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Research Article

Impact Of Consolidation On The Financial Performance Of Indian Public Banks

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ABSTRACT

India is one of the nation whose economy is expanding globally at a quicker pace. These days, the branch development is so expensive, commercial banks struggle greatly to increase the region in which they operate. Second, financial analysts assess the performance of the public bank about the price of its shares. In the current climate, public banks are a fierce rival to commercial banks in profitability, low operating expenses, growing non-performing assets, and high share values. The topic "Impact of consolidations on Financial Performance of Indian Public Banks" has been chosen considering the issues as mentioned earlier in mind. Consolidations are crucial tools for the expansion and growth of the economy in the globalized world. A Consolidation is the coming together of multiple businesses via sharing interests. Following a Consolidation, the firm name may become the name of the buyer or the seller, or it may become a new name altogether. Moreover, the consolidation occurs when one business acquires a majority stake in another business. The buyer pays cash or the buyer's stock for the seller's assets or stock. It is undeniable that the buyer has the upper hand in consolidation deals. The individual or company will cease to exist upon purchase. Based on the objectives, the research concentrated on the causes of bank consolidations in India, tried to determine the correlation between the CAMEL variables (capital adequacy, asset quality, management quality, earning quality, and liquidity) and Indian banks' financial performance, and looked at the effects of consolidations on these variables both before and after the merger. A thorough analysis was conducted of the annual reports of a subset of Indian public banks, both five years prior to and five years following the consolidations. The T-test was used for analysis, and it is followed by correlation and multivariate analysis. T-test to examine the profitability and efficiency of banks as well as the effect of consolidations on the combined banks' financial performance. Finding the correlation between different dependent variables has been done using correlation. The link between the dependent variables and the categorical independent fixed factors, such as Pre/Post-Merger, has been designed using multivariate analysis.

Keywords: Consolidation, profitability, financial performance, correlation

1. INTRODUCTION

India is one nation whose economy is expanding globally at a quicker pace. India's economy is expanding rapidly and has been rising to the top in a number of industries, including information technology, R&D, pharmaceuticals, infrastructure, energy, retail consumer goods, telecom, banking, financial services, media, and hospitality. The way commercial banks are seen and operate in India has significantly changed since the banking sector reforms were implemented.

It is expected that the Indian banks will handle the significant inflows and outflows of different financial resources. A robust banking system through restructuring is required to manage the influx and outflow of financial resources. According to analysis, India's banking industry is the fastest-growing one, and the growth of the national economy has been greatly influenced by the stability of the banking system. Referred to as the "backbone of the Indian economy," the banking sector plays a significant and crucial role in a rising nation such as India. There have been 22 mergers in the banking industry since the start of the banking and economic reforms in 1990 [1].

Banks are, as far as we understand, financial institutions. The Indian banking industry has seen tremendous transformation in the last several years, which has had an impact on the structure, dynamics, and nature of the strategic relationships between financial institutions. Traditional savings and lending services are being replaced by other financial services offered by Indian banks, including merchant banking, venture capital, securities trading, insurance, and more. Banks have expanded their operations into new regions in recent times.

Banks offer a range of resources, facilities, and financial services to its clients in one location to serve a broad range of activities. The financial system must broaden both in form and structure in order to meet the demands of this new environment. In order to take advantage of opportunities and compete in the global market, banks must be in good financial standing. Owing to the increasing level of competition, banks are driven to expand through inorganic means such as mergers and acquisitions [2]. The bank might implement a plan of action like mergers and acquisitions (M&As) to deal with this shifting circumstance. Among the first to notice the cyclical pattern of Merger and Acquisitions (M&As) activity were [3].

Globally, there has been a growing inclination towards mergers and acquisitions due to heightened rivalry. Cost-cutting measures, sound financial planning, and business expansion are necessary. With the use of mergers and acquisitions, all of these may be accomplished.

Researchers from all over the world are interested in working on the topic of mergers and acquisitions because it's a crucial instrument for business expansion into new markets [4]. The Reserve Bank of India* and other financial regulatory bodies have taken many actions to consolidate the Indian banking industry in the post-liberalization era of the Indian economy [5].

India's GDP has expanded about 9% in the last several years. It has led to its recognition as the next major economic force. The Indian banking sector has seen a number of difficulties, and the country's economy has made mergers and acquisitions a common occurrence. When three banks—the Bank of Bengal, the Bank of Bombay, and the Bank of Madras—were reorganised to establish a single financial body that was later known as the State Bank of India, M&A activity in India began way back in the 1920s. Approximately seventeen urban cooperative banks combined with state-owned commercial banks in the year 2000. Public sector banks make up 75% of India's banking system [6].

