Chapter I
Research Design

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1. Introduction

The primary function of any financial system is the mobilization and allocation of financial savings and their distribution for industrial investment and stimulating capital formation to accelerate the process of enormous growth. This process of savings and investments involves financial institutions, markets, instruments and service. Thus financial system plays a crucial role in the functioning of the economy because it allows a more efficient transfer of resources from savers to investors as well as facilitates the use of funds by households, business, traders and Governments. In fact, an efficient financial sector spurs economic growth. Conditions that support the development of a more robust and balanced financial structure will improve the ability of domestic financial systems to contribute to their growth. By restoring macro-economic stability, building better legal, accounting and regulatory systems, specifying rules for fuller disclosure of information, and levying taxes that do not fall excessively on finance, governments can lay foundations for smooth functioning of financial system.

The Indian financial system comprises of an impressive network of branches, other financial institutions, and investment institutions and a wide range of financial instruments which function together for the development of capital and money markets.

Banks being integral part of the financial system play a special role in the development of the economy as they not only accept and deploy large amounts of uncollateralized public funds in a fiduciary capacity, but also leverage such funds through credit creation. A banking sector performs three primary functions in an
economy: the operation of the payment system, the mobilization of savings, and the allocation of savings to investment projects. By allocating capital to the highest value use while limiting the risks and costs involved, the banking sector can exert a positive influence on the overall economy, and is thus of broad macroeconomic importance.

In India, prior to nationalization, banking was restricted mainly to the urban areas and was neglected in the rural and semi-urban areas. Large industries and big business houses enjoyed major portion of the credit facilities. Agriculture, small-scale industries and exports did not receive the deserved attention. Therefore, inspired by a larger social purpose, 14 major banks were nationalized in 1969 and six more in 1980. Since then the banking system in India has played a pivotal role in the Indian economy, acting as an instrument of social and economic change. The rationale behind bank nationalization has been succinctly put forth by eminent bankers.

Although nationalization of banks helped in the spread of banking to the rural and hitherto uncovered areas, it contributed to the monopoly granted to the public sector and lack of competition led to overall inefficiency and low productivity. Excessive focus on quantitative achievements had made many of the public sector banks unprofitable and undercapitalized by international standards. Many banks were earning less than reasonable rates of returns, had low capital adequacy and high non-performing assets, and were providing poor quality customer service. By 1991 the Indian financial system was saddled with an inefficient and unsound banking system. Some of the reasons for this were i) High reserve requirements; ii) administered interest rates; iii) directed credit; iv) lack of competition; and v) political interference and corruption.
The Government of India constituted several committees to resolve problems of Commercial Banking in India. Some important Committees worth mentioning are:

**Narasimham Committee I (1991)** - In August, 1991, the Government of India appointed a high level committee under the chairmanship of Shri M. Narasimham, former governor of RBI to look into all the aspects of the financial system and make comprehensive recommendations to reform it. The committee submitted its report in November, 1991, recommending reforms in both banking sector and in the financial markets. The recommendations of the committee aimed at creating a competitive and effective banking system. Measures like capital adequacy, income recognition, asset classification, norms for investment, entry of private sector banks, gradual reduction of SLR and CRR were recommended and implemented to strengthen the banking system. These recommendations changed the face of the Indian Banking. Public sector banks faced a stiff competition with the entry of private sector and foreign banks. It aimed at bringing “operational flexibility” and “functional autonomy” so as to enhance efficiency, productivity and profitability.

**Khan Committee (1997)** - Khan Committee, was constituted by the RBI in December 1997 to examine the harmonization of the role and operations of development financial institutions (DFIs) and banks. It submitted its report in April 1998. The Major recommendations of the committee were a gradual move toward universal banking; explore the possibilities of gainful mergers between banks; banks and financial institutions; encompassing both strong and weak entities or two strong ones; developing a function specific regulatory framework and a risk–based supervisory framework; establishment of super regulators; speedy implementation of legal reforms to hasten debt recovery; reducing CRR to international standards; and phasing out SLR.
Narasimham Committee II (1998) - The second generation banking sector reforms concentrates on strengthening the foundation of the banking system by structure, technological upgradation, and human resource development.

Verma Committee (1999) - which had been the most controversial of committees, recommended the need for greater use of Information Technology (IT) even in the weak public sector banks; restructuring weak banks but not merging them with strong banks; market driven mergers; sale of foreign branches; closure of subsidiaries of weak public sector banks, and voluntary retirement scheme (VRS) for at least 25 per cent of the staff.

Hence the reforms primarily aimed at structural transformation of the financial system to improve efficiency, stability, and integration of various components of the financial system. Some of the structural changes initiated are free pricing of financial assets, relaxation of quantitative restrictions, and removal of barriers to entry, new methods and instruments of trading, and greater participation and improvement in clearing, settlement and disclosure practice.

The Government of India implemented many banking sector reforms following the recommendation of these committees. These included the reduction of SLR from peak 38.5 per cent to 25 per cent. CRR from 4.75 per cent to from its peak 15 per cent, a gradual deregulation of interest rates on deposits and lending introduction to prudential norms in line with international standards. A system of flexible exchange rates on current account has been adopted.

As a result of these measures, together with technological developments, the operating environment for banks in India has changed significantly. The Indian banking system has been exposed to increased competition with the enhanced presence of foreign banks and entry of new private sector banks. Most of the public sector banks have accessed the capital market. This has changed their capital structure, besides subjecting them to market discipline. The administered
interest rate structure has been almost deregulated. Statutory pre-emptions in the form of CRR and SLR have been reduced significantly. Banks have also been allowed to diversify into non-traditional activities. Banks were provided with operational flexibility and functional autonomy in their day-to-day decision making process to enable them to respond to the evolving situation. Banks have also been subjected to prudential norms in line with the international best practices. In the past, a large amount of banks’ funds was locked in non-performing assets. Multi-pronged institutional arrangements were put in place to enable banks to expeditiously recover their past dues. Advances in information and communication technology have enabled banks to introduce new products and delivery channels, and strengthen their internal control systems. All these changes are expected to have altered the way banks combine inputs to produce and deliver their products and services having a bearing on their efficiency and productivity.

In the light of these transformational changes, the present study attempts to evaluate the performance of commercial banks in general and public sector banks in particular

Section I

1.1 Review of Literature

Luther\(^1\) chaired the committee appointed by Reserve Bank of India to study productivity, efficiency and profitability of commercial banks. The major recommendations of committee were: (i) the capital base of banks need to be improved. For this, bank should transfer at least 40 per cent of the disclosed profits of reserves, free of taxation, (ii) the interest on additional cost profits to reserves, free of taxation, (ii) the interest on additional cost profits to reserves,
free of minimum 3 per cent should be related to cost of funds for banks, (iii) in the light of social obligations cost on the banks, tax laws need to be reserved, (iv) to estimate the cost of various services and profitability of different activities, the Reserve Bank of India, in collaboration with commercial banks should organize regular and systematic surveys, (v) to improve productivity, efficiency and profitability of banks, a systematic, prompt and regular flow of information and its analysis is essential for banks to contemplate timely corrective actions, (vi) there should be uniform system of audit for all categories of banks, on the line of the one prevailing in the State Bank of India.

Shah, G.S.\textsuperscript{2} pointed out weaknesses of the banks and identified specific areas where action needs to be taken to improve profitability. Weakness, he revealed were raising expense and overheads, increase in wasteful work practices, decline in productivity, etc. He suggested following areas where proper attention should be given to enhance profits of banks: (i) locating profit centers and cost centers in the bank, ii) identifying the elements that control or determine the income and cost structure at each center and for the bank as a whole, (iii) evolving measures that could widen the spread between the cost of funds, service and administration, and the return on them, (iv) developing supplementary sources of income on profit.

Makarand \textsuperscript{3} attempted to evaluate each of the public sector banks using six quantitative indicators viz., branch expansion, priority sector credit, deposit mobilization, export credit, net profit to working funds and wage cost of business development. These indicators were assigned appropriate weights and incorporated in the integrated priority index, on the basis of which inter-bank comparisons were made. The study suggested that: (i) counseling and expert advice to the priority sector on diversified activities is essential, (ii) apart from top management, the staff at a lower level should also be actively involved in the
priority sector credit, and (iii) necessary lending powers should vest with the branch managers.

Varghese, S.K. \(^4\) conducted an in depth study on profits and profitability of commercial banks during the decade 1970-79. The major issues analyzed by her were: (i) Has there actually been a declining trend in the profits and profitability of Indian commercial banks in the seventies? (ii) What are the main determinants of profits and profitability of the Indian banks during this period? (iii) Are the conventional profit accounting standards adequate to project a true pictures of the financial performance of the Indian banks?, and (iv) Are the systems and procedures of drawing up the balance – sheet and profit and loss accounts adequate enough to give a true and fair picture of the banks’ financial position and if not, what improvements are called for ? Owing to data and time constraints, however, the scope of her study was limited to the analysis of profits and profitability of groups of Indian commercial banks, leaving aside the analysis of financial performance of individual banks.

Joshi \(^5\) has analyzed the trends of gross and net profits of all scheduled commercial banks and found that lower capacity for fund management of the banks is due to SLR (Statutory Liquidity Ratio), CRR (Cash Reserve Ratio) and priority sector lending. He found out that there had been lowering yield rate and rising cost rate year by year which contributed a lot to the declining trend in profitability. He viewed that declining demand from the corporate sector for bank funds has serious implications for bank profitability.

Vashist \(^6\) in his empirical work “Performance Appraisal of Commercial Banks in India”, evaluated performance of public sector banks with regard to six indicators i.e., branch expansion, deposits, credit priority sector advance, DRI advances and net profit over the period 1971-83. A composite weighted growth
index was developed to rank the banks and to classify them into four performance levels viz., excellent, good, fair, and poor. The study ranked Indian Overseas Bank at the top and Dena Bank at the bottom. The study suggested for (i) Developing of marketing strategy for deposit mobilization, (ii) Profit planning and (iii) SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis in banks.

