Chapter 3: Review of Literature
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3.1 Overview of the chapter

Over the past half a century, banking efficiency has been a hot research topic and extensive literature has been carried out in developed nations. The focus of efficiency research in developed countries has been on the implications of efficiency results for financial institutions in the areas of government policy, such as deregulation, bank failure, merger and acquisition, and so on (for an extensive review of literature on the subject matter, see Berger et al., 1993; Berger and Humphrey, 1997; Berger and Mester, 1997; Ashton and Hardwick, 2000; Casu and Molyneux, 2001; Mokhtar et al., 2006 Kwan and Eisenbeis 1997;Altunbas et al. 2000;Williams 2004; Rao 2005; Chang and Chiu 2006; Altunbas et al. 2007; Pasiouras 2008; Murinde and Zhao 2009; Papanikolaou 2009; fiordelisi, Marques-Ibanez, and Molyneux 2011. Further, in the last two decades, reforms in Indian banking sector have also attracted various mergers and acquisitions, which has attracted researchers and policy makers to study the effects of various reforms on bank performance. This chapter reviews the empirical literature on the benefits of mergers focuses on the changes in the cost efficiency using accounting data.

Rhoades (1987) examined the impact of mergers on the ratios of net income before extraordinary items to assets and non-interest expenses to assets. He ran probit analyses with dummy variables distinguishing non-acquired banks from
banks acquired by multi-bank holding companies as the dependent variable. Performance measures and several control variables serve as the independent variables. He found that neither income nor non-interest expenses were affected by merger activity.

Rhoades (1993) is conducted with 13 acquisitions involving billion dollar banks. Based on all his study, Rhoades concluded that no performance effect due to mergers.

Brewer et al. (1990) stated that the structure of the U.S banking industry was changed dramatically by the bank consolidation in the 1990s due to the mergers whereby the total number of banks has been reduced significantly. Mergers also led to the increased market share of large banks. They also found that the difference merger motivations affects merger bid premiums that the acquiring banks are willing to offer for the targets. They also suggested that the targeted banks more likely to offer a larger bid premium; by targeting higher profits through higher returns on assets and/or returns on equity. Besides, bid premiums and the announcement-period abnormal stock returns can be positively correlated with the long-term performance of the merged banks, if the market participants able to identify in advance the improved performance associated with bank acquisitions.

Srinivasan and Wall (1992) examined all commercial bank and bank holding company mergers occurring between 1982 and 1986. They found that mergers did not reduce non-interest expenses. Srinivasan (1992) reached a similar conclusion.
Linder and Crane (1992) analyzed the operating performance of 47 bank-level intrastate mergers that took place in New England between 1982 and 1987. Of the 47 mergers in the sample, 25 were consolidations of bank subsidiaries owned by the same holding company. The authors aggregate acquirer and target data one year before the merger and compare it to performance one and two years after consolidation. The performance of merged banks was adjusted by the performance of all non-merging banks in the same state as the merging entities. The results indicated that mergers did not result in improved operating income, as measured by net interest income plus net non-interest income to assets.

Berger and Humphrey (1992) examine mergers occurring in the 1980s that involved banking organizations with at least $1 billion in assets, using frontier methodology\(^6\) and the relative industry rankings of banks participating in mergers. They found that, on average, mergers led to no significant gains in X-efficiency and also conclude that the amount of market overlap and the difference between acquirer and target X-efficiency did not affect post-merger efficiency gains.

DeYoung (1993) also utilized frontier methodology to examine cost efficiency and reached similar conclusions as Berger and Humphrey. In addition to similar findings as Berger and Humphrey, he argued that improvements were unrelated to the difference between acquirer and target efficiency. However, DeYoung found that when both the acquirer and target were poor performers, mergers resulted in improved cost efficiency.
Robert DeYoung (1997) estimated pre- and post-merger X-inefficiency in 348 mergers approved by the OCC in 1987/1988. Efficiency improved in only a small majority of mergers, and these gains were unrelated to the acquiring bank’s efficiency advantage over its target. Efficiency gains were concentrated in mergers where acquiring banks made frequent acquisitions, suggesting the presence of experience effects.

Rhoades (1993) conducted a thorough examination of in-market mergers taking place between 1981 and 1986. He performed regression of the change in several performance measures on control variables and dummy variable differentiating banks that engaged in an in-market merger from those that did not. He also conducted several logit analyses where the dependent variables measure whether the efficiency quartile of a bank increased, decreased, or remained unchanged. He found, in both model, cost reductions and efficiency gains were not significantly related to horizontal mergers.

Madura and Wiant (1994) “studied abnormal returns of acquirers over a long period of time following the merger announcement. They find that average cumulative abnormal returns of acquirers in a sample of 152 deals taking place between 1983 and 1987 were negative during the 36-month period following the merger announcement. Moreover, abnormal returns were negative in nearly every month. Acquirer losses around the time of the announcement may reflect a loss of wealth from an overly generous acquisition price. Negative abnormal returns in months after the announcement, however, are not likely to be due to
the price. They seem more attributable to either the merger achieving fewer benefits than projected, or the market revising downward its expectations for the merger.

Spindt and Tarhan (1993) found gains in their sample of 192 commercial bank mergers completed in 1986. They performed non-parametric tests comparing the performance changes of merged banks with a group of matched pairs indicating that mergers led to operating improvements. Spindt and Tarhan's results were based on a sample that is dominated by mergers involving banks of a relatively smaller size. Because the results may be driven by economies of scale at small institutions, it is unclear whether their findings are relevant to larger M&A case, which drastically transforming the banking and financial industry.

