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Impact of Merger on Efficiency of Acquiring Bank: An Analytical Study on Merger of Bank of Rajasthan and ICICI Bank

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Abstract
The paper tries to analytically evaluate the impact of merger of Bank of Rajasthan and ICICI Bank on their operating performance in terms of different financial parameters. Several financial ratios. Kolmogorov-Smirnov test,Shapiro–Wilk test,Paired Sample T test,Wilcoxon Signed-Ranks Test have been extensively used to find out the difference in pre and post merger operational performance of merged entity of ICICI bank after analyzing data for four years prior to merger and for four years after the merger .The study shows that there are significant differences between pre and post merger above mentioned financial indicators and majority of the financial indicators (13 out of 17) of Bank of Rajasthan (Target Bank) and ICICI Bank (Acquiring Bank) display significant improvement in their operational performance during post- merger period. Therefore, the results of the study reveal that average financial ratios of sampled bank in Indian banking sector showed a remarkable and significant improvement in terms of operational efficiency, profitability, and stakeholders wealth.
Keywords: Merger, India, Bank of Rajasthan , ICICI Bank.

1. Introduction:

The term 'merger and acquisition (M&A)' has become a buzzword in today's banking business in the face of global competitive banking environment. Mergers and acquisitions activity has gained renewed vigor caused by growing competition, liberalization, globalization, and integration of national and international markets. Most of the merger in Indian banking segment has so far taken place to restructure financially weak banks with strong banks. But, this may have hostile influence upon the asset quality of the stronger banks. It is, therefore, expected that the strong banks should be merged with stronger banks to compete with foreign banks as well as to penetrate in the global financial market. One of the strategies to confront the severe competition could be, to strengthen through the process of mergers and acquisitions in case of Indian financial sector organizations. India is slowly but steadily moving from a regime of 'large number of small banks' to 'small number of large banks' and 'larger the bank, higher its competitiveness and better prospects of survival' appears to be the tune for success. The key motivating force for merger activity is rigorous competition among firms of the same industry which puts focus on economies of scale, cost efficiency, and profitability. The other factor behind bank mergers is the "too big to fail" principle followed by the authorities. Earlier, merging of one bank with another implemented by regulator was aimed at protecting the interest of investors of fragile banks. Many small and weak banks have been merged with other banks mainly to protect the interests of depositors which may be classified as forced mergers. When a specific bank shows severe symptoms of sickness such as huge NPAs, erosion in net worth or substantial decline in capital adequacy ratio, RBI imposes moratorium under Section 45(1) of Banking Regulation Act, 1949 for a specific period on the activities of the sick bank. In this moratorium period, RBI identifies a strong bank and asks that bank to prepare a scheme of merger. Presently, market led mergers has gained momentum.

It is observed that though there are several studies conducted on the subject, most of the studies are conducted on performance appraisal studies or impact studies of financial reforms and its impact on individual banks. There are very few studies which have been conducted analysis on the impact of merger and acquisition (M&A)on the performance of acquiring banks whether it is private or public sector bank. Therefore, in India, very limited research has been done on this topic. Books available are in abundance but they are mostly theory based. None of the few studies conducted in India have explored the performance of mergers and acquisitions empirically and econometrically in terms of their effect on performance of banks. Moreover, although there is plethora of research literature on mergers and acquisitions, most of the studies have been done for the efficient markets of the developed world especially US and UK. Thus, there was a gap of the study on the subject, especially in the context of developing country like India. Therefore, after finding the gap of research, the present study makes an attempt to fill these voids and aims to investigate the performance of pre-merger and post merger and acquisition that have taken place in India and tries to judge the effect of merger and acquisition on the financial performance of ICICI bank's merged entity.

Main Reasons behind Merger of Bank of Rajasthan with ICICI bank:

The bank of Rajasthan with the assets base of Rs. 17300.06 Crores incurred the net loss after provision and taxes remained at Rs.102.13 Crores for the year ended 31st march, 2010. ICICI bank is learnt to have indicated that it's willing to pay more than BOR's present market valuation. According to banking circles, the Taylors, who acquired BOR a decade ago, have been under pressure to sell the old private bank which is grappling with directives from SEBI and RBI.In March, SEBI banned 100 entries allegedly holding BOR shares on behalf of the promoters from all stock market activities.RBI had slapped a penalty of Rs.25 lakh on the bank for string of violations like deletion of records in the bank's IT system, irregular property deals and lapses in the accounts of a corporate group. All these have led the boards of both the banks on May 23, 2010 to approve the merger and all branches of bank of Rajasthan Ltd is functioning as branches of ICICI bank Ltd. with effect from august 13, 2010.