Godse, V.T. and Padwal, S.M. ⁷ studied the issue of bank profitability conditions and observed that any emphasis on the increases of the volume of business and proper management of burden would definitely result in enhancing the profitability of commercial banks. They concluded that the key profitability of Commercial Banks in India is due to high volume of business (in total, per employee) and not the expenses (per branch and per person) which is popularly practiced.

Amandeep ⁸ in her work evaluated the profit and profitability of Nationalized Banks. The study analyzed the factors that influence the profitability of banks and recommended that in order to improve the banks’ profitability, the banks need to focus attention on the management of spread, burden, establishment expenses, and income and deposit composition. The study found that priority sector lending and rural banking do not have an adverse effect on the banks’ profitability to a significant extent. Hence, advances to priority sector and opening of rural branches may be extended in the large interests of the society.

Shanbag, ⁹ has critically evaluated various target based on social obligations assigned to banks from time to time after their nationalization. The author did not dispute the basic need and principles behind social banking in a highly structured society. However, he urged the necessity of redefining the basic ideas
and concept behind social banking and suggested re-grouping of the priority sectors with the contemporary relevance.

Panda and Lal\textsuperscript{10} in their paper attempted to develop certain internal management techniques for improving the profitability of the Indian banking system. The authors have identified productivity, development of funds, quality of advances, information system and organizational set up and branch policy as the most important factors influencing the profitability.

Rajagopalan\textsuperscript{11} has given a general view on productivity in banks. He opined that profitability and productivity depends on various factors like reduction of costs, recovery of overdue, work reorganization, introduction of computers, etc. He also identified that establishment expenses play a key role in determining the level of profit. He viewed that attention should be paid on the staffing pattern in banks.

Swami and Subrahmanyam\textsuperscript{12} utilized ‘Taxonomic Method’ for studying the inter-bank differences in the performance of public sector banks in India. The Taxonomic Method aims for deriving out a single measure of performance based on several individual indicators of banks’ business activity. It has been found that many banks show wide disparities in their measures of performance especially with differential weighting of individual indicators of business activity.

Toor\textsuperscript{13} made an attempt to find a link between the nature of business being handled by banks and their earnings in case of nationalized banks. The various aspects of the business mix like deposits (category – wise); advances (nature-wise, category-wise), expenditure incurred on deposits and income earned on advances have been examined and discussed by the author. The author viewed
that the business mix in the nationalized banks has high variations and certainly has bearing on their operational efficiency and profitability trends.

Chidambaram and Alamelu\textsuperscript{14} emphasized the profitability aspect in commercial banks. In this paper, the scholars analyzed and compared the performance of public and private sector bank on profitability angle. It was found that all the private sector banks have been registered both high profits and high rate of growth. Better customer service, technology, innovative products, good marketing strategies, proper monitoring of advances, regional orientation are some of factors responsible for the success of private sector banks in India.

Pradeep K Keshari M Thomas, P\textsuperscript{15} examined whether foreign banks on an average operate with greater efficiency and so attain higher levels of productivity and profitability. For this purpose, first, a stochastic frontier production function for the banking industry is estimated and bank-wise technical efficiency is computed. In the second stage, the authors compared the mean efficiency level of foreign banks with that of domestic banks. In addition, foreign and domestic banks are also compared with respect to the other measures of performance, namely, productivity and profitability. The results showed that foreign banks as a group was 1 per cent less efficient than domestic banks while the standard deviation of technical efficiency of foreign banks was slightly higher than that of domestic banks. The comparison of labor (or branch) productivity and profitability between DBs and FBs revealed that the same are respectively higher for the latter group. Basing on their findings, the authors opined that greater productivity and profitability of FBs cannot be interpreted as the indicators of their greater efficiency in resource utilization, rather they tend to support an alternative explanation that the higher productivity and profitability of FBs are the consequence of their particular operational characteristics and strategies and preferential treatment rendered to them by the government of India.
Robert, M.\textsuperscript{16} made an attempt to find out the trends in profitability in Public Sector Banks in Indian by taking 15 years period from 1973 to 1987. Robert not only analyzed the trends in profitability of selected PSBs but also assessed the operational efficiency of PSBs and estimated behavioral function for profit based on the key variable, effecting profit for individual banks and for the banking industry as a whole. The scholar in this study found that year-wise trend in profitability of 14 PSBs for the period from 1973 to 1987 revealed that profitability had declined for 8 out of 14 years. Bank-wise trend in profitability showed that out of 14 banks, 12 showed decline in profitability during this period. Operational efficiency based on manpower expenses and other expenses to total staff revealed that CBOI, UCB and DB were the highest cost effective banks among large, medium and small banks. With an intention to improve the profitability and operational efficiency, the Researcher made some suggestions like: (a) Restrictions in the form of CRR are not necessary for PSBs and hence can be gradually reduced to increase the free lendable resources, (b) There is a scope for reducing SLR, (c) Income under interest and discount received can be improved by reducing the extent of Non-performing advances, and (d) Income under other receipts can be increased by giving a greater thrust to non-fund business eg. credit cards, safety lockers, consultancy service, factoring, etc.

Satyamurthy\textsuperscript{17} clarified the concepts of profits, profitability and productivity applicable to the banking industry. He suggested a technique of ratio analysis to evaluate the profit, profitability and performance of banks. He opined that endeavors should be made to improve the spread management through better funds management.

Bhatt and Ghosh\textsuperscript{18} in an empirical study on profitability of commercial banks observed that the profitability of commercial banks has been very low
during the post-nationalization period. The ratio of profits to assets or working funds of the Indian banking system were observed to be much lower as compared to international average. Gross profits have been declining in the banking system over 1980s and 90s. Such profits were no more than 1.1 per cent of working funds. According to the authors, the erosion of profitability of the banks can be ascribed to broad policy of social obligations on one hand and the system of directed investments in terms of SLR and CRR and directed credit programmes such as priority sector lending at subsidized rate of interest.

Robert and Joshi 19 examined selective issues which have arisen in the context of financial sector reforms in India. The authors observed that though much has been done, yet banking reforms agenda is inadequate in number of aspects. It was noted that the reforms were neither well articulated nor do they go far enough. Further, their implementation is also not flawless. It was pointed out that until banking institutions are subject to some structural changes, the reform exercise is going to prove a wasteful and half-hearted approach.

Satyanarayana 20 made an attempt to evaluate the performance of PSBs in India and also suggested ways and means to improve the profitability of banks. The study revealed that in 1994, 15 out of 27 PSBs belonged to ‘A’ category (those banks, which have significant income to earn net profits after making necessary provisions and contingencies). Seven banks were operating in ‘B’ category (those banks, whose after operating profits have no sufficient funds to provide for provisions thereby incurring net losses). The remaining banks were placed in the ‘C’ category (those banks which were unable to earn significant income to enjoy sufficient operating profits). Apart from studying the profitability of above-mentioned groups of banks, capital adequacy position and other balance sheet trends were also discussed. Moreover, same short-term and long-term strategies for enhancing the profitability level were suggested.
Murthy \textsuperscript{21} analyzed various factors which can be helpful to improve the profitability of public sector banks. The study examines the impact of monetary policy and market interest rates on bank profitability and also suggests various measures to improve the profitability of public sector banks in India.

Noulas and Katkar \textsuperscript{22} analyzed the technical and scale efficiency of public sector banks using data envelopment analysis by utilizing cross-sectional data of 18 banks for the year 1993. It has been observed that the overall technical inefficiency was approximately 3.7 per cent, of which only 1.5 per cent was on account of pure technical inefficiency and 2.25 per cent was due to scale inefficiency and a majority of the PSBs were found to be operating under increasing returns to scale.

Bhattacharyya, Lovell and Sahay \textsuperscript{23} examined the impact of partial liberalization during mid-eighties on the productive efficiency of different categories of banks using data envelopment method. The study reported a marginal increase in overall average performance after 1987 and average efficiency of publicly owned banks is much higher than in the privately owned or foreign owned banks.

Das \textsuperscript{24} applied non-parametric frontier methodology to derive efficiency measures for 65 major banks using cross-sectional data for the year 1995. He found that, generally, banks in India were technically more efficient than allocative efficiency. He also found that there is no significant difference in any of the efficiency measures between public and private sector banks, except
scale efficiency, in which foreign banks differed significantly from public and private sector banks.

Sarkar & Das\textsuperscript{25} compared performance of Public Sector Banks, Private Banks, and Foreign Banks for the year 1994-95 on their profitability, productivity & financial management. They found that Public Sector Banks performed poorly as compared with the other two categories of banks. They also found that the foreign banks were more profitable and efficient than Indian banks and amongst the Indian Banks private banks were superior to the public sector banks. They also conclude that the non-traded private sector banks are not significantly different from the public sector banks with respect to profitability and efficiency, a result consistent with the property right hypothesis.

Zacharias, Thomas\textsuperscript{26} studied the performance effectiveness of Nationalized Banks by taking Syndicate Bank as case study in his Ph.D thesis. Thomas has examined various aspects like growth and development of banking industry, achievements of Syndicate Bank in relation to capital adequacy, quality of assets, Profitability, Social Banking, Growth, Productivity, Customer Service and also made a comparative analysis of the performance effectiveness of Syndicate Bank in relation to Nationalized bank. A period of ten years from 1984 to 1993-94 is taken for the study. This study is undertaken to review and analyze the performance effectiveness of Syndicate Bank and other nationalized banks in India using an Economic Managerial-Efficiency Evaluation Model (EMEE Model) developed by researcher. Thomas in this study found that Syndicate Bank got 5\textsuperscript{th} Position in Capital adequacy and quality of assets, 15\textsuperscript{th} in Profitability, 14\textsuperscript{th} Position in Social Banking, 8\textsuperscript{th} in Growth, 7\textsuperscript{th} Productivity and 15\textsuperscript{th} position in Customer Service among the nationalized banks. Further, he found that five nationalized banks showed low on health performance, seven low
on priority performance and eleven low on efficiency performance in comparison with Syndicate Bank.

