Research on Profitability and Liquidity Position of Banks With Reference to Pre and Post-Merger

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Abstract---The main focus of the study was to evaluate the profitability and liquidity position of banks with reference to Pre and post-merger in India. The financial performances of the Indian banking sector has been evaluated using CAMEL approach and Data Envelopment Analysis. The study has employed a sample size of 17 banks, both national and private banks. Pre and post-merger phases for the period 1998-2016 have been examined through analyzing financial performance of each bank. The results have evaluated that HDFC bank ltd, Federal bank, and Bank of Baroda were efficient in terms of the financial performance as compared to other banks. Capital structure and customer requirements were enhanced by the efforts made by the banks.

Keywords--- Profitability, Liquidity, Banks, Financial Performance.

JEL Classification Codes: E5, E6, G2, M4

I. INTRODUCTION

Bank expansions are widely observed from the technical phenomena of merger and acquisitions, specifically for those banks that approach commanding heights in international financial markets. An appealing change is developed by bank mergers in the structure of banking industry. Thereby, Indian banks are establishing more branches and subsidiaries to acquire local banks and expand their operations throughout the country. It is understood that bidder banks in post-merger phase acquire vulnerable banks to compete in the market, and maintain their stability in terms of profitability and liquidity using mergers and acquisitions.

The financial performance is evaluated from the pre and post-merger of Indian banks. In recent years, the financial performance has mounted its height in post-merger phase. This mounting height has enabled Indian banks to accomplish its objectives. Pahuja and Aggarwal (2016) have examined the financial performance of Indian banks through merger and acquisitions. ICICI bank ltd was selected as a case study to examine the specific objective. The profitability and liquidity ratios have significantly predicted the increase in financial performance of Indian banks. Patel (2017) has examined that Indian banks can potentially accomplish their objectives and goals and can reduce their expenses to a significant number with the help of mergers and acquisitions.

Significance of the Study

Merger and acquisitions have deliberately enabled Indian banks to enhance their financial performance in post-merger phase. The financial performance of Indian banks has been emerged for selected banks in previous studies, which did not reveal comprehensively the performance of overall banking industry.

Merger and acquisitions have gained a dominant position among banking sector to raise their profitability index and to increase their financial position.

Therefore, the selection of 17 top positioned Indian banks was a positive step to examine the profitability and liquidity performance in post-merger period.

Additionally, a CAMEL approach was effective to determine the pre and post-merger analysis of selected banks. Financial performance efficiency for Indian banks is another aspect that consequently reflect the position of banks among banking sector. Data Envelopment Analysis is effectively used to determine the efficiency of Indian banks.

Problem Statement

Working capital management is a significant element of comprehensive corporate strategy to construct shareholder's value.

The aspects or approaches integrated within the corporate organizations in organizing working capital might have a considerable influence on both profitability and liquidity. It is a fact that sustaining liquidity is an important aspect, even though the major intention of the bank is to maximize its profit.

The problem here for banks is to retain the balance between profitability and liquidity to construct a positive shareholder value.

Thereby, the relationship between profitability and liquidity is essential to comprehend and establish appropriate decisions and working capital management (Ray, 2013). The study cohesively examined the relationship between profitability and liquidity and the financial performance of Indian banks for pre and post-merger years. The intention specifically lies to understand the financial indicators that explicitly revealed the financial performance of banks in banking sector.

Aim of the Study

This study aimed to examine the comparative analysis of profitability and liquidity of Indian commercialized and nationalized banks. Pre and post-merger period of these banks has been focused since 1998 to 2016.

Research Objectives

Examine the performance of banks for pre and post-merger period in terms of profitability and liquidity.

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II. LITERATURE REVIEW

Profitability

The bank's ability to increase the capital, using retained earnings is determined as profitability. In addition, profitability is used to determine the prospect growth of assets, endow return to investors, absorb loan losses, and support the future growth of assets. Net interest revenue is referred as the largest source of income for banks, in which interest income is calculated from lending activities. Investing activity is further a fundamental source for banks to generate profitability. The banking profitability is measured through net interest margin, return on assets, and return on equity, operating profit, and non-interest income to assets ratio(Mwizarubi et al., 2015).

Liquidity

The ability of bank in converting an asset to cash and unused bank lines of credit is determined as liquidity. It is also referred as securities and reserves of cash for banks. In order to meet all maturing unsecured debt obligations, liquidity should be sufficient enough throughout a one-year time horizon. Liquid assets to total assets, liquid assets to total deposits, demand deposits, customer deposits, and loan to customer deposits are used to measure the liquidity ratio of banks (Meena&Dhar, 2016).

