IOSR Journal of Business and Management (IOSR-JBM)
e-ISSN: 2278-487X, p-ISSN: 2319-7668. Volume 19, Issue 9. Ver. VII. (September. 2017), PP 47-57
www.iosrjournals.org

Effect of Mergers on Efficiency of the Banks: A Study of Selected Merged Banks in India

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ABSTRACT: *This paper examines the impact of mergers on financial performance of selected commercial banks in India by using CAMEL model. CAMEL model is basically a ratio based model for evaluating the performance of banks. Total 16 ratios were used for evaluating financial performance of merged banks. For this purpose 4 Indian commercial banks merged during the period 2004 to 2008 were selected and data have been collected from CMIE data base at IIM, Bangalore. Statistical tool like, Mean, Standard deviation and T-Test have been used for analyzing the performance and testing the hypotheses. Finally, the study concludes that, the overall financial performance of the banks improves after the merger. So it could be recommended as useful financial strategy in order to improve financial performance of banks by achieving economies of scale, competitiveness, increased efficiency and market share.*
Keywords: *Mergers, Financial Performance, CAMEL Model, T-Test*

Date of Submission: 26-08-2017 Date of acceptance: 28-09-2017

I. Introduction

Mergers and Acquisitions are strategic decisions through which firms combine or acquire assets. The basic aim of mergers and acquisitions and all other forms of restructuring is to create value and maximization of shareholders wealth. In past few decades a wave of mergers and acquisitions has been arisen in developing countries. India is no difference in this case. India in the recent years has showed tremendous growth in M&A deal. It has been actively playing in all industrial sectors. It is widely spreading for across the stretches of all industrial verticals and on all business platforms. The increasing volume witnessed in various sectors like, that of financial and banking, Pharmaceuticals, Telecom, FMCG, Industrial Development, etc. The banking industry is an important area in which mergers and acquisitions do make enormous financial gains. As result of changes in the expectation of the corporate customer, banks are now constrained to rethink their business and devise new strategies. “In today’s scenario very often M&As are headline stories of financial dailies, deregulation in the financial market, Market liberalization, Economic reforms and a number of other factors have played important functions behind the growth of mergers and acquisitions in the banking sector (Jigna C T, 2013)”.

Review Of Literature

In today’s liberalized economy the corporate has experienced a major restructuring through M&A route. Mergers and Acquisitions have been considered as a popular strategy for Growth and Expansion. Empirical studies in this field are few and far in number. Some attempts have been made in by scholars in the area of mergers which are reviewed and the summary of review is given in Table-1.

Table-1: A summary of studies on financial performance of Merged Banks

Contributors	Common Findings
Dimikris & Ketemina(2006), Santos(2006),Nazir & Alam(2010), Mohamad Akbar et all (2012)	Technical efficiency and productivity have been increased but there has been decline in the operating efficiency after bank reforms
Healy et. all, Ghosh, Kruse et. all, Weston and Mansigka, Vijay & Saxena, Altunbas & Marques, Mantravadi and Reddy (2007)	Operating performance (i.e, cash inflow) of Merging firms improved significantly following acquisitions
Muhammad (2010)	M&A fails improve the financial performance of bank
Antony Akhil (2011), Pramod & Reddy, Tambi (2005), Bhide et. al (2002), Anup Agraval (1999), Beena P L (2000), Leepsa et al (2009), Saplev V(2000)	There is a significant improvement in the profitability of merging firm
Vardhan Pawaskar (2001), Kumar (2009), Surjit (2002), Vanitha & Selvan (2007)	There was no increase in the post merger profitability

Nedunchezhin and Premalatha (2011), Sathye(2003), Ataullah et al (2006)	Public sector banks efficiency score is more as compared to Private sector banks in the post merger period as per DEA Analysis
Singh and Kumar (1994), Ravi Shankar and Rao	The rehabilitation of sick company by merging with the healthy company is the most effective way of their rehabilitation

The issue of impact of mergers on the financial performance of banks has been well studied in the literature. Most of the studies examined found that mergers and acquisition add significantly to the profitability and positive impact on efficiency of banking sector except few Vardhan Pawaskar (2001), Kumar (2009), Surjit (2002), Vanitha & Selvan (2007) and Muhammad (2010) have contrary views.

II. Objectives Of The Study

To analyze the impact of mergers on financial Performance of Merged banks by using CAMEL parameters,

III. Hypothesis of the study

H0: There is no significant difference between the financial performance of Indian commercial Banks before and after the merger.
H1: There is significant difference between the financial performance of Indian commercial Banks before and after the merger.

IV. Research Methodology

a. Sample Descriptions:

As the complete sources of list of all the banks is not available, the data for this study have been selected based on the convenience sampling method, among the banks list with RBI Report. In the list of commercial banks only four scheduled commercial banks were selected. During the course of study two major categories of mergers were identified and accordingly four banks are divided into 2 private and public and remaining 2 are private and private and the same is presented in Table-2

Table-2 The list of Selected Merged Banks

S. No	Target Bank	Acquiring Bank	Category	Year
1	South Gujarat Local Area Bank Ltd.	Bank of Baroda	**Pr-P**	2004
2	Bharat Overseas Bank Ltd.	Indian Overseas Bank	**Pr-P**	2007
3	Sangli Bank Ltd.	ICICI Bank Ltd.	**Pr-Pr**	2007
4	Centurion Bank of Punjab Ltd.	HDFC Bank Ltd.	**Pr-Pr**	2008

Note: P=Public sector Pr=Private Sector

In order to evaluate post merger financial performance of the merging banks in the long run, at least 10 years financial data is required i.e., five years pre merger period and five years post merger period. Only domestic mergers taking place were selected. Cross-border mergers, i.e., in which either bidder or the target was based outside India were dropped. This was done to ensure homogeneity of the economic and industrial environment so that generalizability of the results could be achieved for Indian Mergers.

b. Data Collection:

For the purpose of analyzing the impact of mergers on physical performance and financial performance of selected commercial banks in India, the various financial variables and accounting ratios have been used. For this purpose the data have been obtained from CMIE database, Capitaline database, RBI reports and Bank's annual reports.

c. Analysis Tools:

The statistical tool like- Mean, Standard deviation, simple and multiple correlation, Regression, t-Test have been used for analyses and testing the hypothesis.