Gupta\textsuperscript{27} has examined the performance of State Bank of India (SBI) over a period of five years (1994-98), using the international CAMEL approach. The main findings of the study were that during 1994-98, SBI has shown substantial growth in assets and corresponding growth in profits and has expanded its network of branches. He opined that intensive competition in the Indian banking industry and the continued economic slowdown has seriously impaired the interest income growth of SBI in 1997-98 and the bank had to rely on volatile income sources and non-interest income to sustain growth. The study presented a brief outline of ownership, business operation and SWOT analysis of SBI. The Study found that SBI’s Capital Adequacy Ratio (CAR) had improved primarily due to increase in profit owing to writing back of excess depreciation of government securities and a 20\% fall in the provision and contingencies. Asset quality also improved as the bank was able to reduce its Net Non-Performing Assets (NPAs). The most striking conclusion was narrowing of Net Interest Margin (NIM) to 4.10 per cent from per cent in spite of return of assets (ROA) improving substantially to 1.11 per cent (1998) from 0.88 per cent (1997).

Kumar\textsuperscript{28} in his paper on profitability of Indian commercial banks has used the technique of stepwise multiple discriminate analysis (MDA) to identify the most critical profitability ratios relating to India banks. The sample comprised of 51 banks- 26 public sector banks and 25 private sector banks. Twelve ratios representing spread and burden and their components were taken, in addition to two decomposed ratios of equity multiplier, totaling 14 ratios. The data was related to year 1994-95. The study identified the following variables among the 14 variables as the significant discriminators of profitability (measured by return on assets). They were: earning assets/shareholder’s equity, spread/working fund,
non-interest expenditure/working fund and operating expenses/total assets. The canonical correlation of the discriminate function was 0.814 which indicated a fairly strong relationship between the groups (non-profitable bank group and profitable group) and the discriminate function. The classification accuracy for the sample was 98.04 percent.

Ramamurthy 29 studied the profitability of Indian banks during the period 1993-96 and attempted to make an international comparison with the banking system in 23 OECD countries. He concluded that Indian banks have higher interest spreads, higher operating profits and higher risk provision levels than banks in foreign countries. The productivity of Indian banks as measured in terms of business per employee increased by 12.80 per cent during the study period.

Subba Rao. S.R, and Datta,L 30 attempted to benchmark nationalized banks for the year 1997-98 using CAMEL rating model. A total of 21 indicators were considered to measure and characterize the financial posture individual banks. Each module was ranked using a 5 point scale, 1 being strong performance and 5 being unsatisfactory performance, For analysis, banks with rating “up to level 2” were termed as “Better banks” and banks with rating “above level 2” were considered as “Weak banks”. Out of 19 banks, 13 banks turned out to be better banks in respect to Capital adequacy and solvency module; 11 banks were considered better in respect of Earnings performance module; 9 banks were rated better from Asset quality point of view and 7 banks were rated better in terms of Manpower performance. With respect to Liquidity assessment, 6 banks were found to be better. Combing all the factors, 11 banks were grouped as better banks.
Varde and Singh \(^{31}\) in a study of profitability of commercial banks over 15 years gave consideration to two types of factors that affect the interest levels, (i.e., external factors like monetary policy, fiscal policy and interest rate policy etc.) and internal factors like operational and managerial efficiency of individual banks. They distinguished between effectiveness, efficiency and productivity and recommended that efficiency of a bank could be classified into four categories, i.e., (i) manpower efficiency; (ii) operational efficiency; (commercial efficiency), and (iv) efficiency of ancillary business. Efficiency according to each category can be measured separately, and the overall measure of efficiency is productivity.

Bhatia and Verma \(^{32}\) made an attempt to determine empirically the factors influencing profitability of PSBs in India by using multiple regression analysis. Net Profit as a percentage of working funds has been used to measure the Bank profitability during 1971 to 1995. The researchers in this study found that priority sector advances; fixed/current deposit ratio and establishment expenses affected the profitability of PSBs negatively. Net spread, which to a great extent depends on the management expertise of the bank staff, influenced the profitability of banks positively and significantly. High credit-deposit ratio was also observed to be influencing profitability positively. However, its impact was found to be statistically non-significant.

Das, Abhiman \(^{33}\) made an attempt to compare the inter-bank performance of public sector banks during the reforms period. This study was carried out for a period of three years, i.e. 1992, 1995 and 1998. Das in his paper found a certain convergence—taking place in the performance of the public sector banks during the years of study. He further found that there is growing emphasis on other income and a peculiar tendency to go for risk-free rather than risky loans.
The RBI provided the Central Bank’s perspective on how deregulation had impacted on bank performance. The review covers all categories of banks, not just PSBs. The principal findings of this review are worth highlighting:

- There has been a decline in spreads, a widely used measure of efficiency in banking, and a tendency towards their convergence across all bank-groups, except foreign banks.
- Intermediation costs as a percentage of total assets had also declined, especially for PSBs and new private sector banks, largely to a decline in their wage costs.
- Capital adequacy and asset quality (measured by the net NPAs as a percentage of net advances) have both improved over the period 1995-96 to 1999-2000.
- Median Profit per employee of PSBs witnessed a significant rise between 1996-97 and 1999-2000, due largely to a rise in the same in the case of the SBI Group.
- Non-Interest income to working funds rose moderately for the median PSBs.
- The cost to income ratio declined both at the SBI Group and the Nationalized Banks.
- The ratio of wage bill to total expenses remained at a high level of PSBs.

The Verma Committee identified weak banks, strong banks and potential weak banks based on the study of seven financial performance parameters. These parameters include capital adequacy ratio, coverage ratio, return to assets, net interest margin, operating profits to average working funds, cost to income, and staff cost to net interest income plus other income. Accordingly, UCO Bank, United Bank of India and Indian Bank were indentified as weak banks in whose case none of the seven parameters were met. As against this, Oriental Bank of
Commerce and State Bank of Patiala were identified as strong banks because they satisfied all the parameters. But in respect of six banks, viz. Allahabad Bank, Central Bank of India, Indian Overseas Bank, Punjab and Sind Bank, Union Bank of India and Vijaya Bank, most of the parameters i.e. five or six of the total seven parameters were not fulfilled. Hence, they were described as potential weak banks. The main weakness of financial ratio analysis adopted by Verma Committee (1999) is that the choice of a few or a single ratio does not provide enough information about the various dimensions of performance. As a result, a bank that is poorly managed on certain dimensions may appear to be performing well as long as it compensates in other dimensions. Furthermore, it is a short run analysis that may be inappropriate for describing the actual efficiency of the bank in the long run, since it fails to consider the value of management actions and investment decisions that will affect future performance. Another problem that may arise is the choice of a benchmark against which to compare a univariate or multivariate score from ratio analysis. Also, commonly used performance ratios fail to consider multiple outputs (services and /or transactions) provided with multiple inputs.

The Money and Banking Division of the Economic Research Department, State bank of India, Mumbai analyzed the performance of Public Sector B’anks for the year 1997-98 and 1998-99 on four broad parameters: Business performance- which focused on deposits, advances, investments and net profits; Efficiency indicators – using return on equity ROE decomposition model, Vulnerability- Measured by Capital-to –Risk weighted Assets Ratio(CRAR) and Non-performing assets(NPAs); and labor productivity measured by three ratios i.e. business per employee, profit per employee and average assets per employee.

Parasuraman attempted to measure the performance of major banks in India in the year 1998-99. For this purpose EVA (Economic Value Added) has been computed taking certain assumptions as to the cost of equity and operational
profit adjustments. A rank correlation coefficient was struck between the ranks in different criteria in comparison to that of EVA. The study found that the ranking of banks under return of assets assumes close resemblance to the ranking under EVA, whereas the ranking under criteria like total income, interest, as percentage of total assets spread and net profits did not match with the ranking under EVA.

Prasanta Athma\textsuperscript{38} made an attempt to evaluate the performance of public sector commercial banks with special reference to State Bank of Hyderabad. The period of evaluation of performance is from 1980 to 1993-94. The study outlined the growth and progress of commercial banking in India and analyzed the trends in deposits, various components of profits of SBH with other PSBs, Associate banks of SBI and SBI. Statistical techniques like ratio, percentage, compound annual rate growth and averages are computed for the purpose of meaningful comparison and analysis. The major findings of the study are that since nationalization, the progress of banking in India has been very impressive. All the types of deposits have continuously grown during the study period, though the rates of growth were highest in fixed deposits. A comparison of SBH performance in respect of resource mobilization with other banks showed an increasing trend indicating that a more than proportionate increase in spread than in burden. Finally, majority of the customers have given a very positive opinion about the various statements relating to customer service offered by the SBI.

Saha and Ravisankar\textsuperscript{39} rated 25 PSBs using data envelopment analysis for the period from 1991-92 to 1994-95. It was found that, barring a few exceptions, PSBs have, in general, improved their efficiency over the study period. UBOI, UCO Bank, Syndicate Banks and Central Bank of India were found to be at the lower end of the relative efficiency scale, while Corporation Bank, OBOC, SBI, Canara Bank, SBOH, Bank of Baroda and Dena Bank were found to be consistently efficient banks.
Das, M.R.\textsuperscript{40} made an analysis that looks at the performance of the private sector banks for the year 1999-2000 vis-à-vis the preceding year. For this purpose, data were mainly collected from the RBI Report on Trend and Progress of Banking in India, 1999-2000. The analysis was carried out by aggregating the 32 Private Sector Banks into two groups, namely, the OPRSBs (24) and the NPRSBs (8). Out of 38 indicators, 10 relating to Business performance, 18 Efficiency indicators, 7 Vulnerability indicators and 3 relating to Labour productivity were selected for the purpose of evaluation of Private Sector Banks. The analysis revealed that OPRSBs put forth a better performance than the NPRSBs in many respects. Das in this study felt that the PRSBs have to play an important strategic role by improving the overall efficiency of the banking system by setting high performance standards. As far as accessing modern technology is concerned, Das observed that the NPRSBs, which were equipped with latest technology, are ahead of most of the OPRSBs.