Liquidity and Profitability Theories

The interplay between liquidity and profitability has been focused by numerous theories. The intention of these theories underlies efforts to investigate, whether there is a relationship between liquidity and profitability in banking industry. Bassey& Moses (2015) asserted that higher liquidity negatively affects the performance of banks, where they further implies that profitability is reduced by higher liquidity. Trade-off theory supported the assertion and implied that the risk of bank is eradicated through higher liquidity; therefore, the compensation premium is required to compensate the costs of bankruptcy for investors. Conventional corporate finance theories signified that optimal level of banking is desired by a bank in an equilibrium condition that exclusively ascertains costs and incentives by implementing a zero margin relationship. However, capital requirement enforces banks to possess liquidity for exceeding their private optimal level, if they are bonded and imposed by monetary authorities (Agbada&Osuji, 2013).

Ibe (2013) postulated that there will be no short-run relationship between the liquidity and profitability as it is a matter of fact that banks desire to attain their optimal liquidity through capital structure. Furthermore, there is no impact of liquidity found on profitability as first standard order conditions cannot modify the capital structure of banks. It indicates that banks must be exceedingly above the optimal liquidity level, when higher liquidity eradicates the profitability of banks. The paradigms for such condition can be emerged from the unexpected shock and regulatory requirements of the banking industry. Agbada&Osuji (2013) have asserted that high amount of cash attained by banks maximizes the safety of banks alongside the deposits they possess. However, the banks will experience certain illiquidity conditions, if customers desire for more cash in a particular period, where banks keep investing and attempting to expand their profitability. Thereby, a good portfolio mix is essential to reconcile the interplay between profitability and liquidity. The positive implication can be conducted by analyzing the circumstances and the objectives; thus, selecting a distinct and balanced asset portfolio (Almazari, 2014).

Empirical Evidence Between Liquidity and Profitability

The relationship between liquidity and profitability is profoundly determined in assorted aspects of banking industry. Alshatti (2015) has examined the effects of liquidity management on profitability in the Jordanian commercial Banks. Furthermore, the study identified negative relationship between two aspects of banking sector, asserting that liquid assets imposes a probability to reduce the costs comparatively to other assets. It is further examined that the analysis of corporate financial performance attained new essence when emerging the impact between market globalization and turbulent economic environment. Managers can effectively predict the future cash flows based on macroeconomic stability. In addition, a higher level of liquidity is sustained from high investment opportunities that observe the cash flow volatility among the unlisted companies and firms. The companies experience confrontation from the higher level of asymmetric information. Thereby, unanticipated financial complexities might be accomplished if banks sustain a high level of liquidity(Al-Nimer, et al., 2013).

Liquidity is vital to obtain the financial performance of banking industry; and to sustain and enhance the position of bank in the banking sector. On one hand, liquidity is considered as an essential element for the capital cost; however, on the other hand, it is an effective measure that assumes the risk of a bank. Receivable conversion period, cash conversion period, current ratio and inventory conversion period are important variables to measure the liquidity of banks. Al-Nimer, Warrad&Alomri (2013) have provided empirical evidence between profitability and liquidity of banking sector in which banks were investigated for the period of 1980-2000. Profitability and high net interest margin are comparatively related to the large over-heads and high amount of capital of banks. Effective determinants, including bank size and loans have positive impact on the profitability of banking sector. Saeed (2014) has analyzed the profitability and liquidity of European banks, using the dynamic panel models and pooled cross-sectional time-series models. The results determined that dynamic effects of profitability is affected on size, diversification, ownership and risk. Statistically significant relationship has been found between profitability and liquidity of Iranian banks specifically in the initial years of their activity.

The relationship between profitability and liquidity analysis of pre and post-merger among banks has been analyzed by numerous studies (Singh & Sharma, 2016; Meena&Dhar, 2016).

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However, these studies have not shown apparent structure of the analysis before and after the merger among Indian banks. The study conducted by Gattoufi et al (2014) notified a negative relationship between the liquidity level and the profitability of banks in Saudi Arabia. Ray (2013) has signified the importance of merger and acquisition in Indian banking industry. By considering the mergers, amalgamations, and acquisitions, the study has analyzed the growth of ICICI bank.

The study indicated that the banks had certainly devised an optimal strategy to augment its growth after post-merger phase. Mwizarubi, et al. (2015) has determined a positive relationship between profitability and liquidity of Ghana banks.

Therefore, this study intended to examine the profitability and liquidity analysis of pre and post-merger period among Indian banks.Patel& Shah (2016) have examined the mergers and acquisitions of Indian banking sector. The objective was to investigate the comparative position of pre and post-merger financial performance of selected Indian banks. Economic value added analysis has been used to examine the comparative position in selected banks. The results have determined that financial performance of banks is enhanced in post-merger years.

The benefits of merger and acquisitions have been examined in terms of wealth maximization, stock performance and financial performance. Jain (2016) has evaluated the financial performance of Indian banks after merging.