V. Analysis Of Financial Performance Of Sellected Merged Bank

Financial performance of selected merged banks is analyzed and interpreted based on CAMEL parameters

Analysis of Financial Performance of Bank of Baroda

Bank of Baroda and South Gujaratha Local Area Bank Ltd were merged on June 25 2004. The financial the financial performance of these banks is examined by taking a data pertaining to 5 years before and five years after the merger. From the table -3, the following observation can be made for each parameters of CAMEL Model.

Capital Adequacy:

The pre and post merger average CAR is 12.56 and 13.36 respectively. The average relationship between total debt to total equity during pre and post merger period is 15.49% and 14.22% respectively. The average mean ratio of advances to total assets during pre and post merger period is 44.09 and 59.35 respectively and pre and post merger period mean ratio between government securities to total investment is 2.65 and 2.014 percent respectively. This shows that, there is a less and negative growth in case of CAR (6.25%), DER (-8.199%) and ratio between government securities to total investment (-23.885%) after the merger and there is a positive growth in case of Advances to Assets ratio (34.60%). This is also proved by t-test at 5 percent level of significance.

The application of t test reveals that, CAR, DER and Government Securities to total investment ratios got insignificant t value (P value > 0.05), in which case **H0 is accepted**. Hence, there is no significant difference between pre and post merger CAR, DER and Govt. Securities to total investment ratios of the bank. But, in case of AAR t value is significant (P value < 0.05), therefore, there is a significant difference between pre and post merger AAR. This result indicates that, the lending capacity of the bank has been increased after the merger but the overall financial health and solvency of the bank has not improved after the merger.

Assets Quality

Bank's pre and post merger average Net NPA to Net Advance ratio is 4.396 and 0.512 respectively and the mean relationship between total investments to total assets during pre and post merger period is 36.158 and 24.986 respectively. The average ratio of Net NPA to Net Advances and total investments to total assets are decreased after the merger with a negative growth rate of -88.217% and -30.898% respectively. This is positive sign for bank and also proved by t-test at 5 percent level of significance.
The result of t-test reveals that, both Net NPA to Net Advances and Total Investment to total assets got significant t value (P value < 0.05), in both the cases **H0 is rejected**. Hence, there is significant difference between pre and post merger assets quality of the bank. Therefore, it indicates that, the merger improved the assets quality of the bank.

Management Efficiency:

The Bank's pre and post merger mean ratio between total advances to total deposits is changed from 115.60% to 117.392% respectively. The average Profit per employee (PPE) of the bank during the pre and post merger is recorded 0.15 crore and 0454 crore respectively. The pre and post merger average Business per employee (BPE) is changed from 21.95 crore to 71.16 crore respectively and RONW of the bank pre and post merger period are recorded at 15.812 and 14.592 respectively. There is a tremendous growth in case of PPE and BPE during post merger period with a growth rate of 202.667% and 224.19% respectively and there is less growth in case of total advances to total deposits (1.545%) and negative growth in case of RONW (-7.90) after the merger, which are proved by t test at 5 percent level of significance and the result shows that (see Table-6.2), PPE and BPE ratios got significant t value (P<0.05) in which

H0 is rejected. Hence, there is significance difference between pre and post merger PPE and BPE of the bank. The ratio of total advance to total deposits and RONW got insignificant t value (P>0.05), in these cases,

H0 is accepted. It means there is no significant difference between pre and post merger TA to TD and RONW. Therefore it can conclude that, the productivity of the bank increased after the merger but efficiency has not increased during post merger period.

Earnings Quality:

The pre and post merger mean ratio of OP to AWF is changed from 1.29 to 1.27. The average ratio between NP to AWF during pre and post merger period is 0.842 and 0.866 respectively and the average pre and post merger period PAT growth is recorded at 127.87 and 135.726 respectively. It would be observed that, there is less and negative growth in case of OP to AWF, NP to AWF and PAT growth with mean growth rate of -1.395%, 2.85% and 6.14% respectively. This is also proved by t test at 5% significance level. The application of t test shows that (see table-6.2) all the ratios of earnings quality got insignificant t value (P values 0.933, 0.87, 0.75 > 0.05), hence **H0 is accepted**. Therefore there is no significant difference between pre and post merger earnings quality of the bank. To conclude, it can be said that, the profitability of the bank has not improved after the merger.