In view of the above discussion, the objective of the study is to critically analyze and evaluate the impact of merger on the Efficiency of ICICI Bank during Post Liberalization Regime in terms of different parameters. The study has further attempted to investigate and test whether there exist any significant deviations in the results achieved by the banks after merger. Keeping in mind the significance of the present study, the objectives of the present study are:

a) To measure 'pre merger' performance of target bank (Bank of Rajasthan) as well as acquiring bank(ICICI Bank) and 'post merger ' financial performance of merged entity of ICICI Bank.
b) To analyze whether there exists any variation in the 'pre merger ' and 'post merger' financial performance of the sample banks undertaken into our study dividing the study period into pre-merger and post merger period.
c) To assess the nature and magnitude as well as trend in growth of performance of those sample banks under our consideration during pre and post-merger period.
d) To evaluate the impact of merger on financial as well as operative performance of sample banks under our consideration.

2.Methodology:

2.1. Collection of data:

The present study is based on secondary data published by the Reserve Bank of India, Annual Report of Public Sector Banks, Trend and Progress of Banking in India, Study Reports of various Committees set up by the Government of India etc. Data have also been collected from the websites of various government and non-government agencies. The financial and accounting data of banks has been mainly collected from banks' Annual Report of several years to evaluate the impact of M&As on the performance of said banks. Financial data has also been collected from *www.moneycontrol.com* for the study. Moreover, several banking journals, research work published in seminar lectures etc have been carefully followed to analyse our results. The secondary data which has been collected was subjected to descriptive and inferential analysis.

2.2. Period of Study:

In order to make a comparison of the performance of the target bank and acquiring bank, in our study of the merger of the Bank of Rajasthan with ICICI Bank Ltd , data for four years prior to merger and data for four years after the merger have been analyzed. Thus, a period of nine years (2007-08 to 2014-15) has been analyzed.

2.3. Method of Analysis:

For attaining the result vis-à-vis to analyze the impact of merger on acquirer banks, pre and post merger financial performance have been compared in terms of several suitable financial ratios. The pre and post merger financial performance have been achieved in terms of Investment- Deposit Ratio, Priority sector advance as % to total advance, Deposit per employee, Advance per employee, Interest income as a % of total income, Non-interest income as a % of total income, Interest expenses as a % of total expenses, Establishment expenses as a % of total expenses, Other operating expenses as a % of total expenses, Spread as a % to Assets, Interest Income as % to average working funds, Non-interest Income as % to average working funds, Operating profit as % to average working funds, Return on Asset, Net NPA as % to net advances, Capita Adequacy Ratio [CAR(%) etc.

The pre-merger (four years before) and post -merger (after four years) financial ratios have been compared. The year of merger is considered as base year and denoted as 0 which has been excluded from the analysis. Keeping in mind the objective of the study, we have taken into consideration the mean difference, standard deviation, independent t-test as tools of statistical evaluation of our study. In order to test the null hypothesis, paired t- test is used. This test is a parametric statistical hypothesis test for the case of two related samples on a single sample. This study has also attempted to test the hypotheses relating to the impact of M&A on the various performance parameters and thus derive a conclusion about whether the event of M&A has made a positive impact on the performance of the sample bank or not. The ratios for each of the performance parameters were estimated for the above mentioned merger individually. Thereafter, we compared means of the performance parameter over time i.e. before the merger vs after the merger.