Houston and Ryngaert (1994) examined abnormal returns from four days before the target was initially declared a takeover candidate (by any bank) to the announcement day. In their sample of 153 mergers announced between 1985 and 1991, acquirers suffered a loss in value and target firms enjoyed gains. However, there was no significant aggregate effect on the overall value of the two organizations. The amount of value that was created was reaching its highest when acquirers were strong *ex ante* merger performers and when substantial overlap existed. This relationship of value creation with the degree of overlap is consistent with the market expecting mergers best suited for improved efficiency or increased market power to experience the greatest level of *ex post* merger benefits.
Zhang (1995) on U.S. data contradicted most abnormal return studies. Among a sample of 107 mergers taking place between 1980 and 1990, he found that mergers led to a significant increase in overall value. Although both merger partners experienced an increase in share price around the merger announcement, target shareholders benefited much more on a percentage basis than the acquiring shareholders. Cross-sectional results suggest that increases in value were smallest when improved efficiency and increased market power were expected to have their greatest potential impact. Changes in value has also decreased as targets got larger relative to acquirers and as the amount of geographic overlapped between acquirers and targets increased. The latter finding is consistent with diversification creating value.

Vennet (1996) found that domestic merger among equal-sized partners significantly increase the performance of merged banks. This type of merger provides ample opportunities to reduce redundancies and exploit synergies, and thus raised the operational efficiency and profit level of the merged banks. The study was conducted based on 422 domestic banks takeovers in ten European countries.

Pilloff (1996) combined both approaches found in the literature to analyze a sample of 48 mergers of publicly traded banking organizations that merged between 1982 and 1991. Pilloff obtained results that are consistent with the bulk of the merger literature. In general, mergers were not associated with any significant change in performance, suggesting that managers were unable to generate benefits from deals on average. This results apply as well in the
banking and financial industry. Moreover, the mean overall change in shareholder value was also quite small. Although there was no average change in either operating performance or shareholder value, there was a great deal of variation among banks. Some mergers proceeded successfully and others might show mixed evidence or unsuccessful results.

Pillof and Santomero (1996) stated that consolidation can reduce cost if economies of scale are achieved. If redundant facilities and staffs are eliminated during the post-merger organization, the larger institutions may become more efficient. In addition, cost can be reduced if bank offer several products at a lower price compare to when separate bank offer individual products. They also agreed that there is no significant gain in value or performance from the consolidation. Besides, as there is no correlation between changes in accounting-based performance measures and stock market returns around the merger announcement, thus the market is unable to accurately forecast the success of individual mergers. Moreover, the consolidation in the United States indicates nothing to prove that bank merger have impacts towards improvement in the performance. They also suggest that misguided view of one's own managerial talent has lead to the restructuring of the world financial structure. People do not really understand what actually happened in a consolidation process. However, a specific and through assessment on management process in the agreement about a consolidation can avoid this problem.
Akhavein, Berger, and Humphrey (1997) analyzed changes in profitability experienced in the same criteria of large mergers as examined by Berger and Humphrey. They found that banking organizations has significantly improved their profit efficiency ranking \textit{ex post} mergers. However, rankings based on more traditional ROA and ROE measures that exclude loan-loss provisions and taxes from net income did not change significantly following consolidation.

Rhoades (1998) studied nine large bank mergers occurred since the mid-to-late 1980s and early 1990s. The key findings were: (1) significant cost cutting objectives were achieved; (2) four of the nine mergers showed clearly efficiency gains and (3) seven of the nine mergers exhibited improvement in return on assets. All the merged firms indicated that actual savings met or exceeded their expectations. Most of the firms projected that cost savings would be fully achieved within three years after merger.

Barr et al. (1999) evaluated the productive efficiency and performance of U.S. commercial banks over the period 1984 to 1998 using a constrained multiplier, input-oriented Data Envelopment Analysis (DEA) model. They found that the relationships between efficiency of inputs and outputs are strong and consistent, as well as independent measures of bank performance. They also discovered that the impact of varying economic conditions is mediated to some extent by the relative efficiencies of the banks that operate in these conditions. In recent years, changes in the regulatory environment, huge growth in off-balance sheet risk management financial instruments, the introduction of e-commerce and on-line banking, and significant financial industry consolidation have made the U.S.
banking industry highly competitive. The bank examiner ratings determine that there is a close relationship between efficiency and soundness.

Berger et al (1999) reviewed more than 250 references in the context of financial services industry consolidation and found that consolidation appears to increase profit efficiency. There was little or no cost efficiency improvement on average following M&As. Consolidations involving inefficient firms appeared to improve both cost and profit efficiency as the M&A event may have woken up management to the need for improvement.

Avkiran (1999) analysed four cases of banks’ mergers in Australia. Though acquiring banks were more efficient than target banks, the acquiring bank did not always maintain its pre-merger efficiency. Hence, the role of mergers in efficiency gains was not necessary positive. However, they noted that in one of the banks’ mergers, there was a gradual rise in efficiency after the merger.

Haynes & Thompson (1999) used a panel of 93 UK building societies over the period 1981 to 1993 and noted significant productivity gains, apparently rising over a period of six years or more subsequent to the acquisition itself.

Liu & Tripe (2001) also performed DEA analysis on six bank mergers cases in New Zealand and found that most banks achieved efficiency gains post merger.

Houston et al (2001) took a sample of 64 bank mergers in US during the period 1985 to 1996 and observed that post-merger operating performance of the banks had improved via increases in average pre-tax return on assets.

Grigorian and Manole (2002) applied Data Envelopment Analysis (DEA) to bank level-data from a wide range of transition countries to measure the commercial
banks efficiency (by stressing profit maximization and provision of transaction services as banks’ primary objectives). DEA results imply that banking sectors with few large and, well capitalized banks have more chance to generate better efficiency and higher rates of intermediation. They argued that it is necessary to model various types of functions performed by banks, and control for the inputs necessary to provide a certain level of utility to owners (profits) and depositors (services) in order to fully assess the efficiency of commercial bank operations. They also implied that privatization of banks does not guarantee significant improvements in efficiency.