Ganesh, P \textsuperscript{41} examined the determinants of profitability of Public sector banks in India by an empirical estimation of profit function model which showed the interest cost, interest income, deposits per branch, credit per branch to total assets, proportion of priory sector advances and interest income loss are the significant determinants of profits and profitability of Indian Public Sector Banks. The study concluded that the average establishment cost positively contributed to the profitability but it adversely affected the net profit of Public Sector banks and also the reforms in banking sector played a significant role in improving the profit and profitability of the banks in general and policies towards directed investments and direct credit programmes in particular.

Garai, et. al., \textsuperscript{42} made an attempt to evaluate the performance of SCBs in India. This study is confined to the period 1995-96 to 1997-98. Six efficiency
indicators were selected for the study. Weights were assigned on the basis of multi-group discriminate analysis. The existence of group difference was also examined by applying parametric test procedure. The analysis of the study made it clear that when compared with performance of private and foreign banks, PSBs performance is not satisfactory.

Khannan and Narain made an attempt to identify the factors influencing spread of SCBs in India. The study is carried out for the period 1995-96 to 1999-2000 by covering 27 PSBs, 31 PBs and 28 FBs. Pooled data model and Generalized Least Square approach was used for carrying the analysis. The researchers in this study found that size of the bank does not necessarily imply higher spreads. Further, they found that non-interest income as a share of total assets enable banks to tolerate low spread. With regard to regulatory requirements variables, it was found that capital plays an important role in affecting spreads of PSBs.

Kaveri, in his study attempts to extend the study conducted by the Verma Committee more specifically to ascertain whether enough signals of weakness were indicated much before the event. The study considered 1998-99 as the year of event when the Verma Committee identified weak banks, strong banks and potential weak banks. This study considers nine efficiency parameters, which are computed, based on the data collected from the Reserve Bank of India publications. The parameters include-

- Capital Adequacy Ratio
- Gross Profit/Working Funds
- Interest Expended/Total Assets
- Intermediation Cost/Total Assets
- Net Interest Income/Total Assets
- Net Non Performance Assets/Net Adequacy
- Net Profit/Total Assets
- Provisions and Contingencies/Total Assets.

The above parameters focus on two major concerns of banks i.e. loan default and profitability whereas the Verma Committee covered all aspects of financial health. This article has given some evidence to indicate that no bank can be weak or potential weak all of a sudden. There is a gradual deterioration in the position of loan default & profitability. Hence, it suggested to develop a ratio model to arrive at a single score to classify banks into three categories, i.e., weak, strong and potential weak.

Sathye studied the productive efficiency of publicly owned, privately owned and foreign owned banks operational in India in the year 1997/1998 and compared the efficiency of Indian banks with that of banks in other countries. He found that the public sector banks have a higher mean efficiency score as compared to the private sector banks in India, but found mixed results when comparing the public sector banks and foreign commercial banks in India. He also found that most of the banks on the efficient frontier are foreign owned.

Shanmugam and Lakshmanasamy applied three approaches, viz., non-parametric approach, stochastic frontier function and random coefficient approach to measure efficiency, and assessed robustness of the efficiency measures using data on domestic banks in India for the year 1999. It was found that the overall mean technical efficiency ranges between 52% and 80% in different approaches. The high rank correlation among efficiency values computed in different approaches has also been observed and the results indicated that deposits were the dominant factor in determining the output of the banks in all the models.
Singh, Sultan \(^{47}\), made an endeavor to assess the impact of reforms on the operational performance and efficiency of commercial banks in India. Ratio analysis was used as a tool for assessing the performance of selected commercial banks. The study revealed that the total income as a percentage of working funds and/or total assets and spread as a percentage of total income/total advance/working funds/total deposits have improved during the reform period as against the pre-reform period in most of the banks. Total income, interest earned other income, spread, total expenses, interest expended, operating expenses and establishment expenses are comparatively more consistent in the reform period. The hypotheses that the profitability position has improved in reform period may be accepted to some extent. It was observed that in the PSBs that the size of NPA has also been reduced to some extent and quality of service has improved in the reform period. The priority sector lending has registered a decline in the deregulation era.

Subrahmani and Raghav \(^{48}\) analyzed and compared the efficiency in six public sector banks, four private sector and three foreign banks for the year 1996-97. Operational efficiency is calculated in terms of total business and salary expenditure per employee. The analysis revealed that higher per employee salary level need not result in poor efficiency. Among the private sector banks, Indus Bank followed by Citi Bank registered highest and second highest on operating profit per employee. However, among the Nationalized Banks there existed wide variations in efficiency.

Avinandan Mukherji, Prithwiraj Nath, and Manabendranath Pal \(^{49}\) explored the linkage between strategic grouping and performance of the Indian banking sector. Strategic grouping and performance were identified using published
financial information for all the public sector banks. Grouping of the Indian public sector banks following comparable financial strategy- with similar asset quality, operational efficiency and profitability was operationalized using the graphical display method of Co-plot. Basing on their position in the two dimensional conceptual map, banks with identical financial performance formed strategic groups with significant positive linkage between better group and their superior financial performance which showed their inherent homogeneity in business policy decisions. Relative performance of the banks in terms of efficiency in converting the resources into financial outputs was obtained using data envelopment analysis technique. Efficient banks were found to be more profitable and their grouping as observed in the efficiency-profitability matrix was found to be identical to the strategic groups obtained using financial ratios. The paper offers a framework to commercial banks to make informed policy decisions about their competitive positioning in the target market, developing long term strategic focus and identify a benchmark for improving performance.

D’Souza\textsuperscript{50} provides an overview of performance of public sector, private sector and foreign banks during the period from 1991 to 2000. The efficiency of banking system was measured in terms of spread/working funds ratio and turnover/employees ratio. Though the turnover/employees ratio has risen in the public sector banks, the turnover per employee in the private and foreign banks doubled relative to the ratio of the public sector banks during this decade. However the analysis revealed that the profitability of the public sector banks in the late nineties improved relatively to that of the private and foreign banks.

Janaki,B \textsuperscript{51} examined various techniques to increase the employees’ productivity. The changing economic environment required many changes in the
banking sector. The study stressed the importance of aspects such as technology support for enhancing customer service, strategies for redeployment, and strategies to make employees more productive, to increase the employee productivity. He suggested that parameters need to be expanded to reflect the contribution of non-fund-based activities. His study also felt that motivation and attitudinal change in employees of PSBs play a key role in unleashing their productivity.

Sayuri, Shirai 52 assessed the impact of reforms by examining the changes in the performance of banking sector. It was found that the performance of public sector banks improved in the second half of the 1990’s. Profitability (measured by the return on assets) of nationalized banks turned positive in 1997-2000 and that of SBI group have steadily improved their cost efficiency over the reform period. Even though foreign banks and private sector banks performed better than the public sector banks in terms of profitability, earning efficiency (measured by ratio of income to assets), and cost efficiency in the initial stages, such differences have diminished as public sector banks have improved profitability and cost efficiency. The paper suggested that the banking sector reforms, since 1991, have exerted an increased pressured and thus had a positive non-negligible impact on the performance of public sector banks.

Kusum Ketkar, Athanasios G.Noulas, Nanmohan Agrawal 53 examined the relative efficiency of Indian state controlled, nationalized, private and foreign banks from 1990 to 1995 using Date Envelopment Analysis methodology. The study included 39 banks. The overall efficiency of the whole sample was rather stable for the period examined and approximately 31 per cent. The foreign banks appear to be most efficient group. The size is positively related to the
pure technical efficiency. Surprisingly the state controlled and nationalized banks dropped significantly in 1991 after the announcement of reform program for the banking sector by Reserve Bank of India and had failed to reach the pre-reform levels by 1995.

Petya Koeva\textsuperscript{54} provided new empirical evidence on the impact of financial liberalization on the performance of Indian commercial banks. The analysis focuses on examining the behavior and determinants of bank intermediation costs and profitability during liberalization period. The results suggests that ownership type has a significant effect on some performance indicators of the banks in sample and that the observed increase in competition during financial liberalization has been associated with lower intermediation costs and profitability of the Indian banks.

Ruchi Terhan, Niti Soni\textsuperscript{55} made an attempt to analyze the operating efficiency and its relationship with profitability in the public sector banking industry in India. The analysis of the relationship between the group status and technical efficiency showed that the banks affiliated to the SBI group are more efficient than nationalized banks and the difference in the efficiency levels of these two groups is statistically significant.

Subal C Kumbhakar, Subrata Sarkar\textsuperscript{56} analyzed the relationship between deregulation and total factor productivity (TFP) growth in the Indian banking sector using a generalized shadow cost function approach. TFP growth was decomposed into a technological change, a scale, and a miscellaneous component. A disaggregated panel data analysis was applied, using the population of public and private banks over 1985-1996 that covers both pre- and
post-deregulation periods, indicated that a significant decline in regulatory distortions and the anticipated increase in TFP growth have not yet materialized following deregulation. While private sector banks have improved their performance mainly due to the freedom to expand output, public sector banks have not responded well to the deregulation measures. The results indicated the presence of a weak ownership effect in Indian banking and no evidence of performance differentials narrowing due to competition, following deregulation.

Das et al.\textsuperscript{57} analyzed the efficiency of Indian banks using data envelopment analysis using four input measures viz. borrowed funds (i.e. deposits and other borrowings), number of employees, fixed assets and equity, and three output measures investments, performing loan assets and other non-interest fee based income, and found that despite liberalization measures aimed at strengthening and improving the operational efficiency of the financial system, Indian banks were still not much differential in terms of input- or output- oriented technical efficiency and cost efficiency; However they found that there were significant differences in terms of revenue and profit efficiencies. They also found that bank size, ownership and the fact of its being listed on stock exchange has a positive impact on the average profit efficiency, and to some extent revenue efficiency scores. Also, they found that there was a general improvement in efficiency during the post-reform period.

