globalization, deregulation and disintermediation along with worldwide harmonization of banking supervision law following the Basel process have provided an opportunity to create a level playing field in all markets. So in banking sector also, as elsewhere in business, competitive environment is taken as the main force behind efficiency and innovation. The main objective of this study is to measure how efficiently the Indian commercial Banks are meeting their different objectives as well as also tried to evaluate the impact of financial reforms on the efficiency level of the Indian banking sector. The sample of 60 commercial banks which remained in existence during the period 1995-08 has been taken. The study did not include cooperative banks and regional rural banks for analysis.

The study adopted three major approaches to make the selection of inputs and outputs for measuring the efficiency of banks: (a) Intermediation approach, (b) Value added approach and (c) Income approach. As non-interest is one of the major component of the output of a bank, so it is included as one of the output in assets approach named as Intermediate approach. The first two approaches are related to economic growth and safety objectives, while last approach reflects the profit goal. They found that among the different structure of banks, new private sector banks as a group emerged as most efficient banks in Indian banking system. As these banks are working in relatively more flexible environment in recruiting and retaining the professional managers. Result based on the three approaches highlight the efficiency based on income approach has improved significantly in the post-liberalization period in the Indian Banking system. It is also found that Public Sector Banks on the average are less efficient in comparison to the non public sector banks.

Sinha Ram Pratap and Chatterjee Biswajit (2010) in their study titled, "Bank Ownership and Deposit Mobilization: A Non-Parametric Approach" have discussed the impact of Bank ownership, relaxation of entry and changes in the branch licensing policy for deposit mobilization i.e. whether some significant differences exist between the in-sample public and private sector commercial banks in respect of their deposit mobilization activity. The period of the study is 2002-03 to 2005-06. The study compares the performance of 40 Indian commercial banks using Window Analysis. The study seeks to compare the in-sample commercial banks in terms of deposit-mobilization, deposit-mobilized by the respective commercial banks within the accounting year have been taken as the bank output. On the other hand, net worth and branches have been taken as the input. Deposits = f (Net-worth, Branches). For analyzing the data they used the concept of technical efficiency. They found that decline in average technical efficiency of the in-sample commercial banks implies a greater divergence in performance among these. However, with advent of financial sector reforms and the prudential regulations pertaining to the commercial banking sector, commercial banks have started the doing business more cautiously. In fact, the introduction of bank assurance has opened up new avenues for earning money for the banking sector. Among the in-sample banks, the private sector banks performed better than the Public Sector Banks.

The RBI Governor on March 11, 2011 in his report titled "Planning for Operational Efficiency in Banking Focus: Tool and Techniques for Improving Operation Planning", in The Financial Express discussed on the tools and technique for improving efficiency of Indian banks. The issue of improving efficiency has always been on the priority of the top level management of banks. The banks are facing challenges to perform better with the adoption of new technology in banking. It has empowered banks not only to handle large volume of transactions but also provide innovative products and assets quality services to the customers. So, to compensate the cost of installation of technology it is necessary that banks find different way out for improving operational Efficiency in its business processes. For achieving operational efficiency Executives and managers of the bank's branch should employ newer tools and techniques to achieve the operational efficiency and the effectiveness of planning function in banks. They are as follows:-

1. Frame work for business planning and profit targeting
2. Administrate the plan which helps in the accomplishment of the objectives.
3. Assessment of business potential in the form of branch service capacity and man power requirement for various scales of branches.
4. Allocate the resources in an efficient manner.
5. Motivate the branches to achieve their best output performance.

He also suggested that case studies would be the effective medium of instruction. Problem solving exercises using excel based tool will enable for immediate application to resolve the day to day problems.

Dangwal R.C and Kaur Narinder (2011), in his study titled, "Nationalized Banks in Liberalization Era" tried to evaluate the changes in the Total Factor Productivity of 19 Nationalized banks in India. For analyzing the performance of 19 nationalized banks the post-reform period of six years from 2002-03 to 2007-08 have been taken into consideration. The present study has used four output variables and two input variable. Output variables are Deposits, Advances, Investments and spread. Input variables are Interest Expenditure and Operating Expenditure. To calculate the Malmquist Factor Productivity Index, he used the following five indices: (1) Efficiency Change (2) Technical Change (3) Pure Efficiency Change (4) Scale Efficiency Change (5) Total Factor Productivity Change.

1. The study on the basis of Efficiency Change revealed that 7 banks have increased efficiency change and it has decreased in 4 banks. In the case of 8 banks, there is no change in EFCH as compared to previous years during the study period.
2. Technical Change on the basis of Bank-wise analysis reveals that there is a substantial improvement in 14 banks and deterioration in 5 banks with respect to change in technology over the study period.
3. Bank-wise analysis reveals that Pure Efficiency Change in 3 banks has increased and it has decreased in 4 banks. In case of 12 banks, there is no change in PECH during the study period Dena Bank is at the top in case of PECH with 3.4% increase, while State Bank is at the bottom.
4. In case of Scale Efficiency the Public Sector Banks are at the top with 2.2% increase over the previous year, while Andhra Bank is at the bottom.
5. The TFPCH of eleven banks is higher than the nationalized group over the study period. UBI is at the top in case of TFPCH with 7.8% increase while BOM is at the bottom.