Table-3: Statistical summary of CAMEL Parameters of Bank of Baroda

Parameters	Ratios	*Merger Period*	Mean	S D	N	df	t Stat	P(T<=t) two-tail	Growth Rate (%)
CAPITAL ADEQUACY	*CAR*	*Pre*	12.556	0.954	5	8	-1.275**	0.238	6.356
		Post	13.354	1.024	5				
	DER	*Pre*	15.490	0.818	5	8	1.657**	0.136	-8.199
		Post	14.220	1.506	5				
	AAR	*Pre*	44.094	2.646	5	8	-6.871*	0.000	34.603
		Post	59.352	4.201	5				
	GS/TI	*Pre*	2.646	0.974	5	8	1.206**	0.262	-23.885
		Post	2.014	0.652	5				
ASSETS QUALITY	*NNAP / NA*	*Pre*	4.396	0.988	5	8	8.554*	0.000	-88.217
		Post	0.518	0.228	5				
	TI / TA	*Pre*	36.158	5.773	5	8	3.702*	0.006	-30.898
		Post	24.986	3.496	5				
MANAGEMENT EFFICIENCY	*TA / TD*	*Pre*	115.606	1.304	5	8	-1.390**	0.202	1.545
		Post	117.392	2.561	5				
	PPE	*Pre*	0.150	0.066	5	8	-2.688*	0.028	202.667
		Post	0.454	0.244	5				
	BPE	*Pre*	21.950	3.606	5	8	-4.458*	0.002	224.191
		Post	71.160	24.417	5				
	RONW	*Pre*	15.812	4.637	5	8	0.441**	0.671	-7.690
		Post	14.596	4.061	5				
EARNIGS QUALITY	*PPE*	*Pre*	1.290	0.406	5	8	0.087**	0.933	-1.395
		Post	1.272	0.224	5				
	NP / WF	*Pre*	0.842	0.270	5	8	-0.169**	0.870	2.850
		Post	0.866	0.167	5				
	PAT Growth	*Pre*	127.874	51.618	5	8	-0.329**	0.750	6.140
		Post	135.726	13.368	5				
LIQUIDITY	*LA / TD*	*Pre*	46.220	3.849	5	8	4.061*	0.004	-19.831
		Post	37.054	3.264	5				
	LA / TA	*Pre*	39.974	3.213	5	8	4.796*	0.001	-21.129
		Post	31.528	2.276	5				
	GS / TA	*Pre*	0.938	0.300	5	8	2.440*	0.041	-44.776
		Post	0.518	0.241	5				

Source: compiled from Table-6.1,
**Significant, **Not Significant at 5 percent level of significance*

Liquidity:

The Bank's average LA to TD ratio during pre and post merger period is recorded at 46.22% and 37.05% respectively. The pre and post merger average ratio between liquid assets to total assets is 39.97% and 31.58% respectively and the mean relationship between Govt. Securities to Total assets during pre and post merger is 0.938 and 0.518 respectively. All liquidity ratios are decreased during post merger period but which is not proved by t test at 5 percent level of significance. The result of t test reveals that (see table-6.2), all three ratios got significant t value (P value 0.004, 0.001, 0.041>0.05). At 5% level of significance the H0 is rejected. Hence there is no significant difference between pre and post merger liquidity position of the bank. Therefore it can be concluded that, the liquidity position of the bank remains same after the merger.

Analysis of Financial Performance of Indian Overseas Bank

Indian Overseas Bank and Bharat Overseas Bank were merged on 31 March 2007. The impact of this merger on financial performance of merged bank is analyzed by using CAMEL parameters.

From the table-4, the following observation can be made for each parameters of CAMEL Model.

Capital Adequacy:

The pre and post merger average CAR is 12.86 and 13.34 respectively. The average relationship between total debt to total equity during pre and post merger period is 19.82% and 17.53% respectively. The average mean ratio of advances to total assets during pre and post merger period is 50.13 and 62.86 respectively and before and after merger mean ratio between government securities to total investment is 83.54 and 85.30 percent respectively. There is a less and negative growth in case of CAR (3.7%), DER (-11.53%) and GS to TI (2.105%). The ratio between advances to assets is increased during post merger period with a mean growth of 25.39%. This is also proved by t-test at 5 percent level of significance. The application of t test reveals that, CAR, DER and GS to TI ratios got insignificant t value (P value; 0.509; 0.184; 0.829 > 0.05), in which case **H0 is accepted**. Hence, there is no significance difference between pre and post merger CAR, DER and GS to TI ratios of the bank. But, in case of AAR t value is significant (P value; 0.007< 0.05), therefore, there is a significance difference between pre and post merger AAR. This result indicates that, the lending capacity of the bank has been increased after the merger but the overall financial health and solvency of the bank has not improved after the merger

Table-4: Statistical summary of CAMEL Parameters of Indian Overseas bank

Parameters	Ratios	*Merger*	Mean	SD	N	df	t Stat	P(T<=t) two-tail	Mean Growth
CAPITAL ADEQUACY	*CAR*	*PRE*	12.86	1.07	5	8	-0.690**	0.509	3.701
		POST	13.34	1.11	5				
	DER	*PRE*	19.82	3.49	5	8	1.453**	0.184	-11.534
		POST	17.53	0.41	5				
	AAR	*PRE*	50.13	7.64	5	8	-3.598*	0.007	25.389
		POST	62.86	2.03	5				
	GS/TI	*PRE*	83.54	1.61	5	8	-0.829**	0.431	2.105
		POST	85.30	4.46	5				
ASSETS QUALITY	*NNAP / NA*	*PRE*	2.11	1.97	5	8	0.356**	0.731	-15.735
		POST	1.78	0.67	5				
	TI / TA	*PRE*	37.26	6.82	5	8	3.469*	0.008	-29.104
		POST	26.42	1.52	5				
MANAGEMENT EFFICIENCY	*TA / TD*	*PRE*	115.64	2.95	5	8	-3.563*	0.007	4.889
		POST	121.30	1.97	5				
	PPE	*PRE*	0.27	0.09	5	8	-1.171**	0.275	29.927
		POST	0.36	0.13	5				
	BPE	*PRE*	30.57	10.66	5	8	-5.162*	0.001	218.687
		POST	97.41	26.92	5				
	RONW	*PRE*	29.97	1.36	5	8	4.703*	0.002	-69.972
		POST	9.00	9.88	5				
EARNINGS QUALITY	*OP / WF*	*PRE*	1.59	0.32	5	8	2.944*	0.019	-47.930
		POST	0.83	0.49	5				
	NP / WF	*PRE*	1.18	0.13	5	8	3.853*	0.005	-50.169
		POST	0.59	0.32	5				
	PAT Growth	*PRE*	136.00	25.23	5	8	1.962**	0.085	-31.290
		POST	93.45	41.42	5				
LIQUIDITY	*LA / TD*	*PRE*	47.39	6.53	5	8	3.674*	0.006	-23.391
		POST	36.31	1.68	5				
	LA / TA	*PRE*	41.09	6.53	5	8	3.699*	0.006	-27.129
		POST	29.95	1.68	5				
	GS / TA	*PRE*	31.10	5.58	5	8	3.369*	0.010	-27.642
		POST	22.51	1.21	5				