Tan and Hooy (2002) examined the main aspects of the Malaysian bank merger program, and studied the effects of the consolidation on the volatility of Malaysian bank stock returns by using General Autoregressive Conditional Heteroskedasticity (GARCH) model. They found that the bank’s stock prices and returns become more stable (after the initial consolidation announcement), based on the estimation of conditional variances. Before the announcement, there was a persistent positive risk returns tradeoff and asymmetrical news effects in the bank stock. However, bank stocks faced a huge reduction in the volatilities and the asymmetrical news effects, after the announcement.

Ping-wen Lin (2002) findings proves that there is a negative correlation and statistical significance exist between cost inefficiency index and bank mergers; meaning banks engaging in mergers tend to improve cost efficiency. However, the data envelopment analysis empirical analysis found that bank mergers did not improve significantly cost efficiency of banks. In another study, he found that
(1) generally; bank mergers tend to upgrade the technical efficiency, allocative efficiency, and cost efficiency of banks; however a yearly decline was noted in allocative efficiency and cost efficiency. (2) In terms of technical efficiency and allocative efficiency improvement, the effect of bank mergers was significant; however, in terms of cost efficiency improvement, the effect was insignificant.

Kadir et al. (2002), examined the total factor productivity (TFP) and technical efficiency of 32 finance companies in Malaysia from year 1988 to 1996 by using similar framework. They however concluded that the major source of overall economic growth and welfare improvements is productivity growth. It is thereby necessary to understand and examine the level of productivity of each decision-making unit. Their research also shows that average output of the finance companies grew at 20.77% per annum. They also found that the productivity of all finance company decreased by 1.3% per annum. Thus, to increase their technical efficiency, finance companies need to save and reallocate their existing resources.

Khong and Habibullah (2002) studied the effects of bank mergers on productivity in 1990s using the multilateral productivity index and found that, for the period 1989 to 1999, the local banks was less productive compared to the foreign commercial banks. Acquiring banks have higher productivity level than targeted banks, due to the bank mergers. In other words, productivity as a whole should be improved as mergers have been seen as acquisition of less productive banks by more productive banks. Since 1989, banks have less incentive to operate efficiently due to government interventions. However, the Bank Negara Malaysia
idea to strengthen the local financial institutions through consolidation is most welcomed. The steps are crucial since the new merger entity needs time to obtain the benefit from bank mergers.

Alias et al. (2002) analyzed the efficiency and productivity of Indonesian commercial banks from year 1991 to 1999 using Data Envelopment Analysis (DEA) and the Malmquist productivity index. They explained that, although there was a decline in productivity in 1997, due largely to the financial crisis, the technical efficiency and productivity still grew at the frontier over the period. They also stated that the level of efficiency and productivity of the bank is not really reflected by the structure of the commercial banks (in terms of assets sizes and total loans). Regarding to technical efficiency results, respective banks need to manage their inputs and avoid wastage as the bank assets is identified as the main source of inefficiencies.

Shih (2003) contended that merging failing banks is likely to create banks more likely to fail than the predecessor banks but merging relatively healthy banks is likely to create banks less likely to fail. He added that when banking sector is relatively healthy, there is no urgency for policy makers to strengthen the banking sector. During the 1997-1998 Asian economic crisis, policy makers were likely to take interventionist measures, such as encouraging or forcing banks to merge. In this situation, bank mergers would likely create even weaker banks and worsen the banking sector crisis.

Krishnasamy et al. (2003) examined the changes in productivity of the merged 10 Malaysian banks in the period of 2000 and 2001 by utilising non-parametric
methodology, Data Envelopment Analysis (DEA) and Malmquist total factor productivity index (MPI). Results revealed that total factor productivity increased in all eight banks except for EON bank, which remained the same whilst Public bank recorded a decrease in productivity. These findings were supported by Sufian (2004) in which he used DEA analysis and concluded that Malaysian banks achieved overall efficiency during 1998 to 2003, in particular the small and medium size banks.

Diaz et al. (2004) carried out empirical analysis of 181 acquisitions of European Union financial entities during the period 1993-2000. They observed acquisition of financial entities can increase profitability. There is a lag of at least two years between the acquisition and the increase in performance.

Amel et al. (2004) also found no clear evidence that M &As result in cost reduction. They noted that empirical evidence suggested commercial bank M &As did not significantly improve cost and profit efficiency. There was general consensus that consolidation in financial sector was beneficial up to certain size in order to reap economies of scale.

Knapp et al. (2006) studied 80 mergers in US during the years 1987 to 1998. Results showed that bank holding company mergers do, on average benefit the shareholders of the acquiring bank. Acquirer is found to be more profitable after a merger.

Weiguo& Ming (2008) paper uses DEA (Data Envelopment Analysis) for analyzing commercial banks’ efficiency, top five American banks and four
Chinese banks and concluded that merger and acquisition (M&A) has greater impact on banking efficiency of Chinese banks than that of American banks.

Peng & Wang (2004) study addresses on the cost efficiency, economies of scale and scope of the Taiwanese banking industry, specifically focusing on how bank mergers affect cost efficiency. Study reveals that bank merger activity is positively related to cost efficiency. Mergers can enhance cost efficiency, even though the number of bank employees does not decline. The banks involved in mergers are generally small were established after the banking sector was deregulated.

Lin et al. (2006) found that merger and acquisitions (M&As) in US banking firms increased firms’ performance. M&As can be an effective growth strategy for banking firms. Most banking mergers can contribute to firm productivity, shareholders value and profitability.

Knapp, Gart & Chaudhry (2006) research study examines the tendency for serial correlation in bank holding company profitability, finding significant evidence of reversion to the industry mean in profitability. The paper then considers the impact of mean reversion on the evaluation of post-merger performance of bank holding companies. The research concludes that when an adjustment is made for the mean reversion, post-merger results significantly exceed those of the industry in the first 5 years after the merger.