Shanmugan and Das\textsuperscript{58} studied banking efficiency using stochastic frontier production function model during the reform period, 1992-99. The study considered four input variables (viz. deposits, borrowings, labor, and fixed assets) and four output variables (viz. net interest, income, non interest income, credits and investment). They found that deposits are dominant in producing all outputs and the technical efficiency of raising interest margin varied across the banks. In particular, they found that the reform measures that have been
introduced since 1992 have not helped the banks in raising their interest margins. Also, in general they found that private and foreign banks performed better than public banks.

Paromita Mukherjee 59 arranged all the Indian public, private and foreign banks on the basis of performance indices developed for measuring the relative performance of a bank. The index used here was based on two performance indicators for solvency and profitability. The ranking of the banks was done not only at one point of time, but the performance of a bank was compared over the years also. From the analysis it was observed that though the foreign banks top the list, public sector banks as well as the private banks have improved themselves to enter the top 30 list. Notably, it was observed that public sector banks were quite capable of competing with their private and foreign counterparts.

Rammohan and Roy 60 compared the revenue maximizing efficiency of public, private and foreign banks in India, using the physical quantities of inputs and outputs in the 1990’s using deposits and operating costs as inputs, and loans, investments and other income as outputs. They found that the public sector banks were significantly better than private sector banks on revenue maximization efficiency, but between public sector banks and foreign banks the difference in efficiency was not significant.

Ramasastri, A.S., Achemma Samuel and Gangadaram S 61 made an attempt to compare the behavior of interest and non-interest income of scheduled commercial banks in India for the period form 1997-2003. This paper further tries to examine whether non-interest income has helped in stabilizing the total income of schedule commercial banks in the country. The major findings of the study are: (a) the average net interest income of SCBs. declined during the
period 1997-2003, (b) The non-interest income of all SCBs exhibited an increase over a period of 7 years. It was also observed that interest income was more stable than that of non-interest income, and (c) with regard to the question about whether non-interest income has helped in stabilizing the total income of banks, it was seen that with respect to the State Bank Group, foreign banks and old private sector banks, non-interest income helped to stabilize total operating income. However, in the case of nationalized bank and new private sector banks, it was seen that non-interest income has not helped in stabilizing their income appreciably.

Sooden and Bali 62 analyzed the profitability of PSBs in the pre- and post-reform periods. The time period was divided as pre-reforms period 1982-91 and post-reforms period 1992-2000. They studied the trends in profitability and factors affecting the profitability of PSBs. Their study used correlation matrix and also regression analysis. Their study concluded that in the post-banking sector reforms period, profitability of many PSBs started to increase. But at the same time, the falling priority sector lending has eroded the social profitability linked with the PSBs in the following years.

Amarendra R 63 examined the changes in the bank productivity growth through employing the Malmquist Total Productivity (TFP) index. The study decompounds the total factor productivity change of banks into technological progress, pure technical efficiency and scale efficiency change. Overall total factor productivity of banks was almost stagnant during the period. The contribution of technological progress towards productivity declined, however technical efficiency and scale efficiency have been improved for all banks. The highest TFP growth has been observed among public sector banks, followed by old private sector banks (mostly in terms of increasing efficiency in catching up
with the new private and foreign banks), while both new private and foreign banks recorded decline in total productivity growth.

Chakrabarti, R and Chawla, G\textsuperscript{64} have applied the increasingly popular methodology of Data Envelopment Analysis to evaluate efficiency of Indian Banks during the 1990-2002 period. Their results suggest that on a “Value basis”, the foreign banks, as a group, have been considerably more efficient than all other bank groups, followed by the Indian private banks. From a “Quantity” perspective however, the Indian private banks seem to be doing the best while foreign banks are the worst performers. This seems to reflect the general policy of foreign banks to “cherry-pick” more profitable business rather than offer services to a wider section. The public sector banks have, in comparison, lagged behind their counterparts in performance.

Don U A Galagedera and Piyadasa Edirisuriya\textsuperscript{65} investigated the efficiency and productivity in a sample of Indian commercial banks over the period 1995-2002 using data envelopment analysis technique and productivity change using Malmquist Productivity Index. The results revealed that there has been no significant growth in productivity during the sample period. When analyzed separately, the public sector banks revealed a modest growth in productivity that appears to have been brought about by technological change. The private sector banks indicated no growth. In general the smaller banks are less efficient and have high equity to assets and high return to average equity ratios.

NVM Rao; Prakash Singh; Neeru Maheshwar\textsuperscript{66} made an effort to study sweeping changes brought about by e-initiative measures in the banking sector by choosing few banks from the public sector and private sector banks respectively. The paper analyses a comparison of various models using metric method. The different elements of the metric include revenue generation, value
proposition, infrastructure etc. A mathematical model taking into consideration various ranking and weight ages to the elements of the metric has been developed to analyze whether investments in e-initiative increased productivity and profitability in the Indian banking system. The model suggests that the performance of the banking sector has improved considerably. Profitability, customer satisfaction, and many other parameters show a market improvement. The authors held that a mathematical approach proposed in this paper will find extensive application in other sectors of the economy also.

Abhiman Das, Saibal Ghosh 67 investigated the performance of Indian commercial banking sector during the post reform period 1992-2002. Several efficiency estimates of individual banks were evaluated using nonparametric Data Envelopment Analysis (DEA). Three different approaches viz., intermediation approach, value-added approach and operating approach have been employed to differentiate how efficiency scores vary with changes in inputs and outputs. The analysis links the variation in calculated efficiencies to a set of variables, i.e., bank size, ownership, capital adequacy ratio, non-performing loans and management quality. The findings suggest that medium-sized public sector banks performed reasonably well and are more likely to operate at higher levels of technical efficiency. A close relationship was observed between efficiency and soundness as determined by bank's capital adequacy ratio. The empirical results also show that technically more efficient banks were those that have, on an average, less non-performing loans. A multivariate analysis based on the Tobit model reinforces these findings.

Sanjay J Bhayani 68 analyzes the performance of new private sector banks through the help of the CAMEL model. For the purpose, four leading private sector banks—ICICI, HDFC, UTI and IDBI—have been taken as sample. After making an analysis of the CAMEL parameters, the author has assigned ranks to
all the banks according to their performance in various parameters of CAMEL, and then he assigns them overall ranking. For the purpose of CAMEL analysis, the data of five years, i.e., from 2000-01 to 2004-05, has been used. The findings of the study reveal that the aggregate performance of IDBI is the best among all the banks, followed by UTI.

Sanjeev 69 studied efficiency of private, public and foreign banks operating in India during the period 1997-2002 using data envelopment analysis. He also studied if any relationship can be established between the efficiency and non-performing assets in the banks. He found that there is an increase in the efficiency in the post-reform period, and that non-performing assets and efficiency are negatively related.

Uppal 70 analyzed the profitability of four major bank groups, i.e., SBI and its associates (G-I), Nationalized banks (G-II), New private sector banks (G-III) and foreign banks (G-IV) in the post-reforms era and concluded that there is a significant difference in the profitability of various major bank groups. The average profitability is the highest in the foreign banks and new private sector banks and the PSBs are far behind in many parameters. From the correlation matrix, it is inferred that the lower profitability of PSBs is due to the significant and negative effects of burden, whereas it is the opposite in the case of new private sector banks having higher profitability due to the lowest burden and positive impact of interest income and expenditure. The study suggests some strategies, such as competitive strategies, customer focus, latest technology, effective HRM policies, capital planning, profit accountability, merger and acquisition, and autonomy, which are necessary for the survival of PSBs in the liberalized and globalized environment.
B.S Bodla, Richa Verma made an attempt to identify the key determinants of profitability of Public Sector Banks in India. The analysis is based on step-wise multivariate regression model used on temporal data from 1991-92 to 2003-04. The study has brought out that the explanatory power of some variables is significantly high. Such variables include NII, OE, P&C and Spread. The study has indicated that the variables such as non-interest income, operating expenses, provision and contingencies and spread have significant relationship with net profits. Among them two variables P&C and OE are found having negative relationship. However, some variables namely CD ratio, NPAs and BPE are found with low explanatory power. The study concludes that control over non-performing assets, operating expenses, provision and contingencies are major areas of concern for the management of public sector banks.

Manish Mittal and Aruna Dhide compares various categories of banks on their productivity and profitability. The study reveals that there is no remarkable difference in the spread ratio, there is significant difference in Burden ratio among the public sector and private sector and foreign banks. Those public sector banks that have been able to increase the productivity found themselves at par with the private sector banks.

Sathya Swaroop Debasish made an attempt to measure the relative performance of Indian banks over the period 2000-2007 using output-oriented CRR DEA model. The analysis uses eight input variables and six output variables. Segmentation of banking sector in India was done along Bank assets size, Ownership status and years of operation. Overall, analysis supports conclusion that foreign owned banks were on average most efficient and that new banks are more efficient that old ones, which were often burdened with old debts. In terms of size, smaller banks are globally efficient, but large banks are
locally efficient. Moreover, this study also concluded evidence of concentration of efficiency parameters among peer bank group.

Gurucharan S Pritam Singh and Susila Munisamy\textsuperscript{74} investigated the technical efficiency and productivity of the Indian banking sector over the period spanning 2002 to 2006 using data envelopment analysis. The variables used in this study are deposit and operating expenses as inputs while investments, loans and interest income are outputs. The empirical findings indicated that a wide diversity of efficiency and productivity exists among Indian banks. Their productivity estimates have shown that an overall productivity growth of 7.7 per cent over the span of 5 years. The Foreign banking group showed vast improvement of 11.6 per cent over the entire period. The Nationalised Banking group and the other commercial banking groups saw productivity improvements over the initial period but this was ploughed back when the trend reversed in 2006 and they regressed by 10.3 per cent and 5.2 per cent respectively when compared to year 2005. The static efficiency of the banks for each year reflects the patterns observed in the productivity measures. The CRR efficiency scores show that all the three group of banks are on a declining trend. The major source for the inefficiency is the inefficient utilization of resources while economies of scale play a secondary role. The foreign banking group is found to be more productive as compared with nationalized and private banking groups.