*Source: compiled from Table-6.5 *Significant, **Not Significant at 5 percent level*

Assets Quality

Bank's pre and post merger average Net NPA to Net Advance ratio is 2.11 and 1.78 respectively and the mean relationship between total investments to total assets during pre and post merger period is 37.26 and 26.42 respectively. The average ratio of Net NPA is decreased to Net Advances and total investments to total assets are decreased after the merger with a negative growth rate of -15.735 and -29.104 respectively. This is positive sign for bank but which are not proved by t test at 5% level of significant

The result of t-test reveals that, at 5% level of significance Net NPA to Net Advances got insignificant t value (P; 0.731>0.05), in this case **H0 is accepted**, hence there is no significance difference between pre and post merger Net NPA ratio and Total Investment to total assets got significant t value (P value 0.008<0.05), in this case **H0 is rejected**. Hence, there is a significance difference between pre and post merger TI to TA of the bank. Therefore, it can conclude that, the quality of the assets does not improve after the merger.

Management Efficiency

The Bank's pre and post merger mean ratio between total advances to total deposits is changed from 115.64 and 121.30 respectively. The average Profit per employee (PPE) of the bank during the pre and post merger is recorded 0.27 crore and 0.36 crore respectively. The pre and post merger average Business per employee (BPE) is changed from 30.57 crore to 97.41 crore respectively and RONW of the bank during pre and post merger period are recorded at 29.97 and 9.00 respectively. There is a positive growth in case of TA to TD, PPE and BPE during post merger period with a growth rate of 4.889, 29.927 and 218.68 respectively and there is a negative growth in case of RONW (-69.972%) after the merger, which are proved by t test at 5 percent level of significance and the result t test shows that (see Table-6.6), all the ratios of management efficiency except PPE got significant t value (P, 0.007; 0.001; 0.019 <0.05) in which cases **H0 is rejected.** Hence, there is a significant difference between pre and post merger TA to TD, BPE and RONW of the bank. PPE increased after the merger but it got insignificant t value (p 0.275>0.05), it shows that, the profit per employee of the bank during pre and post merger period is more or less same. Therefore it can conclude that, the overall productivity and efficiency of the bank are increased after the merger.

Earnings Quality:

In the present case the pre and post merger mean ratio of OP to AWF is changed from 1.59 to 0.83. The average relation between NP to AWF during pre and post merger period are 1.18 and 0.59 respectively and the average pre and post merger period PAT growth are recorded at 136 and 93.45 respectively. It would be observed that, there is a negative growth in case of OP to AWF, NP to AWF and PAT growth with mean growth rate of -47.93, -50.17 and -31.29 percent respectively. This is not proved by t test at 5% significance level. The application of t test shows that (see table-6.6), the ratio of OP to AWF and NP to AWF got significant t value (P values 0.019; 0.005 > 0.05), in which cases **H0 is rejected.** Hence there is a significant difference between pre and post merger operating profit and Net profit ratios of the bank. PAT growth got insignificant t value (P value 0.085>0.05), in this case **H0 is accepted**. It means pre and post merger PAT growth are more or less same. Finally it can be say that the overall profitability of the bank has improved after the merger.

Liquidity:

The Bank's average LA to TD ratio during pre and post merger period is recorded at 47.39 and 36.31 percent respectively. The pre and post merger average relation between liquid assets to total assets are 41.09% and 29.95% respectively and the mean relationship between Govt. Securities to Total assets during pre and post merger are 31.10 and 22.51 respectively. There is a negative growth in case of liquidity ratios of the bank with a mean growth of -23.39, -27.129 and -27.642 percent respectively. This is positive sign for the bank, which is also proved by t test at 5 percent level of significant. The result of t test reveals that (see table-6.6), all the liquidity ratios of the bank got significant t value (P value, 0.006; 0.006; 0.10 <0.05). In which cases at 5% level of significance the **H0 is rejected.** Hence there is a significant difference between pre and post merger liquidity position of the bank. Therefore it can say that, the efficiency of the bank increased by proper utilization of liquid assets during post merger period.

Analysis of Financial Performance of ICIC Bank

ICICI bank and Sangli Bank Ltd were merged on April 19 2007. The financial performance of this bank was analyzed by taking data for five years before the merger and five years after the merger. From the table-5, the following observation can be made for each parameters of CAMEL Model.