Campa & Hernando (2006) evaluated the performance record of M&As that took place in the European Union financial industry during the period 1998-2002. They found that M&As usually involved targets with lower operating performance than
their average in their sector. Target banks showed significant improvement in return-on-equity and net financial margin. These improvements were noted after two years the transactions were completed.

Hassan & Lawrence (2008) investigates the cost and profit efficiency effects of bank mergers on the US banking industry. He used non-parametric technique of Data Envelopment Analysis (DEA) to evaluate the production structure of merged and non-merged banks. The empirical results indicate that mergers have improved the cost and profit efficiencies of banks. Further, evidence shows that merged banks have lower costs than non-merged banks because they are using the most efficient technology available (technical efficiency) as well as a cost minimizing input mix (allocative efficiency).

3.2 Indian Literature

A few researchers like Bhattacharyya et al. (1997b), Mukherjee et al. (2002), Sathye (2003), Ram Mohan and Ray (2004), Das and Ghosh (2006) and Mahesh and Rajeev (2009) concluded that banks with public ownership are more efficient than their private counterparts, while others like Khatri (2004), Chakrabarti and Chawla (2005), Chatterjee and Sinha (2006) and Mittal and Dhingra (2007) have concluded that private sector banks are relatively best performers.

Noulas and Ketkar (1996) measured the efficiency of public sector banks of India by using the Data Envelopment Analysis. The study considered 18 public sector banks and the necessary information for analysis have been collected from the RBI publications for the year 1993. The study identified that pure technical efficiency was 1.5 percent and scale inefficiency was 2.25 percent and none of
the banks were operating under decreasing returns to scale. Bhattacharyya et al. (1997b) divulged that deregulation has led to an improvement in the overall performance of Indian commercial banks. Bhattacharyya et al. (1997a) also reported a positive impact of deregulation on the Total Factor Productivity (TFP) growth of Indian PSBs.

Ataullah et al. (2004) reported that the OTE of the banking industries of India and Pakistan improved following financial liberalisation. Ram Mohan and Ray (2004) found an improvement in the revenue efficiency of Indian banks. Also, they noticed a convergence in performance between PSBs and private sector banks in the post-reforms era.

Shanmugam and Das (2004) observed that during the deregulation period, the Indian banking industry showed progress in terms of the efficiency of raising non-interest income, investments and credits.

Reddy (2004; 2005) noted an ascent in the OTE of Indian banks during the deregulation period. Das et al. (2005) found that the efficiency of Indian banks, in general, and of bigger banks, in particular, improved during the post-reforms period. Chatterjee (2006) noticed a declining trend in the cost inefficiency of the banks during the post-reforms era. Sensarma (2006) noted that deregulation in the Indian banking industry (especially PSBs) reduced intermediation costs and improved TFP. Zhao et al. (2007) noted that, after an initial adjustment phase, the Indian banking industry experienced sustained productivity growth, driven mainly by technological progress. On comparing the effect of deregulation on the productive growth of banks in the Indian subcontinent (including India,
Pakistan and Bangladesh. Jaffry et al. (2007) concluded that technical efficiency both increased and converge across the Indian subcontinent in response to reforms.

Rezvanian et al. (2008) reported a ascent in cost efficiency in all ownership groups and industry as a whole. Furthermore the observed increase in cost efficiency has taken place due to allocative efficiency improvement rather than technical efficiency gains. Ketkar and Ketkar (2008) noted the efficiency scores of all banks, in general, improved regardless of their owners during the period of reforms. Also, the nationalised banks have registered the strong gains. These gains in efficiency have shown an improvement in bank profitability. RBI (2008) found that efficiency has improved across all bank groups during the study period and most of the observed efficiency gains have emanated after few years of reforms, i.e. from 1997/1998 onwards. Sahoo and Tone (2009) found that competition created after financial sector reforms generated high efficiency growth and reduced excess capacity the Indian banking sector. Though the aforementioned studies reflect a positive effect of deregulation on the efficiency and productivity of the Indian banking sector, there are also a few studies that report an adverse effect of a deregulatory environment on the performance of Indian banks. Kumbhakar and Sarkar (2003) concluded that a significant TFP growth has not been observed in the Indian banking sector during the deregulatory regime. Galagedera and Edirisuriya (2005) observed that deregulation has brought no significant growth in the productivity of Indian banks. Furthermore, PSBs have not responded well to the deregulatory measures. Das
and Ghosh (2006) found that the period after liberalisation did not witness any significant increase in the number of efficient banks and some banks have a high degree of inefficiency during the period of liberalisation. Sensarma (2005; 2008) pointed out that the profit efficiency of Indian banks has shown a declining trend during the deregulation period. In the literature on Indian banking, there are also a few studies that were carried out with the main objective of examining the impact of ownership on the efficiency of banks.

Keshari and Paul (1994) observed that foreign banks as a group have been found to be less efficient than domestic banks and the standard deviation of technical efficiency of foreign banks was slightly higher than that of domestic banks. However, the efficiency differences were not significant. Das (1997a) and RBI (2008) found no significant differences in any of the efficiency measures between PSBs and private sector banks.

Srivastava and Jain (2006) and Debasish (2006) found that foreign-owned banks are, on average, more efficient than domestic banks. Singh et al. (2008) found that foreign banks are more efficient and showed an efficiency improvement during the study period, while nationalised banks observed a fall in efficiency. Gupta et al. (2008) noted that SBI and its associates have the highest efficiency, followed by private sector banks and the other nationalised banks. A few studies also appear in the literature which exclusively concentrated on the efficiency of PSBs.
Noulas and Ketkar (1996) analysed the technical efficiency and Scale Efficiency of 18 PSBs and found that the majority of the banks operate under increasing RTS.