Sharad K and Sreeramulu M\textsuperscript{75} compared the employees productivity and employees cost ratio between the traditional banks from 1997-2008. The study concluded that the performance of the modern banks (foreign and New Private sector banks) was much superior to the traditional banks (public and old private sector banks). However, the gap between the performance of modern and
traditional banks on all the five variables (business per employee, profit per employee, employee cost to operating expenses, employee cost to total business and employee cost to total assets) has shown a decreasing trend, which has significantly reduced during the period of 12 years under study, on account of the measures taken by the traditional banks during the period.

H.P Mahesh, Meenakshi Rajeev 76 examined the changes in the productive efficiency of Indian commercial banks after the financial sector reforms initiated in 1992. Using stochastic frontier technique they estimated banks specific deposit, advance and investment efficiencies for the period 1985-2004. The results showed that the deregulation has significant impact on all the three types of efficiency measures. While deposit and investment efficiencies have improved advance efficiency has declined marginally. Public sector banks as a group ranks first in all the three efficiency measures showing that as opposed to the general perception, these banks are doing better than their private counter parts. Private Banks however have shown improvement during the post-liberalized period in terms of all types of efficiency measures.

H.P. Mahesh and Shashanka Bhide 77 examined the efficiency levels of Indian banks for the period 1985-2004. They employed stochastic frontier analysis to estimate banks specific cost, profit and advance efficiencies. Their results showed that while loan advance efficiency has not shown much improvement after deregulation, cost and profit efficiencies show varying trends for different bank groups. Public sector banks rank first in two of three efficiency measures, indicating that, as opposed to the general perception, these banks do not lag behind their private counterpart in their efficiency. Their results also showed that competition has a significant impact on the efficiency levels of commercial banks across all three efficiency measures. The authors opined that the impact of various factors captured in the study was based on performance in
a given setting, and the rapid changes in the financial sector will have an influence on the performance of the banking industry.

M Chandrasekar, Rajendra M. Sonar examined the effect of IT investments and related assets on the efficiency and total factor productivity of domestic banks, group-wise. Panel data of 29 banks constituting the public and private sector banks is analyzed. Insofar as total factor productivity change is concerned, new private sector, PSU and SBI group banks appear to score, in that order. Much of the low growth recorded across sectors is attributable to technological reasons, though managerial and scale inefficiencies too exist. Results for the study period indicated that private sector banks had a slight edge over their industry counterparts. However, the results indicated that on the technology front as well as in exercising managerial control substantial scope exists for improvement across the sectors.

Nageshwar Rao and Shefali Tiwari have made an in-depth study on the efficiency in the public sector banks and the factors responsible for their success and failure. The study evaluated the factors affecting efficiency of public sector banks using twenty-three variables employing product movement correlation. The study found that efficiency factors related to employees are not having a significant correlation with any of the efficiency output constructs i.e. deposits, assets and advances; the efficiency factor related to per branch is significantly correlated to all the output construct; efficiency factor related to liquidity are not having a direct impact on the output constructs of efficiency of public sector banks.

Omprakash K. Gupta, Yogesh Doshit, and Aneesh Chinubhai, analyzed the performance of Indian banking sector, measured and compared in two stages: through the construct of productive efficiency suing the non-parametric frontier
methodology, DEA and finding the determinants of productive efficiency through TOBIT model. Inputs and outputs are measured in monetary value and efficiency scores determined for the period 1999-2003. The study showed that SBI and its groups have the highest efficiency, followed by private banks and other nationalized banks. The results were consistent over the period, but the efficiency differences diminished over the time. The capital adequacy ratio was found to have a significantly positive impact on the productive efficiency.

Rasoul Rezvanian, Narendra Rao, Seyed M Mehdian examined the effects of the ownership on the efficiency, efficiency change, technological progress and productivity growth of the Indian banking industry over the period 1998 to 2003 using a nonparametric frontier approach. A host of best practice frontiers were constructed relative to which the performance of foreign-owned banks, private-owned banks and public-owned banks operating in India were assessed. The results indicate that foreign banks are significantly more efficient when compared to other banks, i.e. the privately-owned and publicly owned-banks. The findings also provide evidence to indicate that a large number of Indian banks operate below their optimal scale. Specifically, the Indian banking industry can be characterized by the existence of very few large, but inefficient publicly-owned banks along with many small size banks that would be able to improve their cost efficiency by expanding their scale of operations. The study concluded that in order to assist the Indian banking system to function more efficiently and be more competitive in the global marketplace, the Indian policy makers should create policies to encourage private ownership of banks, facilitate the entry of foreign banks and promote mergers and acquisitions among Indian banks. Such policies can help Indian banks increase their scale of operations and improve their cost efficiency.
Rudra Sensarma \(^2\) studied the effects of deregulation on the Indian banking industry using profit-based measures of performance using panel data of 83 Indian banks belonging to different ownership groups for the period 1986 to 2005. The study found that profit efficiency and productivity declined following deregulation. While public sector banks performed better than private banks in the pre-deregulation period, there was no difference in their performances after deregulation. Foreign and new private banks turned out to have the highest levels of profit productivity. The results were in contrast with the findings of previous studies that have found significant improvements in efficiency and productivity of Indian banks using cost-based measures of performance.

Saumitra N Bhaduri; KR Shanmugam \(^3\) analyzed the ownership – performance issue for the Indian banking sector during the post reform period (1992–2007). Results indicate that both foreign and domestic private banks are superior to their public counterparts with respect to four performance indicators namely, Return on Asset, Operating Profit Ratio, Operating Cost Ratio and Staff Expense Ratio. The one indicator in which the private banks are less efficient than their counterpart is Net Interest Margin. It was observed that foreign banks are superior to private banks, while the State bank group shows better performance among the public banks. The results also highlight a convergence in the performances across various ownership groups over the reform period. Furthermore, the competitiveness due to reform measures seemed to help the poor performing banks in reducing the performance gap. Since publicly owned banks still perform poorly, the authors opined that privatization seems to be an effective policy in improving the performance of Indian banks.

Sunil Kumar and Rachita Gulati \(^4\) evaluated the extent of technical efficiency in 27 public sector banks operating in India and to provide strict ranking of these banks. The study utilized two popular Data Envelopment
analysis models, namely, CCR model and Andersen and Petersen’s super efficiency model. The cross-section data for the financial year 2004/2005 were used for obtaining the technical efficiency scores. The results revealed that only seven out of 27 public sector banks are found to be efficient. Andhra Bank has been observed to be the most efficient followed by Corporation Bank. Further the banks affiliated with the SBI group turned out to be more efficient than the nationalized banks. The regression results incisively indicated that the exposure to off-balance sheet activities, staff productivity, market share and size are the major determinants of technical efficiency.

Sunil Kumar has endeavored to explore the relationship between Technical Efficiency (TE) and profitability in the Indian public sector banking industry based on cross-sectional data for 27 banks. The technique of Data Envelopment Analysis (DEA) has been utilized to compute the TE score for each bank in the year 2005. The mean level of TE for the industry is found to be 88.5 per cent. This implies that public sector banks can produce 1.13 times as much output from the same inputs, if they operate at ‘efficiency frontier’. In 20 inefficient banks, the technical inefficiency ranges from 2.6 per cent to 36.8 per cent. Also, the banks affiliated with ‘State Bank of India Group’ outperform the banks belonging to the ‘Nationalized Banks Group’ in terms of operating efficiency. An analysis of efficiency–profitability matrix based on the efficiency scores and Return on Assets (ROA) reveals that 13 banks that fall in the ‘lucky’ and ‘underdog’ quadrants have the TE score below the industry average. The resource utilization process in these banks features the presence of considerable wastage of resources. The ‘ace’ quadrant contains 9 banks which are flagship units in the industry in terms of both efficiency and profitability. Both Andhra Bank and Corporation Bank appear as an ideal benchmark for the laggards on the efficiency and profitability dimensions of performance evaluation.
Tianshu Zhao, Barbara Casu, Alessandra Ferrai \textsuperscript{86} examined the impact of regulatory reform on the performance of Indian commercial bank covering the period 1992-2004 by employing Data Envelopment Analysis (DEA)-based Malmquist Total Factor Productivity (TFP) index. The study also explores whether deregulation has had a different impact on the performance of public, private and foreign banks and whether it affected the risk-taking behavior of market participants. The empirical study revealed that, after an initial adjustment phase, the Indian banking industry experienced sustained productivity growth, which was driven mainly by technological progress. Banks’ ownership structure per se did not seem to matter as much as increased competition in TFP growth. Foreign banks appeared to have acted as technological innovators when competition increased, which added to the competitive pressure in the banking market. The results also indicated an increase in risk-taking behavior, along with the whole deregulation process.

Mihir Dash and Christable Charles \textsuperscript{87} investigated the technical efficiency of Indian banks, segmented in terms of ownership. Data Envelopment analysis was used with five input variables (VIZ. borrowings, deposits, fixed assets, net worth and operating expenses) and four input variables (advances & loans, investments, net interest income and non-interest income), and the efficiency scores were calculated for a sample of forty nine major banks operating in India. Data was obtained for the sample banks for the period 2003-2008. The results showed that foreign banks were slightly more efficient than public and private banks. Net worth was found to be under-productive for efficient private and foreign banks, while it was properly utilized by public banks. Fixed assets were found to be under-productive for efficient public and private banks. Operating expenses were found to be extremely under productive for efficient private and foreign banks.
Sunil Kumar and Rachita Gulati appraised the efficiency, effectiveness and performance of 27 public sector banks operating in India by using two stage performance evaluation models, using the cross-sectional data for computing the efficiency and effectiveness scores of individual public sector banks. The overall performance scores have been derived taking the product of efficiency and effectiveness scores. The empirical findings reveal that high efficiency does not stand for high effectiveness in Indian public sector banks. However, a positive and strong correlation between effectiveness and performance measures has been noted. On the efficiency front, Stat Bank of Travancore appears as an ideal benchmark, while State bank of Bikaner and Jaipur and State banks of Mysore emerged as ideal benchmark on the effectiveness front.