The objective was to examine the resultant effect of mergers and acquisitions on financial performance of IDBI bank and Oriental Bank of Commerce. Paired T test was used to examine the impact of merger and acquisitions on financial performance of both banks. The results have evaluated that there was significant enhancement in the financial indicators of both banks.

Return on net worth has negative impact on the financial performance of oriental bank of commerce; whereas, total assets turnover ratio was significant indicator of the bank. Conversely, return on net has a significant impact on the financial performance of IDBI bank where total assets turnover ratio showed reduction in the post-merger years.

III. METHODOLOGY& RESULTS

Period of Study

The study intends to examine the pre and post-merger period among Indian banking industry for selected 17 banks. These banks are selected to measure the profitability and liquidity for pre and post-merger phases for the period 1998-2016.

Source of Data

The data is collected for each bank from its annual reports and different financial reports of organizations. CAMEL rating system and Data Envelopment Analysis (DEA) are used to measure the profitability and liquidity of selected banks.Data envelopment analysis (DEA) is considered as a multifactor productivity analysis model, which is used to measure the relative efficiencies of decision making units (DMUs). In addition, linear programming technique rely on the non-parametric approach of data envelopment analysis that is used to assess the efficiencies of analyzed units. Inputs and outputs of decision-making units are measured through data envelopment approach to measure qualitatively and quantitatively.

A number of decision making units are represented through *w*hereas, inputs and outputs are represented through *m* and *s* respectively (Table 1). Equations 1 and 2 are mentioned below to represent the input and output parameters.

Table 1: Data Envelopment Indexes

Title	Sign	Interval;
Input	i	1,2,3,4
Output	r	1
Decision making unit	j	1,2,3

$$X_i = (X_{1i}, \dots\dots\dots, X_{mi})^T \geq 0 \quad (1)$$

$$Y_j = (Y_{1j}, \dots\dots\dots, Y_{sj})^T \geq 0 \quad (2)$$

IV. RESULTS

Pre and Post merger period have been used to evaluate the performance of banks merging with banks targeted for the analysis.

The main factors focused primarily were profitability and liquidity ratios. These factors were measured through different ratios to indicate the financial performance of banks.

Profitability Ratio

Table 2: Pre-merger analysis for Profitability ratios

Banks	ROA	ROE	Operating profit	Net income	Cost to income
HDFC Bank Ltd	0.352	6.448	2.14	4.98	20.884
ICICI Bank Ltd	0.644	8.122	10.754	2.39	8.116
ICICI Bank Ltd	0.668	8.27	12.004	2.416	8.312
Bank of Baroda	1.108	18.704	2.12	12.144	3.85
Punjab National Bank	1.114	11.422	29.914	8.342	23.464
Bank of Baroda	1.19	20.22	1.906	11.798	3.664
Oriental Bank of Commerce	0.82	12.112	15.32	2.454	14.878
IDBI Ltd	0.602	10.918	1.654	0.702	6.66
Centurion Bank Ltd	0.966	10.48	3.684	3.146	8.546
Federal Bank Ltd	0.656	11.84	3.062	8.856	52.852
IDBI LTD	0.6	10.8	1.838	0.668	7.774
Indian Overseas Bank	0.598	11.552	7.418	8.686	5.51
ICICI Bank Ltd	0.754	9.89	13.234	2.486	7.488
Centurion Bank of Punjab Ltd	0.75	12.54	3.036	3.762	8.014
HDFC Bank Ltd	0.5	6.802	2.472	7.318	25.152
ICICI Bank Ltd	1.001	10.373	12.84	2.658	6.285
Kotak Mahindra Bank	1.48	6.884	14.704	0.88	8.262

(Source: Researcher's calculated values based on the data from CMIE database and Indiastat.com)

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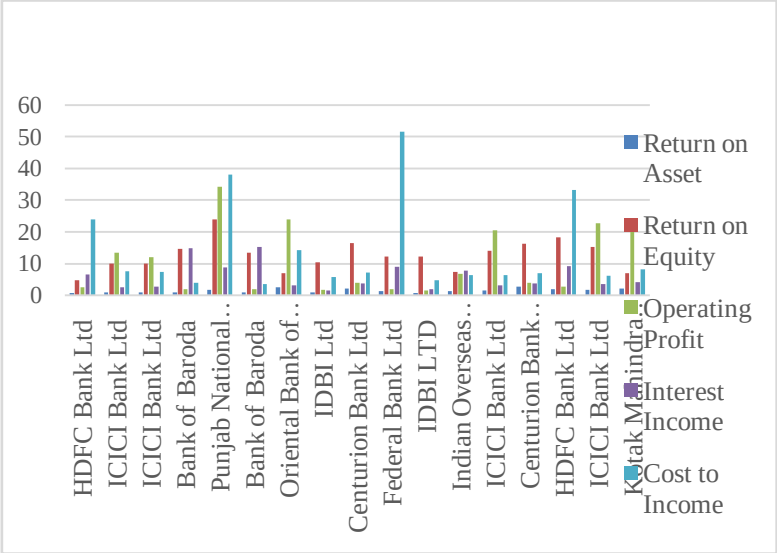