Das (1997b; 2000) found that the banks belonging to the SBI group are more efficient than nationalised banks. The main source of inefficiency was technical in nature, rather than allocative. However, PSBs have improved their allocative efficiency in the post liberalisation period.

Saha and Ravisankar (2000) noted that PSBs have, in general, improved their efficiency scores over the period of 1991/1992 to 1994/1995. Nath et al. (2001) generated 5 strategic groups for 27 PSBs using the DEA and Co-plot techniques. They noted that there is a positive association between efficiency and profitability and poorly performing banks are plagued with overstaffing, low productivity and inefficient training facilities.

Kumar and Verma (2003) observed that the technical efficiency of PSBs is positively related to higher profitability, a larger branch network and higher staff productivity. Mukherjee et al. (2003) found that the PSBs are delivering better services and better transform their resources into performance using superior service delivery as the medium.

Nandy (2007) found that Corporation Bank and Indian Overseas Bank are the star performers among the PSBs.

Sathye (2003) compared the efficiency of Indian commercial banks with the efficiency of foreign banks by employing a nonparametric approach of Data Envelopment Analysis. Annual data consists of 27 public sector commercial
banks, 33 private sector commercial banks and 34 foreign banks were considered for the analysis have been obtained from the Indian Banks’ Association for the year 1997-1998. The analysis revealed that public sector banks such as State Bank of India, and Bank of Baroda and Indus Ind private bank have been recorded with higher mean efficiency. But most of the Indian banks had lower mean efficiency as compared to the foreign banks. The study recommended that the bringing down non-performing assets and curtailing the establishment expenditure and rationalisation of rural branches could help Indian banks to improve their efficiency.

Shanmugam and Das (2004) analyzed the technical efficiency of banks in four different ownership groups in India by using stochastic frontier approach with specification of Cobb-Douglas production function. The analytical results in general indicated that due to technical inefficiency actual output of Indian banks was less than potential output and the State Bank of India group and private foreign group performed better than their counterparts.

Ataullah et al. (2004) compared the technical efficiency of commercial banks in India and Pakistan by employing the Data Envelopment Analysis for the period 1988-1998. The sample included all the commercial banks in India and Pakistan for which data for at least three years were available. The information for the analysis was obtained from the Reserve Bank of India annual reports and various issues of financial Analysis of Banks published by the Indian Banks’ Association and Banking Statistics of Pakistan published annually by the State Bank of Pakistan. The study identified that after 1995-1996 the overall technical
efficiency of the banking in both countries improved. In the case of India, efficiency increased due to improvement in both pure technical efficiency and scale efficiency, while in Pakistan it was due to an improvement in scale efficiency. The analysis also revealed that due to high non-performing loans in the asset portfolios of banks in the two countries a gap in efficiency has been created and the implementation of the financial liberalisation closed the efficiency gap between large and small banks.

Kumbhakar and Sarkar (2004) estimated the cost efficiency of public and private sector banks in India by using the stochastic cost frontier model with specification of translog cost function. The study used data of 50 banks for the analysis and necessary information have been collected from the various issues of the annual reports published by the Indian Banks' Association for the period 1986-2000. The empirical results revealed that deregulation not only increased the cost inefficiency but also affected the rate of fall in inefficiency of banks. During this period private banks were more efficient than the public sector banks.

De (2004) made an attempt to estimate the technical efficiency of public, private and foreign banks in both pre-reform as well as post-reform period by using the Stochastic Frontier Approach with specification of Cobb-Douglas production function. The study used panel data of 65 banks from 1985-86 to 1995-96 have been obtained from the various reports of Indian Banks’ Association. The results revealed that the liberalisation has no effect on the efficiency of Indian banking industry but foreign banks were more efficient compared to the public and private sector banks.
Mishra, Gordon and Peterson (2005) examined the contribution of the acquired banks in only the nonconglomerate types of mergers (i.e., banks with banks), and finds overwhelmingly statistically significant evidence that non conglomerate types of mergers definitely reduce the total as well as the unsystematic risk while having no statistically significant effect on systematic risk.

Bhan (2010) has made an attempt to study the insight into the motives and benefits of the mergers in Indian banking sector. This is done by examining the eight merger deals of the banks in India during the period of reforms from 1999 to 2006. Through the empirical methods by applying t-test and EVA value calculations the potential of the mergers has been evaluate to study the efficiencies or benefits achieved due to the merger. Through this paper and the sample taken for analysis it has been concluded that the mergers in the banking sector in the post reform period possessed considerable gains which was justified by the EVA of the banks in the post merger period.

Shobhana and Deepa (2011) made a probe into the fulfilment of motives as vowed in the merger deals of the nine select merged banks. The study uses Summary Statistics, Wilcoxon Matched Paired Signed Rank Test and ‘t’ test for analysis and interpretation of data pertaining to the five pre and post merger periods each. The result indicates that there has been only partial fulfilment of the motives as envisaged in the merger deals.

Dewan (2007) focused on the post merger financial performance of the acquirer companies in India and performance of firms going through mergers in Indian
industry. The merger cases for the year 2003 have been taken for the analysis. The financial data has been collected for six years from 2000-06. Pre-merger and post-merger financial ratios have been examined using paired sample t test. The results of the analysis reveal that there is significant difference between the financial performance of the companies before and after the merger. Further, it has been found that the type of industry does seem to make a difference to the post-merger operating performance of acquiring firms.

Pithadia and Menapara (2012) evaluated the impact of mergers and acquisitions on financial Performance of Indian Corporate Sectors and examined the impact of merger and acquisitions on Return on Investment, Profitability and Liquidity position of selected companies. The authors concluded that emerging from the point of view financial evaluation is that the merging Companies were taken over by companies with reputed and good management. And therefore, it was possible for the merged firms to turnaround successfully in due course.