It is pertinent to note from the literature review that the earlier studies on the performance of banking sector, particularly in the aftermath of reforms reveals that the studies differed on several dimensions, i.e.,(selection of banks, period of study, choice of indicators, methodology, statistical tools and techniques ) so on and so forth. The distinctive feature of the study is that, it focuses on bank-group wise performance (scheduled commercial banks) as well as bank wise performance of all public sector banks in India in the reforms era (1991-92 to 2008-09). Secondly the study tries to capture performance on 30 indicators some of which are benchmark indicators for the industry. Thirdly, an attempt has been made to compare the performance of the banks on respective indicators and rank them accordingly. Furthermore these indicators have been cluster into three broad dimensions - Bank efficiency, employee efficiency, business and operational efficiency for convenience purpose. Thus the study distinguishes itself from the earlier studies from the above mentioned dimensions.

Section II
1.2 Research Design and Methodology

1.2.1 Need for the study

Following the reforms, the Indian banking sector has witnessed radical changes. During this period Public sector banks have initiated and implemented transformational changes in their business and HR policies and practices in order to align them with the macro level transformation in the business environment and also to enhance their competitiveness in the national and international milieu. One of the main objectives was to increase the productivity of employees. Almost all PSBs came out with voluntary retirement schemes to enable themselves to compete with their counterparts. Many banks have also taken steps to provide specialized training and knowledge sharing programmes, incentives for better performance evaluated on certain parameters, efficient performance appraisal, better promotion opportunities to deserving employees and creating an enabling working environment. Banks aimed at innovative ways of doing their business.

In the light of these changes and developments in the Indian banking sector, the present study makes an attempt to evaluate the performance of public sector banks in terms of productivity, profitability and business performance in the post reforms period. The study evaluates the performance of public sector banks in the post reforms period from 1991-92 to 2008-09.

1.2.2 Research Gaps

Banking research has been a topic of research for both academics and researchers for many years. Several studies have been carried out in the banking sector, particularly in the reforms era. However,
1. The studies were restricted to a few factors or a particular dimension. Moreover these studies have been restricted to either three, five or at the best ten years period.

2. Many of the studies included two or three sectors but confined to a few indicators/variables.

Thus an attempt has been made to bridge the gap by identifying select and benchmark indicators, grouping and analyzing them under three broad dimensions of performance, namely, employee productivity, bank productivity, business performance. Under each category a minimum of nine and a maximum of 11 indicators have been analyzed. This study therefore fills an important gap.

1.2.3 Scope of the Study

Against the backdrop of banking sector reforms, the research endeavors to evaluate the performance of Scheduled Commercial Banks, with particular reference to Public Sector Banks using 26 simple ratios. These ratios have been grouped under three broad categories, viz., Bank/Branch Productivity, Employee Productivity and Business Performance. The major groups of Scheduled commercial banks include i) SBI and Its Associates ii) Nationalized iii) Other Public Sector Banks (IDBI Bank Ltd) iv) Private Sector Banks (segregated into Old Private Sector Banks and New Private Sector Banks) and v) Foreign Banks. The scope does not include Regional Rural Banks.

1.2.4 Objectives of the study

The broad objective of the study is to assess the performance of Scheduled commercial banks with particular reference to Public Sector Banks in the context of financial and banking sector reforms.
1. To examine the major issues in the banking sector reforms and analyze their implication on banking industry with emphasis on public sector banks.
2. To make bank group-wise comparative analysis of performance of Scheduled commercial banks.
3. To evaluate and analyze the performance of the public sector banks in terms of bank productivity, employee productivity and business and operational performance.
4. To compare the performance of bank in the public sector banks category.
5. To discuss and conclude on the findings of the study.

1.2.5 Hypothesis
Against the backdrop of banking sector reforms the following hypothesis has been developed:

The reform measures have brought an exemplary change in the performance of Scheduled commercial banks in general and Public sector banks in particular.

1.2.6 Data Base
The data required for the study was primarily obtained from ‘Performance Highlights of Banks’ a publication of the Indian Banks’ Association. The data was also retrieved from publications of different institutions like
1. Reports on currency and finance
2. Annual reports on trends and progress of banking in India
3. Reports on the basic statistical return
4. Reports on handbook of statistics on Indian economy
5. Reports on basic statistics relating to banking in India
6. RBI occasional papers
7. RBI monthly bulletins
8. IBA reports on performance highlights of public sector banks in India for the relevant period
9. IBA reports on performance highlights of private sector banks
10. IBA reports on performance highlights of foreign banks

1.2.7 Performance Indicators

A. Indicators measuring bank/branch efficiency:

1. **Deposits per branch (DPB)**: Total deposits/ Total number of branches. Deposit mobilization is one of the key objectives of a bank. Its efficiency is calculated in terms of deposits per branch. A higher ratio is a good indicator of efficiency of the bank and vice versa.

2. **Advances per branch (ABP)**: Total advances/ Total number of branches. The deposits are funds used for advancing loans and making investments. This in turn brings income to the bank. Its efficiency is calculated in terms of advances per branch. The higher the ratio, the more is the efficiency and vice versa.

3. **Business per Branch (BPP)**: Total deposits plus Total advances / Total number of branches. Business of bank includes sum of deposits and advances which is called turnover. The higher the ratio, the more is the business of the bank at branch level and thereby greater efficiency of bank at branch level.

4. **Income per Branch (IPB)**: Total income / Total number of branches. The total income of the bank comprises of the income derived from interest and discounts, commissions, exchange and brokerage, rent, net profit on sale of investments, net profit on revaluation of investments, income from non
banking assets and other income (commission on collections of bills, transfers on letters of credit, letting out of lockers and guarantees, commission on government business, consultancy and other services, brokerage on securities etc). A higher ratio is a good indicator for any bank.

5. **Profit per branch (PPB):** Net profit/ Total number of branches. Net profit is the difference between income and expenditure. It not only reveals profitability at branch level but at the same time indicates efficiency. A better ratio indicates good health and efficiency.

6. **Expenditure per branch (EXPB):** Expenditure / Total number of branches. Expenditure of the banks includes, expenses on interest paid on deposits, borrowings etc. salaries, allowances, provident fund, gratuity and bonus. It also includes expenses made for Directors’ and Local Boards Members’ fees, rent, taxes, insurance, lighting, law charges, postage, telegrams, stamps, auditors’ fees, depreciation on bank’s property, stationary, printing, advertisement, loss from sale of non-banking assets, and other expenditure. A lower ratio is the good indicator for any bank.

7. **Operating expenses per branch (OPEXPB):** Operating expenses/ Total number of branches. Operating expenses include establishment expenses, rent, taxes and lighting, printing and stationary advertisement and publicity, depreciation, insurance, etc. Operating expenditure is a part of total expenditure, which includes interest expenditure, provisions and contingencies, establishment expenses. This ratio reveals the true efficiency of each branch. The higher the ratio, the lower the profit and hence the efficiency.
8. **Establishment Expenses per Branch (EEXPB)**: Establishment Expenses / Total number of branches: Establishment expenses included expenses made on salaries, allowances, provident funds, bonus etc. Higher is the establishment expenditure; lower will be the profits in a branch and vice versa. This indicator is viewed in the context of business per-branch as well. Higher the business per branch may also be accountable for high establishment expenses per branch.

9. **Spread/Net interest margin per branch (NIMPB)**: Net-interest margin/ Total number of branches. Net interest margin is commonly termed as spread. The net-interest margin is the difference between the interest paid by the bank on their deposits and the interest earned on loans. It stands as a key indicator of the efficiency of the resource intermediation. Judged thus, net interest margin is the bread and butter of the banking. Too large spread in a deregulated environment indicates the absence of competition within the banking system and perhaps reflective of the existence of certain degree of monopoly on the part of the financial intermediaries. Therefore, the spread that is unduly high can impinge on the saving and investment potential of an economy. On the other side too low spread can affect the profit margins of the banks, putting requirement on their capital base. However, by and large higher interest margin per branch implies higher level of efficiency. Increase in spread per branch shows the increase in interest income of the banks.

10. **Priority sector advances per branch (PSAPB)**: Priority Sector Advances / Total number of branches. Priority sector advances include credit given to agriculture and small-scale industries. Priority sector also includes small road and water transport operators, retail trade, small business, professional and self employed. It also includes educational loans, advances to state sponsored corporation / agencies for lending to weaker section, housing loans for
weaker sections, pure consumption loans etc. Higher is the priority sector lending, higher is the contribution of the branch concerned to the service of the nation in the poverty eradication. But on the other hand this may also indicate that on account of subsidized credit and due to growing problem of NPAs in priority sector lending, the concerned banks’ income may be adversely affected.

B. Indicators measuring employee efficiency

Banking industry by nature is information intensive and human capital intensive. The productivity of employees is crucial for the overall efficiency of the banks.

1. **Deposits per employee (DPE):** Total deposits/ Total number of employees. Deposit mobilization is one of the key objectives of a bank. At the employee level, its efficiency is calculated in terms of deposits per employee. A higher ratio is a good indicator of efficiency at employee level.

2. **Advances per employee (APE):** Total advances / Total number of employees. The productivity of the employees in the banks is usually measured by this parameter. It is determined by the total number advances made by the bank with the total number of employees. Higher ratio is the efficiency of employee of any bank and vice versa.

3. **Businesses per employee (BPE):** Deposits + Advances / Number of Employees. The average business per employee is a proxy of employee’s productivity. The input is number of employees and output is the total business. This ratio therefore indicates input-output relationship. The higher the ratio, the greater is the efficiency of employees – the human element.
4. **Income per employee (IPE):** Total income/ Total number of employees. A higher rate of income has significant implication for the any bank. Higher ratio of income per employee is a prime indicator of good health of the bank.