Capital Adequacy:

The pre and post merger average CAR is 11.67 and 18.89 percent respectively. The average relationship between total debt to total equity during pre and post merger period are 8.10% and 4.21%

respectively. The average mean ratio of advances to total assets during pre and post merger period are 53.79 and 53.33 percent respectively and before and after merger mean ratio between government securities to total investment are 71.08 and 54.82 percent respectively. There is a positive and negative growth in case of CAR (57.30), DER (-47.99), AAR (-0.836) and GS to TI (-22.885). This is also proved by t-test at 5 percent level of significance.
The application of t test reveals that, all capital adequacy ratios of the bank except AAR got significant t value (P value, 0.000; 0.000; 0.000<0.05), in which cases first hypothesis (H0) is strongly rejected. Hence, there is a significant difference between pre and post merger CAR, DER and GS to TI of the bank and AAR got insignificant t value, therefore, there is no significant difference between pre and post merger AAR of the bank. It shows that the lending capacity of the bank is more or less same during before and after merger and merger improved the overall financial health and solvency of the bank.

Assets Quality

Bank's pre and post merger average Net NPA to Net Advance ratio are 2.16 and 1.36 percent respectively and the mean relationship between total investments to total assets during pre and post merger period are 30.48 and 31.63 respectively. The average ratio of Net NPA to Net Advances is decreased after the merger with negative growth of -36.91 and very less improvement in case total investments to total assets ratio after the merger with a growth rate 3.78. This is positive sign for bank but which are not proved by t test at 5% level of significant. at 5% level of significance both the ratios of assets quality got insignificant t value (P; 0.382; 0.546<0.05), in which cases **H0 is accepted**, hence there is no significant difference between pre and post merger assets quality of the bank. Therefore, it can conclude that, the quality of the assets is not improved after the merger.

Management Efficiency

The Bank's pre and post merger mean ratio between total advances to total deposits is changed from 175.07 and 181.71 respectively. The average Profit per employee (PPE) of the bank during the pre and post merger is recorded 1.06 crore and 1.10 crore respectively. The pre and post merger average Business per employee (BPE) is changed from 98.84 crore to 81.94 crore respectively and RONW of the bank during pre and post merger period are recorded at 16.93 and 9.58 percent respectively. There is a less positive growth in case of TA to TD and PPE during post merger period with a growth rate of 3.78 and 3.77 percent respectively and there is a negative growth in case of BPE and RONW after the merger but this not proved by t test at 5 percent level of significance and the result t test shows that (see Table-6.10), all the ratios of management efficiency except RONW got insignificant t value (P, 0.636; 0.694; 0.112 <0.05), therefore in which cases **H0 is accepted.** Hence, there is no significant difference between pre and post TA to TD, PPE and BPE of the bank and RONW is significant after the merger, therefore it can conclude that, merger is not having any impact on productivity and efficiency of the bank.

Earnings Quality:

The Bank's pre and post merger mean ratio of OP to AWF is changed from 2.25 to 3.16. The average relation between NP to AWF during pre and post merger period are 2.08 and 2.35 respectively and the average pre and post merger period PAT growth are recorded at 194.86 and 115.95 respectively. It would be observed that, there is a positive growth in case of OP to AWF and NP to AWF is 40.658 and 12.993 percent respectively. There is a negative growth in PAT during post merger. This is not proved by t test at 5% significance level. The application of t test shows that (see table-6.10), all the ratios of earning quality got insignificant t value (P values 0.05, 0.338; 0.228 > 0.05), in which cases **H0 is accepted.** Hence there is no significant difference between pre and post merger earnings quality of the bank. Finally it can be said that the overall profitability of the bank during pre and post merger is more or less same.

Liquidity:

The Bank's average LA to TD ratio during pre and post merger period is recorded at 51.41 and 46.67 percent respectively. The pre and post merger average relation between liquid assets to total assets are 29.27% and 25.69% respectively and the mean relationship between Govt. Securities to Total assets during pre and post merger are 21.64 and 17.26 percent respectively. There is a negative growth in all the cases of liquidity ratios of the bank with a mean growth of -9.217, -12.258 and -20.234 percent respectively. This is positive sign for the bank, which is also proved by t test at 5 percent level of significant. The result of t test reveals that (see table-6.6), liquid assets to total deposits ratio got insignificant t value (P, 0.967<0.05). In this case, the **H0 is accepted.** Hence there is no significant difference between pre and post merger LA to TD of the bank. The ratio LA to TA and GS to TA got significant t value (P, 0.017; 0.003<0.05). Therefore, there no significance difference between LA to TA and GS to TA ratios of the bank. So it can say that, the efficiency of the bank increased by proper utilization of liquid assets during post merger period.