Mantravadi& Reddy (2008) studied the impact of mergers on the operating performance of acquiring corporates in different industries, by examining some pre- merger and post-merger financial ratios, with the sample of firms chosen as all mergers involving public limited and traded companies in India between 1991 and 2003. The results from the analysis of pre- and post- merger operating performance ratios for the acquiring firms in the sample showed that there was a differential impact of mergers, for different industry sectors in India. Type of industry does seem to make a difference to the post-merger operating performance of acquiring firms.
Anand & Singh (2008) studied the impact of merger announcements of five banks in the Indian Banking Sector on the shareholder bank. These mergers were the Times Bank merged with the HDFC Bank, the Bank of Madurai with the ICICI Bank, the ICICI Ltd with the ICICI Bank, the Global Trust Bank merged with the Oriental Bank of commerce and the Bank of Punjab merged with the centurion Bank. The announcement of merger of Bank had positive and significant impact on shareholder’s wealth. The effect on both the acquiring and the target banks, the result showed that the agreement with the European and the US Banks Merger and Acquisitions except for the facts the value of shareholder of bidder Banks have been destroyed in the US context, the market value of weighted Capital Adequacy Ratio of the combined Bank portfolio as a result of merger announcement is 4.29% in a three day period (-1,1) window and 9.71 % in a Eleven days period (-5, 5) event window. The event study is used for proving the positive impact of merger on the bidder Banks.

Raiyani (2010) in her study investigated the extent to which mergers lead to efficiency. The financial performance of the bank has been examined by analyzing data relevant to the select indicators for five years before the merger and five years after the merger. It is found that the private sector merged banks are dominating over the public sector merged banks in profitability and liquidity but in case of capital adequacy, the results are contrary. Further, it was observed that the private sector merged banks performed well as compared to the public sector merged banks.
Sinha et al. (2010) in their study described the impact of mergers and acquisitions on the financial efficiency of the selected financial institutions in India. The analysis consists of two stages. Firstly, by using the ratio analysis approach, they calculated the change in the position of the companies during the period 2000-2008. Secondly, they examine changes in the efficiency of the companies during the pre and post merger periods by using nonparametric Wilcoxon signed rank test. The result revealed a significant change in the earnings of the shareholders, there is no significant change in liquidity position of the firms. The result of the study indicate that M&A cases in India show a significant correlation between financial performance and the M&A deal, in the long run, and the acquiring firms were able to generate value

Mantravadi and Reddy (2007) studied the impact of mergers on the relative size and operating performance of acquiring corporates by examining some pre- and post-merger financial ratios with a sample of firms chosen from all mergers involving public limited and traded companies in India between 1991 and 2003. The study used the following financial ratios: operating profit margin, gross profit margin, net profit margin, return on net worth return on capital employed and debt-equity ratio . The results suggest that there are minor variations in terms of the impact on operating performance following mergers, when the acquiring and acquired firms are of different relative sizes, as measured by market value of equity.
Natarajan and Kalaichelvan (2011) used the share price data and financial statements of eight select public and private sector banks, during the period between 1995 and 2004, this study examined M&A as a business strategy and to identify the relative importance of mergers on business performance and increased Shareholders wealth. The study showed that in a banking environment marked by frequent mergers, such transactions directly or indirectly effects the shareholders sentiments and increase market share (i.e.) mergers enhances performance and wealth for both the businesses and shareholders.

Joshi and Desai (2012) in their study measured the operating performance and shareholder value of acquiring companies and comparing their performance before and after the merger. They used Operating Profit Margin, Gross Operating Margin, Net Profit Margin, Return on Capital Employed, Return on Net Worth, Debt-Equity Ratio, and EPS P/E for studying the impact. They concluded that as in previous studies, mergers do not improve performance at least in the immediate short term.

In light of reviewing leading studies in the literature that discusses the effects of M&A on the financial performance of companies, prior studies can be categorized according to measures used to test such effects into four categories as follows: (i) marked measures-based studies, (ii) accounting measures-based studies, (iii) mixed measures-based studies, and (iv) qualitative measures-based studies. Analysis of previous studies reveals: The effect of mergers and acquisitions on the abnormal returns for both the acquiring and the acquired firms is inconclusive; where some studies reported insignificant improved abnormal
returns (Jensen & Ruback, 1983; Choi & Russell, 2004; Megginson et al., 2004). Yuce & Ng (2005) reported significant positive abnormal returns in Canada. On the other hand, few studies reported positive returns in high merger activity era and negative returns in low merger activity era (for example Tse & Soufani, 2001). Furthermore, results reported that M&A leads to a decline of abnormal returns after mergers and acquisitions (Jarrell and Poulsen, 1989; Rau and Vermaelen, 1998; Andre et al., 2004; Yook, 2004; Kling, 2006).

Studies that use accounting measures-based have inconsistent results; where some studies reported slight improvements in the financial performance at insignificant level (Choi and Harmatuck, 2006), other studies reported significant positive performance (Healy et al., 1992; Ghosh, 2002; Heron and Lie, 2002; Ramaswamy and Waegelein, 2003) or negative impact on financial performance (Mueller, 1980; Sun and Tang, 2000; Yeh and Hoshino, 2002; King et al., 2004). In addition, the analysis of the effects of M&A on performance revealed positive impact on specific aspects of performance and negative impact on other aspects of performance (for example, Gugler et al. 2003, who reported significant increase in profitability but negative effect on sales; Mantravadi and Reddy 2008, who reported increase in profitability and decrease in return on net worth).

Some studies showed inconsistent results in respect to industry type. For example, banking industry has experienced deterioration after mergers or acquisition (Berger and Humphrey, 1992; Rhoades, 1993; Kling, 2006) and railroad industry that was affected negatively by mergers in acquisitions (Sun and Tang, 2000) as well as the steel industry (Gallet, 1996). The construction
industry reports improvement in performance. (Choi and Russell, 2004; Choi and Harmatuck, 2006, Ismail et al., 2010).