5. **Profit per employee (PPE):** Net profit or loss/ Total number of Employees. Profit at the employee level is one of the basic indicators to measure the performance of a bank. It is not only a profitability indicator but also an efficiency indicator. A higher ratio indicates more profit per employee, which means greater efficiency of employees.

6. **Expenditure per employee (EXPE):** Expenditure / Total number of employees. It deals with the total expenditure of a bank in a particular year divided by the total number of employees. A lower expenditure per employee indicates higher level of efficiency of the bank.

7. **Establishment expenses per employee (EEPE):** Establishment expenses / Number of employees. Establishment expenses relate to expenditure on salaries and other allowances paid to the staff. In other words, establishment expenses include expenses made on salaries, allowances, provident fund and bonus, etc. The higher the expenses per employee, the lower will be the profit, which ultimately reduces the productivity of the employees.

8. **Spread /Net-interest margin per employee (NIMPE):** Net-interest margin/ Total number of employees. It is a key indicator of the resource intermediation of the bank. It is a sign of robust health for any bank. Higher
the ratio of net interest margin per employee is a good indicator of efficiency of any bank and vice versa.

9. **Priority sector advances per employee (PSAPE):** Priority sector advances / Total number of employees) Priority sector advances include credit given to agriculture, small scale.

C. *Indicators measuring Business and operational efficiency*

1. **Return on Assets (ROA):** Net profit or loss/ Total assets x 100. Assets of a bank include cash in hand, balances with RBI, balances with banks in India, money at call and short notice, balance with banks outside India (only in case of PSBs). They also include total investments, total advances, fixed assets (premises, fixed assets under construction, etc.), other assets example, net inter-office adjustments, interest accrued, tax paid, stock of stationery and stamps, etc. Return on Assets is the ratio of net profit to total average assets. This is the main indicator of profitability used in international comparisons and also given under the RBI guidelines for balance sheet analysis.

2. **Credit- Deposit Ratio (CDR):** Credit/ Deposit x 100. The higher the CD ratio, the higher is the credit deployment, and results in larger profits. According to RBI, CD ratio of 60 percent is considered as ideal.

3. **Establishment expenses to total expenses (EEXTE):** Establishment expenses are the second largest head of bank’s expenses. These expenses are subject to increase due to two factors- the increase in number of employees and in the scale of their emoluments. The ratio explains as to what percentage of total expenditure is used on establishment expenses.
4. **Interest income to total income (IITI):** Interest income is obtained from interest earning assets. Interest income is defined as earnings on advances, investments and on deposits with RBI and other accounts. Interest income of banks accounts for a large proportion of total earnings. It constitutes the most important source of the total income. The higher the ratio, the better is the profitability position.

5. **Non-interest income as a percentage to total income (NIITI):** Non-interest income / Total income x 100. Non-interest income is also called other income. This includes commission, exchange, brokerage, sale of investment, revaluation of investment, sale of land and buildings, exchange transactions, income earned by dividend, and miscellaneous income. Due to fall in interest rates on all deposits, interest income of all banks is declining. To improve its total income, banks are now concentrating on non-interest income activities. So, the higher the ratio better is the profit of the banks.

6. **Net-interest margin (Spread) as a percentage to working Funds (NIM):** Net-interest margin is also called Spread. Spread means interest earned minus interest expended. Higher the ratio better is the profitability position.

7. **Priority Sector Advance to total advance (PSATA):** Priority Sector advance to total advances. : Priority Sector Advances / Total advances. It is the share of Priority sector advances to total advances. Domestic commercial banks are required to lend 40 per cent of their adjusted net bank credit (ANBC) and foreign banks are required to lend 32 per cent of their adjusted net bank credit (ANBC) to priority sector activities as identified by RBI.

8. **Cost to Income Ratio (CIR):** The cost/income ratio is an efficiency measure used to measure how costs are changing compared to income - for example, if
a bank's interest income is rising but costs are rising at a higher rate looking at changes in this ratio will highlight the fact. The cost/income ratio reflects changes in the cost/assets ratio. The cost to income ratio indicates how profitably the funds have been deployed by the banks. The ratio reflects the ability of a bank to generate revenue from its expenditure.

9. **Operating cost to total assets**: This ratio indicates the amount of operating costs expended per unit of assets. This ratio is also used to represent the intermediation cost of banking system by some researchers. The logic for such usage lies in the fact that ultimately, the banks use these operating costs to generate assets (i.e., loans) from their available funds (i.e., deposits). A reduction in operating costs is expected to ultimately result in reduction in lending rates and also net interest margins, thereby facilitating greater credit off take, and hence, economic growth.

10. **Business per unit labor cost**: Unit Labor Cost measures the average cost of labor per unit of output and is calculated as the ratio of total labor cost to actual output. In broad terms, unit labor costs show how much output a bank receives relative to wages, or labor cost per unit of output. It is also the equivalent of the ratio between labor compensation per labor input (per hour or per employee) worked and labor productivity. Unit labor costs (ULCs) represent a direct link between productivity and the cost of labor used in generating output. A rise in an unit labor costs represents an increased reward for labor’s contribution to output. However, a rise in labor costs higher than the rise in labor productivity may be a threat to an economy's cost competitiveness, if other costs are not adjusted in compensation.

11. **Net non performing assets to total advances**: NPAs reflect the performance of banks. A high level of NPAs suggests high probability of a large number of
credit defaults that affect the profitability and net-worth of banks and also erodes the value of the asset. The NPA growth involves the necessity of provisions, which reduces the over all profits and shareholders value. Non-performing Asset (NPA) has emerged since over a decade as an alarming threat to the banking industry in our country sending distressing signals on the sustainability and endurance of the affected banks. Lower the ratio, better the soundness of the banks.

1.2.8 Statistical tools, data interpretation and inference
The data collected through the different documents was complied, computed and analyzed using appropriate statistical tools such as mean value, trend growth rate, regression analysis. Micro soft excel was used for computation of ratios and mean value. Statistical Package like SPSS was used for calculation of trend growth rate and regression analysis.

Mean ($\bar{X}$): The mean value is obtained by adding together all the items and by dividing this total by the number of items.

$$\bar{X} = \frac{X_1 + X_2 + X_3 + \ldots \ldots \ldots + X_n}{N} = \frac{X_n}{N}$$

Where,

- $\bar{X}$ = Arithmetic value
- $\sum X$ = Sum of all the variables
- $N$ = Number of variables

Trend Growth Rate: It is known as compound growth rate. But with this difference that it is worked out for a period on the basis of the value of variable for all the years. Therefore, it is considered to be a better estimate. For estimating the trend growth rate we can use the following equation:

$$\ln Y = a + bt + u$$
In Y = natural log of concerned variable

t = time period

u = error

e^b = growth rate

The above model was estimated by using ordinary least square (OLS) model. OLS is a method of regression which computes parameters a and b minimizing the squared error with respect to the parameters. Error means observed value of concerned variable – estimated value of concerned variable.

1.2.9 Schema of the study

The study is divided into seven chapters

Chapter I

Research Design

Against the backdrop of financial and banking sector reforms this chapter attempts to review the studies pertaining to performance evaluation of commercial banks in India with particular reference to efficiency, productivity, business performance of Commercial Banks in India. This chapter is divided into two sections. Section I aims to provide comprehensive review pertaining to the study, while section II deals with Research Methodology.

Chapter II

Evolution and Development of Commercial Banking in India

This chapter gives comprehensive overview of the Indian Banking Sector and its structural settings. An attempt has been made to reflect on the evolution and development in the history of Indian banking system. This chapter is divided into two sections. Section I deals with the evolution and developments in the Indian banking sector. Section II exemplifies with the universe of Indian banking and its structural settings.
Chapter III
Profile of Public Sector Banks in India
The thrust of this chapter is to provide a profile of public sector banks in India. As at the year 2009 there are 27 public sector banks in India. An attempt had been made to capture an overview of these banks highlighting achievements during their course of evolution.

Chapter IV
Performance of Scheduled Commercial Banks
This chapter attempts to evaluate the performance of Scheduled Commercial banks on two broad dimensions, i.e. Productivity and Operational /Business performance. The Scheduled Commercial banks are assessed according to their constituent groups, i) SBI group ii) Nationalized banks group iii) Old Private sector banks iv) New Private sector banks and v) Foreign banks). It has been organized in IV sections. Section I explains the different parameters used in the study and their respective trends. Section II undertakes the measurement of performance of SCBs in terms of bank efficiency. Section III assesses the employee efficiency of scheduled commercial banks. Section IV captures the business performance of Scheduled Commercial banks.

Chapter V
Performance of Public Sector Banks in India - State Bank of India Group
This chapter attempts to evaluate the performance of State Bank of India Group during the period from 1992-93 to 2008-09 on two broad dimensions, i.e. Productivity and /Business performance. The chapter has been organized in III Sections. Section I aims to assess the performance of SBI group in terms of bank productivity. Section II undertakes to measure the performance of SBI group in terms of employee productivity while Section III captures the business and operational performance of SBI group.
Chapter VI
Performance of Public Sector Banks – Nationalized Banks Group
This chapter attempts to evaluate the performance of Nationalized Banks Group during the period from 1992-93 to 2008-09 on two broad dimensions, i.e. Productivity and Operational /Business performance. The chapter has been organized into III sections. Section I aims to assess the performance of nationalized banks in terms of bank efficiency. Section II attempts to measure the performance of terms of employee efficiency while section III confines to the business and operational performance of Nationalized banks.

Chapter VII
Summary and Suggestions
This chapter discusses and summarizes the key findings of the study.

1.3 Limitation of the Study
The researcher does not see any limitation per se. Apart from the quantitative aspects; the study has taken into consideration a few qualitative aspects i.e. the views of bankers with more than 25 year of experience with regard to the challenges and issues in the banking sector consequent to reforms. However, due to paucity of time, only a few bankers could be approached.
References