2.4. Financial ratio used:

(i) Credit -Deposit Ratio=Total Advance/Total Deposit X 100
(ii) Investment- Deposit Ratio: Total Investment / Total Deposit X 100
(iii) Priority sector advance as % to total advance: Priority sector advance / Total Advance X 100
(iv) Deposit per employee: Total Deposit / no of employees
(v) Advance per employee: Total Advance / no of employee
(vi) Interest income as a % of total income: Interest earned / Total income X 100
(vii) Non-interest income as a % of total income: Non-interest earned / Total income X 100
(viii) Interest expenses as a % of total expenses= Total interest expended / Total expenditure
(ix) Establishment expenses as a % of total expenses = Establishment expense / Total expenditure
(x) Other operating expenses as a % of total expenses = Other operating expenses / Total expenditure
(xi) Spread as a % to Assets =spread (i.e.interest income minus interest expenses)/ Total assets
(xii) Interest Income as % to average working funds =Interest earned/Average working fund(AWF)
(xiii) Non-interest Income as % to average working funds=Non-interest earned/ Average working fund(AWF)
(xiv) Operating profit as % to average working funds= Operating profit/ Average working fund(AWF)
(xv) Return on Asset(ROA)= Net profit/ Average assets X 100
(xvi) Net NPA as % to net advances= Net NPA/ Net advances X 100
(xvii) CAR(%)=Tier-I Capital(%)+Tier-II Capital(%)

2.5. Hypotheses for testing the significant difference between Pre and Post merger financial indicators:

The present work is essentially based on secondary sources of data; hence hypothesis is being tested by using published materials. For the purpose of study, *Null Hypothesis* is that there is no difference in mean value of selected variables before merger and after merger and *Alternate Hypothesis* is that there is difference in mean value of selected variables before merger and after merger.

Hypotheses have been formulated for testing the significant difference between Pre and Post merger financial indicators which have been depicted below:

H_0 (Null Hypothesis): There is no significance difference between the pre and post merger financial indicators like Investment- Deposit Ratio, Priority sector advance as % to total advance, Deposit per employee, Advance per employee, Interest income as a % of total income, Non-interest income as a % of total income, Interest expenses as a % of total expenses, Establishment expenses as a % of total expenses, Other operating expenses as a % of total expenses, Spread as a % to Assets, Interest Income as % to average working funds, Non-interest Income as % to average working funds, Operating profit as % to average working funds, Return on Asset, Net NPA as % to net advances, Capita Adequacy Ratio [CAR(%) etc.Alternatively,

Let Mean value before merger be X1, Mean value after merger be X2.

Ho: X1 = X2 Null Hypothesis: There is no difference in mean value of selected variables before merger and after merger.

H_1 (Alternative Hypothesis): There is significance difference between the pre and post merger financial indicators like Investment- Deposit Ratio, Priority sector advance as % to total advance, Deposit per employee, Advance per employee, Interest income as a % of total income, Non-interest income as a % of total income, Interest expenses as a % of total expenses, Establishment expenses as a % of total expenses, Other operating expenses as a % of total expenses, Spread as a % to Assets, Interest Income as % to average working funds, Non-interest Income as % to average working funds, Operating profit as % to average working funds, Return on Asset, Net NPA as % to net advances, Capita Adequacy Ratio [CAR(%) etc.Alternatively,

H1: X1≠ X2 Alternate Hypothesis: There is difference in mean value of selected Variables before merger and after merger

After the ratios for each of the performance parameters were estimated for the above mentioned mergers individually, this was followed by the Shapiro-Wilk normality test. On the basis of the normality results, paired t test at 95% confidence level was carried out for parameters following normal distribution and Wilcoxon Paired Sign-Rank test was conducted for factors not following normal distribution. We have also conducted Kolmogorov-Smirnov test to justify whether there is violation in normality assumption**.**

Thereafter, we compared means of the performance parameter over time i.e. before the merger vs after the merger. t-test and Wilcoxon test were chosen because those are popularly used for computing pre-post analysis of a phenomenon. The Shapiro–Wilk test is also conducted to test of normality. The different parameters chosen for study were ROA, CDR, IDR, PSA, DPE, APE, IITI, NIITI, IETE, EETE, OOETE, STA, IIAWF, NIIAWF, OPAWF, NNPANA, CAR.

2.6. Kolmogorov-Smirnov test

This test assesses whether there is significant departure from normality in the population distribution for each of the banks. The null hypothesis states that the normality assumption is not violated.