Figure 1: Pre-Merger Analysis for Earnings Quality

Table 3: Post-merger Analysis for Profitability Ratios

Banks	ROA	ROE	Operating profit	Net income	Cost to income
HDFC Bank Ltd	0.52	4.74	2.464	6.406	23.838
ICICI Bank Ltd	0.754	9.89	13.234	2.486	7.488
ICICI Bank Ltd	0.816	9.86	12	2.526	7.242
Bank of Baroda	0.858	14.45	1.738	14.832	3.854
Punjab National Bank	1.676	23.914	34.056	8.652	37.972
Bank of Baroda	0.776	13248	1.886	15.114	3.424
Oriental Bank of Commerce	2.44	6.816	23.88	3.066	14.154
IDBI Ltd	0.886	10.334	1.706	1.426	5.744
Centurion Bank Ltd	2.01	16.324	3.842	3.65	7.084
Federal Bank Ltd	1.128	12.12	1.846	8.924	51.526
IDBI LTD	0.698	12.158	1.5	1.888	4.692
Indian Overseas Bank	1.186	7.34	6.752	7.584	6.27
ICICI Bank Ltd	1.428	13.944	20.4	3.084	6.208
Centurion Bank of Punjab Ltd	2.632	16.062	3.782	3.704	6.818
HDFC Bank Ltd	1.786	18.12	2.6	9.164	33.132
ICICI Bank Ltd	1.54	15.117	22.69	3.3535	6.1615
Kotak Mahindra Bank	2.015	6.965	23.96	4	8.08

(Source: Researcher's calculated values based on the data from CMIE database and Indiastat.com)

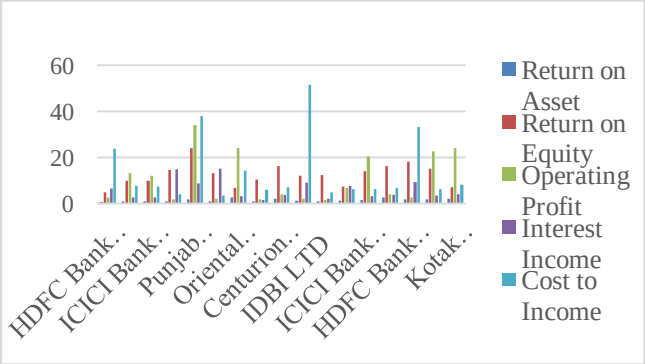

Figure 2: Post-Merger Analysis for Earnings Quality

Return on Asset

Return on Asset (ROA) provides different planning strategies to be implemented to increase the efficiency of the management.

It is represented as percentage and calculated by dividing a company's annual earnings by its total assets. The formula used to analyze ROA is given below:

$$ReturnonAsset = \frac{Totalearnings}{TotalAssets}$$

It has been evaluated that HDFC bank has acquired considerable performance for ROA, ROE, and net income after merger years.

The financial reports of Indian banks have also evaluated the performance of HDFC banks. For the years 2000-2001, HDFC was observed with higher interest rate (8%), ROA (1.44) and ROE (6%). Higher performance in post-merger years has also been observed through loan growth rates.

Bank of Baroda developed higher ratio as compared to the stipulated norms of Indian banks according to the report of Asian development bank. 18.4% ROE was reported by the Asian development bank for the years 2003-2007. ROA and ROE were also recorded as 0.776 and 13.248 times in post-merger years.

From the analysis, it has been examined that IDBI Ltd had achieved its ROE margin at 12% in 2007 as prescribed by the Reserve Bank of India.

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ROA and ROE also recorded 0.886 and 10.334 times in post-merger years.

The ROE of Federal Bank ltd for the years 2007-2011 was reported in the study.

ROA was recorded in the post-merger years to 1.128 times. Moreover, ROA for ICICI Bank Ltd has shown significant performance after post-merger years. ROA and ROE also recorded 2.632 and 16.062 in post-merger years.

ROA for ICICI Bank Ltd has also represented significant performance after post-merger years. Positive impact on ROA for post-merger years have been observed. ROA for Kotak Mahindra Bank was 2.015, which was higher in post-merger years than pre-merger years (Table 2 and Table 3).

Return on Equity

Return on equity (ROE) is a measure of profitability, computed by the following formula:

$$ROE = \frac{NetIncome}{Shareholder's Equity}$$

ICICI bank ltd has occupied higher performance after post-merger years.