Table-5 Statistical summary of CAMEL Parameters of ICICI Bank

Parameters	Ratios	*Merger*	Mean	SD	N	df	t Stat	P(T<=t) two-tail	Mean Growth
CAPITAL ADEQUACY	*CAR*	*PRE*	11.66	1.09	5	8	-7.606	0.000	57.305
		POST	18.35	1.63	5				
	DER	*PRE*	8.10	0.98	5	8	8.702	0.000	-47.999
		POST	4.21	0.21	5				
	AAR	*PRE*	53.79	3.93	5	8	0.214	0.836	-0.864
		POST	53.33	2.85	5				
	GS/TI	*PRE*	71.08	2.12	5	8	6.683	0.000	-22.885
		POST	54.82	5.01	5				
ASSETS QUALIT Y	*NNAP / NA*	*PRE*	2.16	1.80	5	8	0.926	0.382	-36.910
		POST	1.36	0.69	5				
	TI / TA	*PRE*	30.48	3.20	5	8	-0.630	0.546	3.782
		POST	31.63	2.55	5				
MANAGEMENT EFFICIENCY	*TA / TD*	*PRE*	175.07	29.49	5	8	-0.491	0.636	3.788
		POST	181.71	6.47	5				
	PPE	*PRE*	1.06	0.11	5	8	-0.408	0.694	3.774
		POST	1.10	0.19	5				
	BPE	*PRE*	98.84	9.74	5	8	1.784	0.112	-17.098
		POST	81.94	18.81	5				
	RONW	*PRE*	16.93	3.19	5	8	4.328	0.003	-43.427
		POST	9.58	2.06	5				
EARNINGS QUALITY	*OP / WF*	*PRE*	2.25	0.65	5	8	-2.327	0.048	40.658
		POST	3.16	0.59	5				
	NP / WF	*PRE*	2.08	0.41	5	8	-1.018	0.338	12.993
		POST	2.35	0.43	5				
	PAT Growth	*PRE*	194.86	152.21	5	8	1.152	0.283	-40.495
		POST	115.95	16.83	5				
LIQUIDITY	*LA / TD*	*PRE*	51.41	10.12	5	8	0.967	0.362	-9.217
		POST	46.67	4.17	5				
	LA / TA	*PRE*	29.27	1.52	5	8	3.020	0.017	-12.258
		POST	25.69	2.18	5				
	GS / TA	*PRE*	21.64	2.09	5	8	4.113	0.003	-20.234
		POST	17.26	1.14	5				

Source: compiled from Table-6.9,
**Significant, **Not Significant at 5 percent level*

Analysis of Financial Performance of HDFC Bank

From the table 6, the following observation can be made for each parameters of CAMEL Model.

Capital Adequacy:

The pre and post merger average CAR is 12.38 and 16.61 percent respectively. The average relationship between total debt to total equity during pre and post merger period are 9.85% and 8.17% respectively. The average mean ratio of advances to total assets during pre and post merger period are 47.69 and 79.05 respectively and before and after merger mean ratio between government securities to total investment are 64.98 and 79.05 percent respectively. There is a positive in case of CAR, AAR and GS to TI ratios with growth rate of 34.16, 23.13 and 21.65 respectively and negative growth in case of DER i.e., -17.02%. This is also proved by t-test at 5 percent level of significance. The application of t test reveals that, all capital adequacy ratios of the bank got significant t value (P value, 0.000; 0.028; 0.000; 0.004<0.05) therefore the **first hypothesis** (**H0) is strongly rejected in all the cases**. Hence, there is a significant difference between pre and post merger capital adequacy of the bank. This shows that, merger improved the financial health and paying capacity of the bank.

Assets Quality

Bank's pre and post merger average Net NPA to Net Advance ratio are 0.35 and 0.23 percent respectively and the mean relationship between total investments to total assets during pre and post merger period are 38.47 and 26.25 respectively. The average ratio of Net NPA to Net Advances and total investments to total assets are decreased after the merger with a negative growth rate of -33.91 and -30.73 respectively. This is positive sign for bank and this is not proved by t test at 5% level of significant. At 5% level of significance the ratios of Net NAP got insignificant t value (P, 0.117>0.05), in this case **H0 is accepted**, hence there is a significant difference between pre and post merger Net NPA ratio of the bank. TI to TA ratio got significant t value (P, 0.001<0.05), therefore there is a significant difference between pre and post merger Total investment to Total assets ratio. From the above analysis, it can conclude that, merger does not have any impact on efficiency of the bank.

Table-6 Statistical summary of CAMEL Parameters of HDFC Bank

Parameters	Ratios	*Merger*	Mean	SD	N	df	t Stat	P(T<=t) two-tail	Mean Growth
CAPITAL ADEQUACY	*CAR*	*PRE*	12.38	0.93	5	8	-8.757*	0.000	34.16
		POST	16.61	0.54	5				
	DER	*PRE*	9.85	1.38	5	8	2.673*	0.028	-17.02
		POST	8.17	0.24	5				
	AAR	*PRE*	47.69	3.58	5	8	-5.998*	0.000	23.13
		POST	58.72	2.02	5				
	GS/TI	*PRE*	64.98	6.51	5	8	-3.929*	0.004	21.65
		POST	79.05	4.66	5				
ASSETS QUALIT Y	*NNAP / NA*	*PRE*	0.35	0.14	5	8	1.758**	0.117	-33.91
		POST	0.23	0.06	5				
	TI / TA	*PRE*	38.47	4.39	5	8	5.611*	0.001	-30.73
		POST	26.65	1.72	5				
MANAGEMENT EFFICIENCY	*TA / TD*	*PRE*	135.62	4.41	5	8	0.595**	0.568	-0.93
		POST	134.36	1.72	5				
	PPE	*PRE*	0.73	0.18	5	8	-0.961*	0.365	16.35
		POST	0.85	0.21	5				
	BPE	*PRE*	70.86	14.84	5	8	-0.102*	0.921	1.30
		POST	71.78	13.78	5				
	RONW	*PRE*	21.64	4.40	5	8	2.123*	0.066	-21.89
		POST	16.90	2.34	5				
EARNINGS QUALITY	*OP / WF*	*PRE*	1.76	0.09	5	8	-3.944**	0.004	28.00
		POST	2.26	0.27	5				
	NP / WF	*PRE*	1.22	0.05	5	8	-4.067*	0.004	25.70
		POST	1.54	0.17	5				
	PAT Growth	*PRE*	132.66	3.73	5	8	1.066**	0.318	-1.65
		POST	130.47	2.69	5				
LIQUIDITY	*LA / TD*	*PRE*	46.62	2.46	5	8	2.638*	0.030	-13.30
		POST	40.42	4.64	5				
	LA / TA	*PRE*	34.42	2.26	5	8	2.239**	0.056	-12.53
		POST	30.11	3.67	5				
	GS / TA	*PRE*	24.86	2.21	5	8	3.021*	0.017	-15.27
		POST	21.06	1.73	5				