2.7. Shapiro–Wilk test
The Shapiro–Wilk test is a test of normality in frequentist statistics. The null-hypothesis of this test is that the population is normally distributed.

2.8. Paired Sample T Test
It checks whether there is any significant change in normal return before and after the announcement of the M&A event. The hypotheses for the test are stated below (Bhaumik and Selarka, 2008).
H_O: There is no significant difference in normal return due to the occurrence of the event.
H_1: There is a significant difference in normal return due to the occurrence of the event .
The hypotheses can be expressed in two different ways that express the same above idea and are mathematically equivalent:
H_0: $\mu_1 = \mu_2$ ("the paired population means are equal")
H_1: $\mu_1 \neq \mu_2$ ("the paired population means are not equal") or
H_0: $\mu_1 - \mu_2 = 0$ ("the difference between the paired population means is equal to 0")
H_1: $\mu_1 - \mu_2 \neq 0$ ("the difference between the paired population means is not 0")
Where μ_1 is the population mean of variable 1, and μ_2 is the population mean of variable 2.

2.9. Wilcoxon Signed-Ranks Test:
The Wilcoxon Signed-Rank test is a non-parametric statistical hypothesis test used when comparing two related samples, matched samples, or repeated measurements on a single sample to assess whether their population mean ranks differ (i.e. it is a paired difference test). It can be used as an alternative to the paired Student's t-test, *t*-test for matched pairs, or the *t*-test for dependent samples when the population cannot be assumed to be normally distributed.Therefore, it is the non-parametric version of a paired samples t-test. It is used when the difference between the two variables is abnormally distributed. It analyses the difference between the paired observations, taking into account the magnitude of the differences.

3.Analysis of results:
While considering the case of Bank of Rajasthan (Target Bank) and ICICI Bank (Acquiring Bank) merger empirically, with regard to Credit -Deposit Ratio, Investment- Deposit Ratio, Deposit per employee, Advance per employee , Non-interest income as a % of total income , Other operating expenses as a % of total expenses , Spread as a % to Assets, Interest Income as % to average working funds , Non-interest Income as % to average working funds, Operating profit as % to average working funds, Return on Asset , Capita Adequacy Ratio [CAR(%)], null hypotheses are rejected which lead us to conclude that there are significant differences between pre and post merger above mentioned financial indicators.

Regarding Priority sector advance as % to total advance , Interest income as a % of total income , Interest expenses as a % of total expenses , Establishment expenses as a % of total expenses , Net NPA as % to net advances, null hypotheses are rejected signifying that there are significant differences between pre and post merger above mentioned financial indicators.

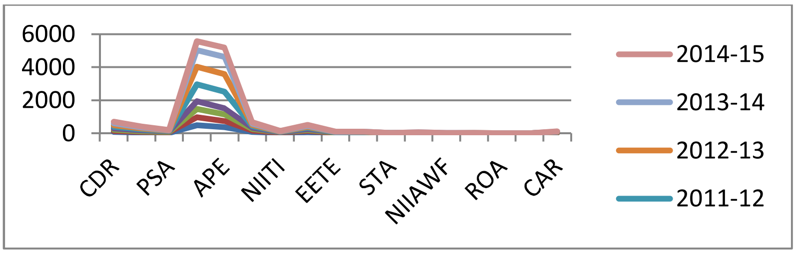
Table 1:-Average Mean and Standard Deviation of Pre-merger and Post-merger Ratios of combined (Bank of Rajasthan (Target Bank) and ICICI Bank (Acquiring Bank) considering four year pre and post acquisition[Merged on August 13, 2010]