Finally they found that TFP change is positive in all the Nationalized Bank except BOM, IB and PNB. The technological changes have more impact than efficiency change in total factor productivity growth.

Joshi, Prasad V. and Dr. Bhalerao, J.V (2011) in their study titled "Efficiency Evaluation of Banking Sector in India Based on Data Envelopment Analysis" studied the technical efficiency of major representatives of Indian commercial banks. He used the data envelopment analysis model on four input variables (viz. deposits, Interest expenses, operating expenses, Assets) and four output variables advances & loans, investments, net interest income and non-interest income. For analysis they have taken 5 public and 5 private sector banks. The banks are selected on the basis of purposive sample technique based on the values of deposits and advances. The relative efficiency of productive units would be based on the CCR model of DEA. Regression analysis approach is characterized as a central tendency approach and it evaluates DMUs relative to an average. The period of the study was 2008 to 2010. They found that efficiency scores of major commercial banks show a great variety and all the banks have a same trend throughout the study period. The average performance of the banking sectors lies in the range above 80% which indicates that banks have adopted appropriate method for conversion of inputs into outputs. The public and the private sector banks both are equally efficient but private sector banks have a lead over the public sector banks. In public sector banks Canara Bank, Punjab National Bank and Bank of Baroda show very efficient and have a consistency in their performance. ICICI Bank has shown a remarkable improvement during the study period. They suggested that the major factors are the huge amount of deposits, advances and other assets resulting in the poor performance of these banks. These banks possess non-performing assets and are not able to make a set off between the deposits and advances. During the study period the banking sector of India was moving towards being a developed economy through continuous efficiency improvement.

Kumar Ashish and Kumar Sunil (2012) in their study titled, "A Study of Efficiency of Public Sector Banks in India" is of the opinion that the overall growth of an economy is dependent to a great extent on the efficiency and soundness of its banking system. A sound banking system serves as an important medium for pushing economic growth by mobilization of small savings of unproductive domestic sector and putting them to the productive use. This paper was an attempt to investigate the efficiency of Indian public sector banks with the help of data envelopment analysis (DEA) which is a deterministic non-parametric approach. The data for the study relates to a sample of 27 public sector banks operating in India out of which 20 banks are Nationalized Banks and the rest 7 banks are State Bank along with its Associates. The study takes into consideration the data for the year 2008-09. The overall level of technical efficiency in these banks has been found to be 95.7 percent. This implies that the sample banks have the scope of producing 1.045 times as much output from the same inputs. On the basis of technical efficiency only 6 banks have been found to be efficient. With regards to pure technical efficiency score 10 banks are efficient which indicates that scale inefficiency is the main reason of inefficiency among banks in India. In the light of these results inefficient banks witnessing diseconomies of scale should reduce their size by reducing the no. of inefficient branches and remaining inefficient branches which have decreasing returns to scale should expand their business by deploying more resources.

The above review of literature proves beneficial in identifying the research issues and the research gaps, which are mainly the edifices on which the objectives of the present study are based. From the above discussion, it has been cleared that various researchers have used different methods to analyze the operational efficiency of banking sector in India. Numerous studies to analyze the operational efficiency of banks are either based on the Data Envelopment Analysis (DEA) approach, a non-parametric tool to detect and improve the sources of inefficiency by bank management and supervisory agents or simply based on parametric tools such as performance, productivity & profitability. The forgoing review reveals that with the exception of a few no systematic and scientific efforts have ever been made to review the extent of efficiency & effectiveness of the nationalized banks which are bound to play a dominant role in the national economy. There is hardly any study in India which has taken simultaneously the different dimensions of operational efficiency like growth & performance, Productivity, Profitability and Technical Efficiency while assessing the operational efficiency of public sector banks in India. The results fail to bring out the overall resultant picture about the operational efficiency of banks in India. Thus, the present study is an endeavor to discuss the various dimensions of operational efficiency in banking sector in India.

Further none of the studies covered an evaluation of the impact of the Financial Sector reforms on the banking sector. In this context the present study would be a pioneering venture in analyzing the operational efficiency of the public sector banks in India.

RESEARCH GAPS

The present study differs from the earlier studies in many ways and enriches the existing literature in the following ways: Firstly, it has included variables other than the variables included by other scholars. Secondly, the study presents the performance of banks from 1990-91 to 2011-12. Thirdly, the study tries to highlight the changing situation of banks towards their efficiency in developing country like India. Fourthly, the study presents the experiences of reforms on Indian economy. It is a fusion of parametric and non-parametric techniques however; earlier studies were based on either parametric or non-parametric techniques.