Moreover, ICICI bank ltd has also acquired substantial performance for the ROA, ROE and operating profit after the post-merger years. This study has shown sufficient evidence about performance of ICICI bank ltd, considering the earning quality ratio.

The performance of Bank of Baroda is evidently observed from the empirical analysis of Indian banks under Basel III requirements. This study has shown that Bank of Baroda accounted 14% on ROE after merging with Benares State Bank Ltd.Higher performance has been achieved by ICICI bank Ltd after post-merger years.

Substantial performance has been acquired for the ROE, ROA, and operating profit after the post-merger years. The study has presented sufficient evidence about ICICI bank performance, concerning the earning quality ratio. After merging with Benares State Bank Ltd, Bank of Baroda accounted 14% on ROE.

Oriental bank of commerce before merging with Global Trust Bank Ltd has reported significant ROA, ROE, and Operating Profit. Moreover, the earning quality of ratio in IDBI Ltd was at 14% ROE for the year 2006-2010.

The results indicated better performance and financial reports of IDBI Ltd.

Higher performance for the earning quality ratio after the merger years has been observed. ROE for ICICI Bank Ltd has shown significant performance after post-merger years. It has also represented apositive impact of ROE for post-merger years. ROE for Kotak Mahindra Bank was higher (6.965) in post-merger years than pre-merger years.

Operating Profit

It is earned from the core business operations of the organization. It has been computed by using formula:

$$OperatingProfit = OperatingRevenue - COGS - OperatingExpenses$$

Operating profit was observed 13% after the post-merger years, which significantly correlated with the report of State Bank of India Ltd for the years 2001-2005. It has been observed that ICICI bank Ltd accounted 12% operating profit for accumulating their earning quality in year 2006.

The performance of Punjab National Bank has been observed through the analysis, which represented 34% for the operating profit.

The findings further revealed that the performance of operating profit, net interest margin, and return on asset for IDBI Ltd gained its earning quality ratio. This study showed decline in the capital ratio for the Indian Overseas Bank at 7% after merging with Bharat Overseas Bank Ltd for the years 2008-2016 (Table 2 and Table 3).

Interest Income

It is a basic source of revenue for banks. The interest income indicated the ability of bank in producing income from its lending, and it has been evaluated by following formula:

$$InterestIncome = \frac{Netinterestincome}{Totalincome}$$

For the years 2003-2007, the average value for earning quality ratio is 16% for the ICICI bank. Additionally, pre and post-merger period of asset quality has been observed with mixed trend for Bank of Baroda.

In order to increase the earning quality of Punjab National Bank, net interest margin, return on asset, and operating profit were observed as the significant factors along with return on equity.

The study has observed for the year 2005-2009 that Bank of Baroda recorded 15% net margin income after merging with South Gujarat Local Area Bank. The financial performance of Centurion Bank Ltd was inspected after attaining bank of Punjab Ltd.

Cost to Income

The performances of ICICI bank, Centurion Bank of Punjab Ltd, and HDFC Bank Ltd were observed for the earning quality ratio.

The study reported that these banks acquired high performance after post-merger years. The performance of Oriental Bank has reported 13% for the earning quality ratio.

Earning quality ratio was inspected by the report to judge the performance of the merger years 1997-2001. IDBI Ltd achieved its earning quality after merging with United Western Bank Ltd at 12% for the years 1997-2001.

Substantial performance for the return on asset cost to income and operating profit after the post-merger years has been acquired by Indian Overseas Bank (Table 2 and Table 3).

Liquidity

Liquidity reported the condition, where an organization can obtain suitable funds by changing its assets or expanding liabilities at an accountable cost. Liquidity is used to measure the monitoring and control of liability management practices.

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Table 4: Pre-merger analysis for Liquidity Ratio

Banks	Liquid Assets to Total Assets	Liquid Assets to Total Deposits	Demand Deposits	Customer Deposits	Loan to Customer Deposits
HDFC Bank Ltd	19.236	9.918	21.358	21.358	8.04
ICICI Bank Ltd	9.908	0.05	7.936	7.936	9.92
ICICI Bank Ltd	9.672	0.06	8.336	8.336	10.096
Bank of Baroda	14.496	19.1	0.396	0.396	15.226
Punjab National Bank	6.9	6.88	3.524	3.524	9.336
Bank of Baroda	15.2	20.034	0.374	0.374	15.808
Oriental Bank of Commerce	6.758	25.672	1	1	0.598
IDBI Ltd	8.826	4.3768	0.038	0.038	1.424
Centurion Bank Ltd	0.898	8.61	6.552	6.552	1.172
Federal Bank Ltd	2.39	6.172	0.206	0.206	0.0506
IDBI LTD	9.206	4.361	0.028	0.028	1.594
Indian Overseas Bank	1.046	1.02	5.318	5.318	0.11
ICICI Bank Ltd	9.562	0.096	9.12	9.12	10.5
Centurion Bank of Punjab Ltd	0.898	7.402	5.07	5.07	1.202
HDFC Bank Ltd	20.83	9.84	22.048	22.048	9.2
ICICI Bank Ltd	9.553	0.079	9.448	7.349	10.991
Kotak Mahindra Bank	7.598	13.53	9.244	6.984	0.606