		Mean	Mean Difference	Change in Ratios	Std.Deviation	Growth Rate(%)
Credit -Deposit Ratio	Pre-merger	72.49	29.44	I	2.78	40.62%
	Post-merger	101.93			3.74	
Investment- Deposit Ratio	Pre-merger	43.69	12.80	I	6.90	29.30%
	Post-merger	56.49			4.96	
Priority sector advance as % to total advance	Pre-merger	27.55	6.87	D	1.77	-24.95%
	Post-merger	20.67			1.90	
Deposit per employee	Pre-merger	484.52	422.15	I	12.24	87.13%
	Post-merger	906.67			251.25	
Advance per employee	Pre-merger	377.78	539.67	I	22.52	142.85%
	Post-merger	917.45			232.37	
Interest income as a % of total income	Pre-merger	83.66	2.29	D	2.02	-2.73%
	Post-merger	81.38			1.13	
Non-interest income as a % of total income	Pre-merger	16.34	2.29	I	2.02	13.99%
	Post-merger	18.62			1.13	
Interest expenses as a % of total expenses	Pre-merger	64.69	1.40	D	4.07	-2.16%
	Post-merger	63.29			2.85	
Establishment expenses as a % of total expenses	Pre-merger	12.60	2.91	D	2.27	-23.06%
	Post-merger	9.69			0.34	
Other operating expenses as a % of total expenses	Pre-merger	12.49	0.60	I	2.40	4.81%
	Post-merger	13.09			0.52	
Spread as a % to Assets	Pre-merger	2.08	0.56	I	0.13	26.95%
	Post-merger	2.64			0.29	
Interest Income as % to average working funds	Pre-merger	7.99	0.05	I	0.44	0.64%
	Post-merger	8.04			0.19	
Non-interest Income as % to average working funds	Pre-merger	1.59	0.25	I	0.22	15.64%
	Post-merger	1.84			0.15	
Operating profit as % to average working funds	Pre-merger	1.71	1.14	I	0.31	66.72%
	Post-merger	2.85			0.38	
Return on Asset	Pre-merger	0.82	0.89	I	0.39	109.56%
	Post-merger	1.71			0.15	
Net NPA as % to net advances	Pre-merger	1.22	0.20	D	0.53	-16.20%
	Post-merger	1.02			0.41	
Capita Adequacy Ratio [CAR(%)]	Pre-merger	13.08	3.55	I	1.08	69.00%
	Post-merger	16.63			0.93	

*I stands for Increase, **D stands for Decrease.
Source: Author's own estimate using e.views 5.

The results suggest that the performance of banks has been improved in terms of Credit -Deposit Ratio, Investment- Deposit Ratio, Deposit per employee, Advance per employee , Non-interest income as a % of total income , Other operating expenses as a % of total expenses , Spread as a % to Assets, Interest Income as % to average working funds , Non-interest Income as % to average working funds, Operating profit as % to average working funds, Return on Asset , Capita Adequacy Ratio [CAR(%)],Net NPA as % to net advances but regarding Priority sector advance as % to total advance , Interest income as a % of total income , Interest expenses as a % of total expenses , Establishment expenses as a % of total expenses , these ratios show negative trend in post merger period.

Fig:1: Graphical presentation of pre and post merger financial performance of Bank of Rajasthan and ICICI Bank



Source: own estimate

The result of the normality from table-2 shows that the significant value of CDR, IDR, OOETE , NNPANA and CAR of the ICICI bank during entire sample period 2000-01 to 2014-15(both pre-merger and post-merger) is less than 0.05, meaning that normality assumption has been violated. Since the significant values of each of the remaining variables (in table-21) is greater than 0.05, we do not reject the null hypothesis and conclude that these data do not violate the normality assumption. The same result is also confirmed by the Shapiro-Wilk test.

Table 2: Kolmogorov-Smirnov test and Shapiro-Wilk test of normality of merged entity of ICICI bank

Tests of Normality						
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
CDR	.229	15	.033	.832	15	.010
IDR	.258	15	.008	.769	15	.001
PSA	.139	15	.200*	.886	15	.058
DPE	.183	15	.187	.902	15	.103
APE	.240	15	.020	.896	15	.084
IITI	.117	15	.200*	.961	15	.717
NIITI	.117	15	.200*	.961	15	.717
IETE	.122	15	.200*	.967	15	.818
EETE	.209	15	.078	.904	15	.108
OOETE	.252	15	.011	.871	15	.035
STA	.127	15	.200*	.966	15	.793
IIAWF	.158	15	.200*	.927	15	.243
NIIAWF	.129	15	.200*	.935	15	.321
OPAWF	.204	15	.092	.885	15	.057
ROA	.137	15	.200*	.973	15	.899
NNPANA	.283	15	.002	.742	15	.001
CAR	.196	15	.124	.847	15	.016
a. Lilliefors Significance Correction						
*. This is a lower bound of the true significance.						