Source: compiled from Table-6.11
**Significant, **Not Significant at 5 percent level*

Management Efficiency

The Bank's pre and post merger mean ratio between total advances to total deposits is changed from 135.62 and 134.36 respectively. The average Profit per employee (PPE) of the bank during the pre and post merger is recorded 0.73 crore and 0.85 crore respectively. The pre and post merger average Business per employee (BPE) is changed from 70.86 crore to 71.82 crore respectively and RONW of the bank during pre and post merger period are recorded at 21.64 and 16.90 percent respectively. The growth of the all the ratios are recorded at -0.93, 16.35, 1.30 and -21.89 respectively.

The result t test shows that (see Table-6.12), all the ratios of management efficiency got insignificant t value (P, 0.568; 0.365; 0.921; 0.066 <0.05), therefore in all the cases **H0 is accepted.** Hence, there is no significant difference between pre and post merger management efficiency of the bank. So it can conclude that, merger does not have any impact on productivity and efficiency of the bank.

Earnings Quality:

In the present case the pre and post merger mean ratio of OP to AWF is changed from 1.76 to 2.26. The average relation between NP to AWF during pre and post merger period are 1.22 and 1.54 respectively and the average pre and post merger period PAT growth are recorded at 132.66 and 130.47 respectively. It would be observed that, there is a positive growth in case of OP to AWF and NP to AWF is 28 and 25.70 percent respectively. There is a negative growth in PAT during post merger. This is also proved by t test at 5% significance level. The application of t test shows that (see table-6.12), the ratio of OP to AWF and NP to AWF got significant t value (P values0.004; 0.004<0.05), in which cases **H0 is rejected.** Hence there is a significant difference between pre and post merger operating profit and Net profit ratios of the bank. PAT growth got insignificant t value (P value 0.318>0.05), in this case **H0 is accepted**. It means pre and post merger PAT growth are more or less same. Finally it can be say that the overall profitability of the bank has improved after the merger.

Liquidity:

The Bank's average LA to TD ratio during pre and post merger period is recorded at 46.62 and 40.42 percent respectively. The pre and post merger average relation between liquid assets to total assets are 34.42% and 30.11% respectively and the mean relationship between Govt. Securities to Total assets during pre and post merger are 24.86 and 21.06 respectively. There is negative growth in all the cases of liquidity ratios of the bank with a mean growth of -13.30, -12.53 and -15.27 percent respectively. This is positive sign for the bank, which is also proved by t test at 5 percent level of significant. The result of t test reveals that (see table-6.6), all the liquidity ratios of the bank got significant t value (P value, 0.03; 0.05; 0.01<0.05). In which cases, the **H0 is rejected.** Hence there is a significant difference between pre and post merger liquidity position of the bank. Therefore it can say that, the efficiency of the bank increased by proper utilization of liquid assets during post merger period.

VI. Conclusion

In the study researcher evaluated the impact of mergers on financial performance of selected commercial banks in India on the basis of CAMEL Model. Total 16 ratios were used in the study showed that, there is a significant improvement in assets quality, management efficiency, earnings quality and liquidity of the selected banks and the capital adequacy of all public sector banks did not indicate improvement but on average it can conclude that the overall financial performance of the banks improves after the merger. So it could be recommended as useful financial strategy in order to improve financial performance of banks by achieving economies of scale, competitiveness, increased efficiency and market share.

References

[1]. Altunbas, Y., & Marques, D. (2008). Mergers and Acquisitions and Bank Performance inEurope: The Role Of Strategic Similarities. Journal of Economics & Business, 60, 204 222

[2]. Antony Akhil, K. (2011), "Post-Merger Profitability of Selected Banks in India," International Journal of Research in Commerce, Economics and Management, Vol. 1, No. 8, (December), pp. 133-5.

[3]. Anup Agrawal Jeffrey F. Jaffe (1999), "The Post-merger Performance Puzzle", Journal of Corporate Finance, USA

[4]. Arif M, Can L (2008). Cost and profit efficiency of Chinese banks: A non-parametric analysis. China Econ. Rev. 19(2):260-273.

[5]. Ataullah A, Cockerill T, Le H (2004). "Financial Liberalization and Bank Efficiency: A Comparative Analysis of India and Pakistan". Appl. Econ. 36(17):1915-1924.

[6]. Beena P. L. (2000). 'An analysis of merger in the private corporate sector in India' Journal of Scientific & Industrial Research, Special Issue on Management, August – Sep., Nasscom, New Delhi. Page No. 34-51

[7]. Biswas Joydeep,(2004) : Corporate Mergers & Acquisitionsin India Indian Journal of Accounting Vol. XXXV(1), pp.67-72

[8]. Canagavally R.(2000) 'An Analysis of Mergers and Acquisitions' Strategic Management Journal, February, pp. 187-201.

[9]. Chen T-Y (2004). „„„A study of cost efficiency and privatization in Taiwan"s banks: the impact of the Asian Financial Crisis" Ser. Ind. J. 24(5):137-151.