(Source: Researcher's calculated values based on the data from CMIE database and Indiastat.com)

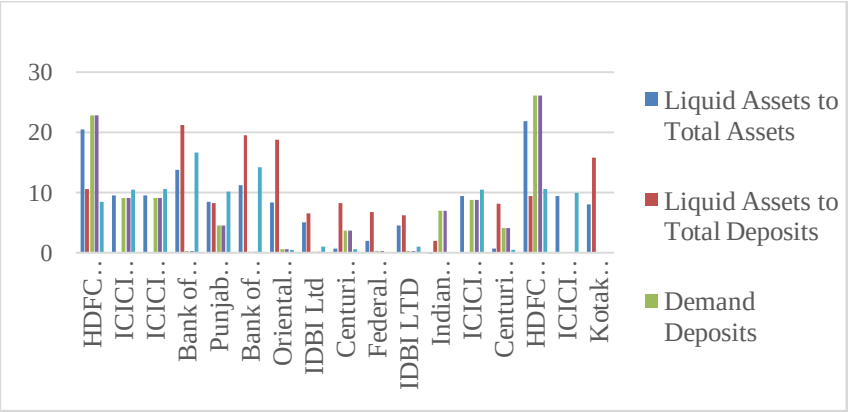

Figure 3:Pre-Merger Analysis for Liquidity

Table 5: Post-merger analysis for Liquidity Ratio

Banks	Liquid Assets to Total Assets	Liquid Assets to Total Deposits	Demand Deposits	Customer Deposits	Loan to Customer Deposits
HDFC Bank Ltd	20.446	10.616	22.772	22.772	8.42
ICICI Bank Ltd	9.562	0.096	9.12	9.12	10.5
ICICI Bank Ltd	9.594	0.1	9.128	9.128	10.538
Bank of Baroda	13.816	21.194	0.28	0.28	16.6
Punjab National Bank	8.492	8.268	4.57	4.57	10.098
Bank of Baroda	11.2592	19.448	0.246	0.246	14.156
Oriental Bank of Commerce	8.416	18.718	0.594	0.594	0.462
IDBI Ltd	5.092	6.528	0.212	0.212	1.024
Centurion Bank Ltd	0.74	8.27	3.668	3.668	0.638
Federal Bank Ltd	2	6.728	0.336	0.336	0.066
IDBI LTD	4.6	6.182	0.268	0.268	0.974
Indian Overseas Bank	0.03	2.02	7	7	0.056
ICICI Bank Ltd	9.492	0.08	8.798	8.798	10.4166
Centurion Bank of Punjab Ltd	0.792	8.104	4.124	4.124	0.482
HDFC Bank Ltd	21.844	9.424	26.052	26.052	10.52
ICICI Bank Ltd	9.447	0.081	8.289	5.142	9.8836
Kotak Mahindra Bank	8.104	15.75	11.615	6.265	2.38

(Source: Researcher's calculated values based on the data from CMIE database and Indiastat.com)