Source: Author's own estimate

Table 3 shows that the negative mean rank is less than the positive mean rank in case of CDR and CAR of merged entity of ICICI bank. This suggests that the Credit –Deposit Ratio measure (CDR), Capital-Adequacy ratio (CAR) in post merger period are likely higher than that in the pre merger period. So we can infer that the phenomenon of merger has accentuated these performance parameters.

Table 3: Wilcoxon Signed Ranks Test of merged entity of ICICI bank

Ranks				
		N	Mean Rank	Sum of Ranks
CDR post – CDR pre	Negative Ranks	2[a]	2.00	4.00
	Positive Ranks	2[b]	3.00	6.00
	Ties	0[c]		
	Total	4		
IDR post – IDR pre	Negative Ranks	3[d]	2.67	8.00
	Positive Ranks	1[e]	2.00	2.00
	Ties	0[f]		
	Total	4		
CAR post – CAR pre	Negative Ranks	0[g]	.00	.00
	Positive Ranks	4[h]	2.50	10.00
	Ties	0[i]		
	Total	4		
OOETE post – OOETE pre	Negative Ranks	4[j]	2.50	10.00
	Positive Ranks	0[k]	.00	.00
	Ties	0[l]		
	Total	4		
NNPANA post – NNPANA pre	Negative Ranks	4[m]	2.50	10.00
	Positive Ranks	0[n]	.00	.00
	Ties	0[o]		
	Total	4		

Source: Author's own estimate

Table 3 also shows that the negative mean rank is higher than the positive mean rank in case of Investment –Deposit ratio(IDR),Other Operating Expenses to Total Expenses ratio(OOETE), Net NPA as % to net advances (NNPANA). This suggests that Investment –Deposit ratio(IDR),Other Operating Expenses to Total Expenses ratio(OOETE), Net NPA as % to net advances (NNPANA)positions in post merger period are likely lesser than that in the pre merger period. So we can infer that the phenomenon of merger has turned down the Investment –Deposit ratio(IDR) ,Other Operating Expenses to Total Expenses ratio(OOETE), Net NPA as % to net advances (NNPANA) position of the merged entity of ICICI bank.

Table 4: Wilcoxon Test Ranks of merged entity of ICICI bank

Test Statistics[c]					
	CDRpost – CDRpre	IDRpost - IDRpre	CARpost - CARpre	OOETEpost - OOETEpre	NNPANApost - NNPANApre
Z	-.365[a]	-1.095[b]	-1.826[a]	-1.826[b]	-1.826[b]
Asymp. Sig. (2-tailed)	.715	.273	.068	.068	.068
a. Based on negative ranks.					
b. Based on positive ranks.					
c. Wilcoxon Signed Ranks Test					

Source: Author's own estimate

By applying the Wilcoxon signed rank test, we can see that for all the 5 ratios, the significance level is more than 0.05 , therefore, the null hypothesis is accepted which indicates that there is no significant difference between the pre and the post-merger performance on the basis of CDR,IDR,CAR, OOETE, NNPANA of the ICICI bank. But, if we compare the individual ratio, we have found that the post-merger CDR,IDR,CAR, OOETE performance for all the two years has been better than the pre-merger period and reverse has happened in case of NNPANA ratio.

Table 5: Paired Samples Statistics of ICICI bank and Bank of Rajasthan and merged entity of ICICI bank