[10]. Chitranandi A.K, (2001) "Trumps for M & A – Information Technology Management in a merger and acquisition strategy" International Journal of Management Reviews 9 (2), pp. 141-170.

[11]. Dimikris angelids and Katerina lyroudi (2006) Efficiency in the Italian Banking Industry DEA and neural networks", "*International research journal of finance and economics*", Vol.1, Issue 5, 2006. pp. 155-165.

[12]. Dr. V R Nedunchezhin, K Premalatha (2011);"Analysis of pre and post merger public sector bank efficiency: A DEA analysis", International Journal of Applied Research and S.tudies, Volume 3, Issue 1(Jan 2014), Pp-1-12.

[13]. Ghosh, A., (2001): 'Does operating performance really improve following corporate acquisitions?' Journal of Corporate Finance 7 pp 151-178.

[14]. Huzifa Husain, (2001) 'Merger and Acquisition unlocking value' Antitrust Bulletin 37, pp. 541-600.

[15]. Kamatam Srinivas (2011) "M&A in Indian Banking Sector-A Study of Selected Banks" Himalaya Publication House, Bengaluru, Pp. 111-141.

[16]. Kumar, R., 2009. "Post-Merger Corporate Performance: an Indian Perspective", Management Research News 32 (2), pp. 145-157.

[17]. Mansur, A. Mulla, 2003. Forecasting the Viability and Operational Efficiency by use of Ratio Analysis - A Case Study. Finance India, XVII (3): 893-897.

[18]. Mantravadi, P. and A. Reddy, (2008). "Relative Size in Mergers and Operating Performance: Indian Experience", Working Paper Series, available at: www.ssrn.com (accessed March 15,2008).

[19]. Mian Sajid Nazir and Atia Alam, (2010), "The Impact of Financial Restructuring on the Performance of Pakistani Banks: (Nazir & Alam, 2010)A DEA Approach", "*The IUP Journal of Applied Finance"*, Vol. 16, No. 1, 2010, pp 71-86

[20]. Mohamad Akbar Noor and Nor Hayati Bt Ahamad, (2012), "The determinants of efficiency of Islamic Bank", *"IUP Journal Of bank Management",* May 2012, Vol XI,. No. 2 pp 32-70.

[21]. Muhammad Usman Kemal (2010). Post-Merger Profitability: A Case of Royal Bank of Scotland (RBS), International Journal of Business and Social Science Vol. 2 No. 5, March 2011

[22]. P. M. Healy, K.G. Palepu, and R. S. Ruback, (1992): 'Does Corporate Performance Improve After Mergers?', Journal of Financial Economics, Vol 31, pp 135- 175

[23]. Pramod & Reddy (2007) "Relative size in mergers and operating performance: Indian Experience", Economic and political weekly, Pp 2936-3942.

[24]. Ravi Sanker and Rao K.V (1998) "Financial Management 12", pp. 12-19.

[25]. S.R. Singh and V. Kumar, (1994). Corporate Rehabilitation and BIFR (New Delhi Shipra Publications, pp. 67.

[26]. S.R. Singh and V. Kumar, (1994). Corporate Rehabilitation and BIFR (New Delhi Shipra Publications, pp. 67.

[27]. Santos José O. Dacanay III, (2007), "Malmquist index and technical efficiency of Philippine Commercial banks in the post-Asian financial crisis period", "*Philippine Management Review* 2007", Vol. 14, pp 93-114.

[28]. Saple V. (2000) “”“Diversification, Mergers and their Effect on Firm Performance: A Study of the Indian Corporate Sector”, Review of Quantitative Finance and Accounting. Page No.67.
[29]. Sathye M (2003). “Efficiency of Banks in a Developing Economy: the Case of India.” EJOR 148(3):662-671.
[30]. Shrimali Vijay and SaxenaKarunesh, (2004) : Merger & Acquisitions : Indian Journal of Accounting Vol. XXXV(1), pp 48-54
[31]. Surjit, Kaur(2002). “A Study of corporate takeovers in India”, Ph. D thesis abstract Pp-1-11.
[32]. Tambi, M. K. (2005). Impact of Mergers and Amalgamation On The Performance Of Indian Companies. Econ WPA Finance
[33]. Timothy A. Kruse, Hun Y. Park, Kwangwoo Park, and Kazunori Suzuki, (2003): ‘Long-term Performance following Mergers of Japanese Companies: The Effect of Diversification and Affiliation’, presented at American Finance Association meetings in Washington D.C, pp 1-40.
[34]. Vanitha, S. and M. Selvam, 2007. Financial Performance of Indian Manufacturing Companies during Pre and Post Merger. International Research Journal of Finance and Economics, 12:7-35
[35]. Vardhana Pawaskar, (2001), Effect of Mergers on Corporate Performance in India. *Vikalpa,* 26 (1): 19-32.
[36]. Vidya Sekhri, (Aug 2011), “A DEA Malmquiest Index approach to measuring productivity and efficiency of Banks in India”, “*The IUP journal of bank Management*”, Vol X, No. 3, pp 49-64.
[37]. Weston, J.F., and S.K. Mansinghka, (1971): ‘Tests of the Efficiency Performance of Conglomerate Firms’, Journal of Finance, September, pp 919-936

IOSR Journal of Business and Management (IOSR-JBM) is UGC approved Journal with Sl. No. 4481, Journal no. 46879.

Dr. Devarajappa S. “Effect of Mergers on Efficiency of the Banks: A Study of Selected Merged Banks in India.” IOSR Journal of Business and Management (IOSR-JBM) , vol. 19, no. 9, 2017, pp. 47–57.