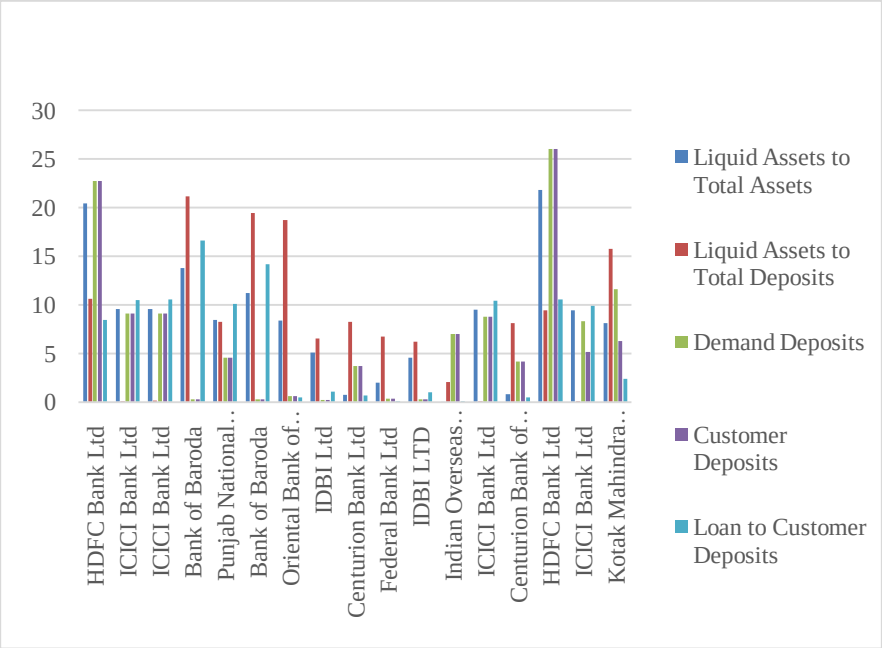

Figure 4:Post-Merger Analysis for Liquidity

Liquid Assets to Total Assets

This approach can yield a Liquid Assets to Total Assets ratio of near to zero. The main formula has been given below:

$$\frac{liquidassets}{totalassets}$$

After post-merger years, Liquid Assets to Total Assets for ICICI Bank Ltd has shown significant performance after post-merger years.

The efficacy of ICICI Bank Ltd in pre and post-merger was 9.553 for Liquid Assets to Total Assets. Whereas, Liquid Assets to Total Assets was 9.447 in post-merger years. A negative impact has been observed about Liquid Assets to Total Assets for post-merger years.

Liquid Assets to Total Deposits

$$\frac{LiquidAssets}{TotalDeposits}$$

The ratio of Liquid Assets to Total Deposits measures the liquidity accessible to the deposits of the bank. Total deposits consist of demand deposits, savings deposits, term deposits and deposits of other financial institutions.

The study has observed higher performance for the liquidity after the merger years. 8% was the average value for liquid assets to total deposits for the years 2006-2010. The performance of Federal Bank Ltd was examined 7% Liquid assets to total deposits for the year in 2009; whereas, 2% was reported in 2010 (Table 4 and Table 5).

Demand Deposits

The study has evaluated the performance if ICICI Bank Ltd by considering the liquidity. 9% demand deposits accounted 9% after the post-merger years. Moreover, the study analyzed that IDBI Ltd has sustained its demand deposits at 0.212% for the years 2006-2010. The performance was inspected after acquiring the targeted bank. The study has revealed the demand deposits of Federal Bank Ltd at 0.336% for the years 207-2011. Although, the study has showed enhancement in the demand deposits for the Indian Overseas Bank at 7% after merging with other banks for the years 2008-2011.

Customer Deposits

The study further revealed the higher performance of customer deposits, loan to customer deposits and demand deposits for IDBI Ltd. Centurion Bank ltd was considered for the financial performance evaluation.

The performance of ICICI Bank, Centurion Bank of Punjab ltd, and HDFC Bank ltd has been examined for the liquidity after merging targeted banks.

There were average customer deposits for ICICI bank, Centurion Bank of Punjab ltd, and HDFC Bank Ltd.

Loan to Customer Deposits

Different banks have acquired different financial performance. Indian Overseas Bank has acquired substantial performance for the liquid assets to total deposits, demand deposits and customer deposits after merging with Bharat Overseas Bank Ltd. Loan to Customer Deposits for Kotak Mahindra Bank was higher in post-merger years than pre-merger years.

Data Envelopment Analysis (DEA)

The efficiency of selected banks of India has been evaluated through the Data Envelopment Analysis. Input and Output variables were listed to evaluate the efficiency of banks. Fixed Asset, Deposit and Loans were taken as the input variables and Investments was taken as output variables.

Input variables are based on the effective parameters of organization. The fluctuations in input variables allow the modifications and enhancements on output variables, which ultimately depends on the performance evaluation.

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Table 6: Slack Report

		Input Slacks			Output Slacks
DMU No.	**DMU Name**	***Fixed Assets***	***Deposits***	***Loans***	**Investment**
1	HDFC Bank Ltd	0.00000	0.00000	0.00000	0.00000
2	ICICI Bank Ltd	0.00000	0.00000	727798.00256	0.00000
3	ICICI Bank Ltd	0.00000	0.00000	727798.00256	0.00000
4	Bank of Baroda	0.00000	0.00000	0.00000	0.00000
5	Punjab National Bank	0.00000	0.00000	1779433.22730	0.00000
6	Bank of Baroda	0.00000	0.00000	0.00000	0.00000
7	Oriental Bank of Commerce	0.00000	268924.50825	8579.86479	0.00000
8	IDBI Ltd	0.00000	148046.66496	0.00000	0.00000
9	Centurion Bank Ltd	168114.16755	23927.49571	0.00000	0.00000
10	Federal Bank Ltd	0.00000	0.00000	1619381.11075	0.00000
11	IDBI Ltd	0.00000	148046.66496	0.00000	0.00000
12	Indian Overseas Bank	0.00000	402504.82850	0.00000	0.00000
13	ICICI Bank Ltd	0.00000	0.00000	727798.00256	0.00000
14	Centurion Bank of Punjab Ltd	168114.16755	23927.49571	0.00000	0.00000
15	HDFC Bank Ltd	0.00000	0.00000	0.00000	0.00000
16	ICICI Bank Ltd	0.00000	0.00000	727798.00256	0.00000
17	Kotak Mahindra Bank	0.00000	0.00000	406621.90612	0.00000