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	PSApre	15.31	4	8.01954	4.00977
	PSApost	20.675	4	1.90498	.952492
Pair 2	DPEpre	424.43	4	56.2309	28.1154
	DPEpost	906.672	4	251.253	125.6265
Pair 3	IITIpre	78.25	4	4.90464	2.45232
	IITIpost	81.3775	4	1.127367	.563683
Pair 4	NIITIpre	21.75	4	4.90464	2.4523
	NIITIpost	18.6225	4	1.1273	.563683
Pair 5	IETEpre	66.415	4	3.22821	1.614107
	IETEpost	63.29	4	2.854692	1.42734
Pair 6	EETEpre	4.695	4	1.12072	.5603644
	EETEpost	9.695	4	.340440	.17022
Pair 7	STApre	1.33	4	.5720	.286036
	STApost	2.6425	4	.29067	.145337
Pair 8	IIAWFpre	8.8525	4	.95660	.4783
	IIAWFpost	8.0375	4	.185719	.092859
Pair 9	NIIAWFpre	2.45	4	.55081	.2754087
	NIIAWFpost	1.84	4	.150775	.0753878
Pair 10	OPAWFpre	2.2675	4	.1862569	.0931284
	OPAWFpost	2.85	4	.382273	.191136
Pair 11	ROApre	.9825	4	.29045	.14522
	ROApost	1.71	4	.154488	.0772442
Pair 12	CARpre	11.1175	4	.54249	.27124
	CARpost	12.7450	4	8.517	4.2585

Source: Authors' own estimate

In case of pre and post merger Priority Sector Advance ratio (PSA pre & PSA post),since the calculated value of t (1.268) for N=2 (as in Table 6) is lower than the table value (3.182 at $t_{0.025}$,df =3), we accept the null hypothesis. The results are not significant at 0.05 level of significance (p=.476). Therefore, the results of the above table show insignificant difference between pre and post M&A Priority Sector Advance ratio, because the p-value is greater than 0.05. Therefore, after merger and acquisition taken place, there is no significant difference in the performance of the said ICICI bank in India as H_0 is accepted. This indicates that the means of the pre and post merger pre and post merger Priority Sector Advance ratio values are not different significantly. Following the same trend of Priority Sector Advance ratio,this findings holds good in case of IITIpre & IITIpost, NIITIpre & NIITIpost, IETEpre & IETEpost, IIAWFpre& IIAWFpost, NIIAWFpre & NIIAWFpost, OPAWFpre & OPAWFpost, CARpre & CARpost which indicates that there is no significant difference between pre and post merger performance of the said merger.

Table-6: Paired Samples t Test of ICICI bank and Bank of Rajasthan and merged entity of ICICI bank

Pair	Variables (Pre-Post)	Paired Differences					t	df	Sig. (2 tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
1	PSApre - PSApost	-5.365	8.462444	4.2312	-18.83063	8.1006	-1.268	3	.294
2	DPEpre - DPEpost	-482.24	301.5514	150.77	-962.0781	-2.4068	-3.198	3	.049
3	IITIpre - IITIpost	-3.12	4.341914	2.170	-10.0364	3.7814	-1.441	3	.245
4	NIITIpre - NIITIpost	3.127	4.341914	2.170	-3.78145	10.0364	1.441	3	.245
5	IETEpre - IETEpost	3.125	5.809747	2.904	-6.11960	12.3696	1.076	3	.361
6	EETEpre - EETEpost	-5.00	1.210812	.6054	-6.926672	-3.0733	-8.259	3	.004
7	STApre - STApost	-1.312	.7027268	.35136	-2.4306	-.19430	-3.735	3	.033
8	IIAWFpre - IIAWFpost	.815	1.138551	.56927	-.99668	2.62668	1.432	3	.248
9	NIIAWFpre - NIIAWFpost	.610	.459855	.2299	-.121732	1.34173	2.653	3	.077
10	OPAWFpre - OPAWFpost	-.582	.468783	.2343	-1.3284	.16343	-2.485	3	.089
11	ROApre - ROApost	-.727	.209184	.10459	-1.06035	-.39464	-6.956	3	.006
12	CARpre - CARpost	-1.627	8.75957	4.379	-15.5659	12.3109	-.372	3	.735

Source: Author's own estimate

On the contrary, in case of pre and post merger (DPEpre & DPEpost) ,(EETEpre & EETEpost),(STApre& STApost)and (ROApre &ROApost), since the calculated value of t (3.198, -8.259, 3.735and 6.956respectively) for N=4 (as in pair 2,6, 7and 11 in table-6) is greater than the table value 3.182 at $t_{0.025}$,df =3), we reject the null hypothesis. The results are significant at 0.05 level of significance (p= 0.049, 0.004, 0.033 and 0.006). Therefore, the results of the above table show significant difference between Pre and Post M&A (DPEpre & DPEpost) ,(EETEpre & EETEpost) , (STApre & STApost) and (ROApre &ROApost),.This indicates that the means of the pre and post (DPEpre & DPEpost) ,(EETEpre & EETEpost) , (STApre& STApost) and (ROApre &ROApost) ratio values are different significantly.