There is a dispute regarding factors that affect the reported performance, where eight factors might affect performance: (1) the method of payment; Cash or Stock, (2) book to market ratio, (3) the type of merger or acquisition transaction; related or unrelated, (4) cross-border versus domestic M&A, (5) mergers versus tender offers, (6) firm size, (7) macro economic conditions, and (8) time period of transaction. All the above mentioned factors had collusion on their influence on performance among the previous studies as follows: Some studies that examine the type of payment argue that cash-financed transactions outperform stock-financed ones (Rau and Vermaelen, 1998; Andre et al., 2004; Megginson et al., 2004), while, other studies found no evidence that the method of payment has influence on the reported performance (Choi and Russell, 2004; Yook, 2004; Heron and Lie, 2002; King et al., 2004). The effect of book to market ratio has been tested, where very few studies reported that glamour acquirers -firms with low book to market ratio- under perform relative to value acquirers firms with high book to market ratio (Andre et al., 2004), while, other studies found no evidence for this belief (Rau and Vermaelen, 1998; Choi and Russell, 2004; Megginson et al., 2004).

The impact of the type of merger; related or unrelated, on post-merger performance has been supported by some studies (Gugler et al., 2003; Ramaswamy and Waegelein, 2003; Choi and Russell, 2004), whereas other
studies failed to prove the relation between industry relatedness and the reported
post-merger performance (King et al., 2004).

The impact of cross- border versus domestic M&A on post- mergers and
acquisitions performance reveals inconclusive results. Few studies argue that
cross-border leads to poor performance (Andre et al., 2004) but, some others
found no significant difference in cross-border deals than domestic ones (Gugler
et al., 2003).

Regarding the effects of firm size on post mergers and acquisitions performance,
the results suggest that there is no consensus in the literature on its impact. Very
few studies argue that there is a negative relationship between firm size and
post- merger financial performance (Ramaswamy and Waegelein, 2003).
Whereas other studies defend a positive relationship between firm size and post

The focus of academic literature has examined the effects of mergers on the
implied volatilities of stocks (Jayaraman, Madelker, & Shastri, 1991; Langetieg,
Haugen, &Whichern, 1980; Levy & Yoder, 1993; Smith, White, Robinson, &
Nason, 1997). Moreover, Bharath and Wu (2005), by investigating long-term
effects of mergers on the implied volatility of the acquirer, provided useful
information about the effects of mergers on volatility. In particular, they termed
the theory of mergers and acquisitions as a response to industry shocks. In fact,
Mitchell and Mulherin (1996) suggested that the theory claimed that merger
waves were a response to industry shocks caused by unexpected changes in
technology, demand, and barriers to entry, or movements in capital markets.
Thus, mergers can be considered as a response to the long-term increase in
volatility observed before the merger.

Keown and Pinkerton (1981) document strong evidence of excess returns earned
by investors in target companies prior to the public announcement of mergers.
They argued that abnormal price movement can be construed as evidence that the market reacted to the information ahead of its public announcement. Travlos (1987) explores the role of the method of payment in explaining common stock returns of bidding firms at the announcement of takeover bids. The results reveal significant differences in the abnormal returns between common stock offers and cash offers. The results are independent of the type of takeover bid, i.e., merger or tender offer, and of bid outcomes. These findings, supported by analysis of nonconvertible bonds, are attributed mainly to signaling effects and imply that the inconclusive evidence of earlier studies on takeovers may be due to their failure to control for the method of payment.

Franks, Harris and Titman (1991) investigate share-price performance following corporate takeovers. They use multifactor benchmarks from the portfolio evaluation literature that overcome some of the known mean-variance inefficiencies of more traditional single-factor benchmarks. Studying 399 U.S. takeovers consummated in the 1975–1984 period, they conclude that previous findings of poor performance after takeover are likely due to benchmark errors rather than mispricing at the time of the takeover.

Slimane (2012) analyzed the evolution of volatility in three emerging markets forming Euronext Stock Exchange, and found that in terms of volatility, the consolidation depended on the degree of integration with other financial places before its effective consolidation.

Pandey (2001) examines the issue of takeover announcements, open offers and their impact on shareholders’ value in the Indian corporate sector. Based on an empirical investigation of 14 large takeover related open offers, using event study methodology, he documented significant announcement effect (10 %) associated with the takeovers in the Indian capital market. He also found that target firm valuations increase in the short run up to announcement.

Dash (2004) examines the economic consequences of mergers with a view of resolving the conflict. It is found that modern mergers are primarily motivated by the firms with above industry-average performance and this trend continues to persist over the time. The event study methodology employed to assess the
extent of value creation by mergers during 1994-96, indicates that on an average, mergers lead to value destruction and destruction of value is greater in case of unrelated mergers.

Sehgal, Sangh and Choudhary (2005) examined the data from 31 Indian corporate restructuring events and found the existence of pre-event extra normal profits and leakage of information. In the post-event phase, the evidence was mixed, with only ‘Change in Management’ type events leading to significant gains.

Suresh, Thenmozhi and Vijayaraghavan (2006) conducted a study to see the stock market’s impact to 25 public announcements of both internal and external strategic decisions of Indian companies during January1, 2004 to May 31, 2005. The study concluded that the market penalized merger announcements substantially as the abnormal returns were negative, though not significantly different from zero on the days surrounding the event. The group means of the post announcement period were substantially lower than the means of the pre-announcement period, reflecting erosion in the firm value.

Anand and Singh (2008) analyzed short term shareholder wealth effects of the Indian bank mergers during the period 1999 to 2005. Event study methodology has been used to assess the impact on the firm’s stock prices. The results document positive and significant increase in value to the shareholders of bidder banks, target banks and their combined portfolio.