(Source: Researcher's calculated values based on the data from CMIE database and Indiastat.com)

Table 7:Efficiency Report

		CRS	Optimal Multipliers			
DMU No.	DMU Name	Efficiency	Fixed Assets	Deposits	Loans	Investment
1	HDFC Bank Ltd	1.00000	0.00000	0.00000	0.00000	0.00000
2	ICICI Bank Ltd	0.45248	0.00000	0.00000	0.00000	0.00000
3	ICICI Bank Ltd	0.45248	0.00000	0.00000	0.00000	0.00000
4	Bank of Baroda	1.00000	0.00002	0.00000	0.00000	0.00000
5	Punjab National Bank	0.26464	0.00000	0.00000	0.00000	0.00000
6	Bank of Baroda	1.00000	0.00002	0.00000	0.00000	0.00000
7	Oriental Bank of Commerce	0.50613	0.00004	0.00000	0.00000	0.00000
8	IDBI Ltd	0.54029	0.00000	0.00000	0.00001	0.00000
9	Centurion Bank Ltd	0.33769	0.00000	0.00000	0.00002	0.00000
10	Federal Bank Ltd	0.40600	0.00000	0.00000	0.00000	0.00000
11	IDBI Ltd	0.54029	0.00000	0.00000	0.00001	0.00000
12	Indian Overseas Bank	0.44668	0.00000	0.00000	0.00000	0.00000
13	ICICI Bank Ltd	0.45248	0.00000	0.00000	0.00000	0.00000
14	Centurion Bank of Punjab Ltd	0.33769	0.00000	0.00000	0.00002	0.00000
15	HDFC Bank Ltd	1.00000	0.00000	0.00000	0.00000	0.00000
16	ICICI Bank Ltd	0.45248	0.00000	0.00000	0.00000	0.00000
17	Kotak Mahindra Bank	0.37676	0.00000	0.00000	0.00000	0.00000

(Source: Researcher's calculated values based on the data from CMIE database and Indiastat.com)

The results have represented the effective input target for deposits, employees, and fixed assets. Efficient target output has been observed in table 6 to evaluate the slack-based model of DEA.

The efficacy of slack-based model for output target was identified through investments and loans. Table 7 has shown the efficiency for input and output slacks of decision making units.

From the analysis, it has been observed that efficiency of HDFC Bank is effective than other banks comparatively.

V. CONCLUSION

The findings have represented better financial performance for ICICI bank after the merger years. Although, mixed trends were also observed in the analysis of acquirer banks. Return on net worth profit per employee and total asset growth rate ratios in post-merger years wereobserved for asset quality performance in ICICI bank. Operating profit was marginally low in the post-merger years as compared to pre-merger years.

Elements in capital adequacy ratios imitate higher performance of Bank of Baroda in post-merger years.

Asset quality performance for IDBI Bank Ltd was presented efficiently from return on net worth, profit per employee, and total asset growth rate ratios in post-merger years. Financial performance of banks of India that banking industry is moving towards betterment after post-merger years.

DEA has been employed in the next phase to estimate the efficiency of recruited Indian banks on the basis of input and output variables.

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HDFC bank ltd, Federal bank, and Bank of Baroda were efficient as compared to other banks; and the financial performance of Kotak Mahindra bank was efficient for post-merger years.

Recommendations

Following are certain recommendations, based on the statistical analysis:

- Top management must have an appropriate analysis of past data of financial performance to make merger deals.
- Banks must use share exchange ratio to motivate shareholders for investing in bank securities after merging.
- Stock risk analysis can be used to determine the risks and diversifiable risk before merging.
- CAMEL and Data Envelopment Analysis approach will be effective to determine the pre and post-merger analysis of banks by considering a greater sample size.
- Pre and post-merger period can be effectively done by considering previous records before the year 1998 till present.

Future Scope

Future studies must evaluate the financial performance of Indian banks in terms of off-balance sheet indicators, which include commitments, lines of credit, securitization and loans. Additionally, the financial performance of Indian banks can be evaluated by considering value-added approach and production.

The efficiency factor and productivity change in Indian banks can be examined in terms of policy perspective. Furthermore, the financial performance of Indian domestic banks can be included for future research.

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