4. Findings and conclusion:

In case of merger of Bank of Rajasthan (Target Bank) and ICICI Bank (Acquiring Bank) , the results suggest that the performance of banks has been improved in terms of Credit -Deposit Ratio, Investment- Deposit Ratio, Deposit per employee, Advance per employee , Non-interest income to total income , Other operating expenses to total expenses , Spread to Assets, Interest Income to average working funds , Non-interest Income to average working funds, Operating profit to average working funds, Return on Asset , Capita Adequacy Ratio [CAR(%)],Net NPA to net advances, but regarding Priority sector advance to total advance , Interest income to total income , Interest expenses to total expenses , Establishment expenses to total expenses , these ratios show negative trend in post merger period. Therefore, we can conclude that there are significant differences between pre and post merger above mentioned financial indicators and majority of the financial indicators (13 out of 17) of Bank of Rajasthan (Target Bank) and ICICI Bank (Acquiring Bank) display significant improvement in their operational performance during post- merger period. The result of the normality test conducted by Kolmogorov-Smirnov test as well as by the Shapiro–Wilk test shows that out of 17 parameters(financial ratios) undertaken into our study for assessing significant impact of merger on sample banks' performance ,all parameters except credit-deposit ratio(CDR),investment deposit ratio(IDR), operating expenses to total expenses(OOETE),net NPA to net assets(NNPANA) and Capita Adequacy Ratio (CAR) of ICICI Bank during entire sample period 2000-01 to 2014-15(both pre-merger and post-merger) do not violate the normality assumption.Paired Samples t Test suggests that there is no statistically significant difference between of pre and post merger Priority Sector Advance ratio (PSApre & PSApost), pre and post meger interest income as a % of total income(IITIpre& IITIpost), pre and post merger non interest income as a % of total income(NIITIpre& NIITIpost), pre and post merger interest expenses to total expenses(IETEpre & IETEpost), pre and post merger interest income to average working fund(IIAWFpre& IIAWFpost), pre and post merger operating profit to average working fund (OPAWFpre & OPAWFpost), pre and post merger capital adequacy ratio(CARpre & CARpost) indicating that there is no statistically significant difference between pre and post merger performance of the said merger on the basis of aforesaid parameters. On the contrary, the results of Paired Samples t Test show significant difference between Pre and Post M&A deposit per employee (DPEpre & DPEpost) , Pre and Post M&A spread to total assets(STApre& STApost) Pre and Post M&A establishment expenses to total expenses ratio(EETEpre & EETEpost) and Pre and Post M&A return on assets(ROApre &ROApost),This indicates that the means of the pre and post (DPEpre & DPEpost) ,(STApre & STApost) and (EETEpre & EETEpost), (ROApre &ROApost) ratio values are different significantly.Although Wilcoxon Signed Ranks Test of merged entity of ICICI Bank indicates that theInvestment –Deposit ratio(IDR),Other Operating Expenses to Total Expenses ratio(OOETE), Net NPA as % to net advances (NNPANA)positions in post merger period are likely lesser than that in the pre merger period and the Credit –Deposit Ratio measure (CDR), Capital-Adequacy ratio (CAR) in post merger period are likely higher than that in the pre merger period, Wilcoxon Test Ranks suggest that there is no statistically significant difference between the pre and the post-merger performance on the basis of CDR,IDR,CAR, OOETE, NNPANA of the ICICI bank. But, if we compare the individual ratio, we have found that the post-merger CDR,IDR,CAR, OOETE performance for all the four years has been better than the pre-merger period and reverse has happened in case of NNPANA ratio.

Merger in banking sector in India has provided rationale that it is the constructive device for survival of feeble banks by merging into larger bank. But, this may have hostile influence upon the asset quality of the stronger banks. It is, therefore, recommended that the strong banks should be merged with stronger banks to compete with foreign banks as well as to penetrate in the global financial market.

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