In the the results we have seen that the performances of most of the financial ratios are declining in the post merger period. Only the per formance of HDFC is something better in the post acquisition.

Shail Shakya, 2014 examine on specific regulatory issues associated with the merger and acquisition in banking sector in India and shall (on the basis of hypotheses) tend to explain various commercial issues annexed to it or incidental thereto. Some of the specific issues highlighted in the paper cover the merger policies of RBI, competition regulation issue between CCI and RBI, etc.
Mrs Sadhana Prajapati, 2010 analysed to ascertain the shareholder views, conducted an event study analysis of bank stock returns, which reveals that in the case of forced mergers, neither the bidder nor the target banks shareholders have benefited.

3.3 Latest Trends in Banking
The RBI has tried to follow the best global banking practices and for this it has taken steps to sharpen the tight norms and strengthened its supervisor mechanism. It has been seen considerable new processes and changes in the business of big commercial banks. Some of them have involved in the field of consumer credit, credit cards, merchant banking, internet and phone banking, leasing, mutual funds, loans etc. A number of banks have already established subsidiaries for merchant banking, leasing and mutual funds and many more are in the process of doing that. A few banks have started factoring business as well.

- Role of Information Technology (IT) and Customer Relationship Management (CRM) in Banking.
- Foreign Direct Investment (FDI) in India.
- Voting Rights of Foreign Investors

The recent trends in banking sector has elaborated by Mr Anil Khandelwal below in tabulated forms:

Table 3.1

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<th>Requirements</th>
<th>Fulfillments</th>
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<td></td>
<td>• ATM, Mobile banking</td>
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<td>Capital Norms</td>
<td>• Min. Capital @ 9% as against 8% by BIS</td>
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<td></td>
<td>• Indian banks are ahead in BASEL III readiness-implementation road map</td>
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<td>• Min. Capital requirement for entry set @ Rs 3 bn, for all banks in pvt sector</td>
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<td>Credit Information</td>
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<td>Financial Track Record</td>
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<tr>
<td>Other Regulatory Initiatives</td>
<td>• Strong Regulatory practices and prudence in place, for managing affluence</td>
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</table>
|                                 | • Regulatory Provisions to bring NBFC & UCB’s,
Capital mobilisation has become more significant for banking sector. Indian Banks Association (IBA) has inducted hybrid capital which has become more important. In order to get better performance and meet compliance standards, hybrid capital having characteristics of both equity and debt, has found application in other sectors by banks.

Mr Anil Khandelwal, CMD of Bank of Baroda said, “Use of hybrid capital may have its merits, The Finance Minister recently reiterated that banks will need to raise Rs. 60,000 crore additional capitals over the next five years”.

The BSE Bankex index has outshined the BSE Sensex for the last one year as well as the past six months. While the Sensex has risen 44% in the last one year (31% in past six months), the BSE Bankex has collected past with 57% gain (34% in six months). But, does this euphoria for Indian banking stocks justify investments at the current levels, in the scenario where the market conditions for credit growth is slowing, margins are under pressure and domestic interest rates are still high as compared to the practice in international markets? However, maintenance of margins has been and will remain a big challenge.

Anil Khandelwal, chairman and managing director (CMD), Bank of Baroda (BoB) has elaborated, "Indian public sector banks will have to work hard to maintain their margins."
However, a lower margin is not the case with PSBs alone as most private banks too have seen a dip in margins in the recent past. That is because, as term-deposit rates had moved up, the CASA (current and savings account) deposits, which are a source of low cost funds, fell for most banks. Going forward, how will margins scenarios pan out? The answers are not simple as it will depend on the movement in deposit rates and the lending rates. And, this is what experts have to say on interest rates.

Adds Khandelwal of BoB, "There is little possibility of interest rates declining as banks are increasing their balance sheet size with the financial year end (March) approaching."

Asset reconstruction business was initiated by IndusInd bank. The private-sector lender plans to partner asset reconstruction companies (ARCs) for this venture. "I think our new initiative, which is going to launch in the next two months, is about asset reconstruction. We will do asset reconstruction within the bank but in tie-ups with ARCs. The business plan is ready. We believe a huge stock of assets is coming into the ARCs as a business area that we need to look at and we will exploit," as per Mr Romesh Sobti, CEO and MD, IndusInd Bank.

The bank is looking to establish branches in London and Dubai to enhance its relationship with current customers who have business interests in West Asia and Europe. "We have a number of business relationships in these countries and it makes sense for us to have a presence there," as per Mr Mushtaq Ahmad, Chairman and CEO, J&K Bank.
“Export-Import Bank of India (Exim Bank) will increase its focus on supporting project exports from India to South Asia, Africa and Latin America”, as per Mr Yaduvendra Mathur, Chairman and MD, Exim Bank.

To conclude it all, the banking sector in India is progressing with the increased growth in customer base, due to the newly improved and innovative facilities offered by banks. FDI has provided a great fillip to the whole of banking sector industry as banks are now competing at a global level.

The above literature reveals the following research gaps:- (i) Most of the studies are related to developed countries such as U.S. and European countries, and the studies related to Indian context are limited. (ii) Secondly, the results of these studies display inconclusive results as some of these studies reveal mergers and acquisitions have positive effect on efficiency of banks and some other studies show negative effects and others demonstrate mixed and neutral effects. Besides, none of the studies are available in recent years and shown ownership and performance relationship in banking industry of India. (iii) Thirdly, most of the studies have used only one or few techniques to analyze the effect of mergers and acquisitions on firm value. However, the study is based on alternate measures and estimations reducing the chances of biasness arising from a specific methodology. Thus study attempts to fill in this gap by providing a
comprehensive and in-depth efficiency study for mergers in Indian banking sector.

The next chapter presents the methodology used to test the research framework and construction of the model for estimating the relationship. It discusses the data collection procedure, variable specification as well as the estimation issues.