The Indian banking sector saw additional consolidations throughout and after the 2000s. The entry of certain international banks into the Indian banking industry, enabled by regulatory bodies, brought intense rivalry to the Indian banking system. Private banks started to proliferate at that point. With strong backing from their parent banks, foreign banks operating in India have established the standard for services and performance in Indian banking institutions. Numerous private banks began combining with international banks as a result of this pressure. Building their financial strength, gaining a bigger share of the expanding retail market, and establishing a stronger regional presence were the driving forces behind the merger. The ratio of input to output or the ratio of cost to income is used to gauge how efficient banking operations are. The ratio of output quantity to input quantity represents the banking efficiency when we look at the quantities of input and output [7].

Globally and in India, M&A activity in the banking sector has increased recently. In recent years, there has been significant upheaval in the international banking sector with regard to mergers and acquisitions [8]. The primary force behind this has been deregulation, which has been achieved in three main ways: by eliminating interest rate regulations, by removing obstacles between banks and other financial intermediaries, and by lowering entrance barriers. Disintermediation, investor demands for higher returns, price competitiveness, lower margins, declining spreads, and rivalry across geographic boundaries have all resulted from it, pushing banks to find innovative ways to increase their earnings [9 – 10]. Due to the apparent benefits of scale economies, geographic diversity, reduced costs through branch and employee rationalization, cross-border expansion, and market share concentration, consolidation has become a prominent strategic instrument and a global phenomenon. Banks are now considering M&As due to the new Basel II regulations [11].

The field of corporate finance, management, and strategy that deals with buying and/or uniting with other companies is known as mergers and acquisitions, or M&A. In a merger, two companies come together to form a new company, typically with a new name. There are situations when the phrase "merger of equals" is used since the companies involved are usually of comparable size and stature. In contrast, an acquisition occurs when a larger firm purchases a smaller one that may be integrated into the parent company or operated as a subsidiary [12 – 13].

The researcher examined several research publications as part of this investigation. According to the study, a number of research have been done on mergers and acquisitions (M&As) in the Indian banking industry, particularly in commercial banks. However, the findings of these studies are inconsistent and do not

sufficiently address the other diverse aspects of M&As. Because branch development is so expensive, commercial banks these days struggle greatly to extend their areas of operation. Second, the value of a commercial bank's share price is how investors assess the bank's success [14 – 16]. In the current climate, private banks are a formidable rival to commercial banks in terms of profitability, low operating expenses, growing non-performing assets, and high share values. It is also evident that the majority of research has focused on trends, policies, and their framework, as well as human factors that require further study, while the profitability and financial analysis of mergers have received insufficient attention. The current study will concentrate more on the influence of M&As on acquiring bank's financial performance in the Indian banking sector it will focus on the causes behind the M&As of different banks [17 – 18].

Various research produces varying kinds of findings. In summary, the literature analysis above leads us to the conclusion that, in developing economies such as India, the banking sector is one of the fastest growing sectors. One of the best instruments for expansion, restructuring, and growth is mergers and acquisitions, which has drawn the attention of academics and researchers. Consolidations in the Indian banking industry has demonstrated that it is an ideal strategy for weak institutions to survive by merging with stronger banks. The aim of this study tends to find the correlation between different dependent variables has been done using correlation. The link between the dependent variables and the categorical independent fixed factors, such as Pre/Post-Merger, has been designed using multivariate analysis.

2. RESEARCH FRAME WORK AND METHODOLOGY

2.1 Conceptual Framework

Both qualitative and quantitative methodologies have been used in traditional research on mergers and acquisitions in the Indian banking industry. Continue the research on the correlation between Indian banks' financial performance and the CAMEL Variables (capital adequacy, asset quality, management quality, earning quality, and liquidity). In a perfect world, researchers would have combined quantitative and qualitative methods to present a comprehensive picture of the banks' post-merger financial performance.

Table 2.1 depicts the model that is being tested. The factors of mergers and acquisitions are expected to include capital adequacy, asset quality, management quality, earning quality, and liquidity. It articulates the connection between Indian banks' financial performance and CAMEL characteristics. Thus, the models H01, H02, H03, H04, and H05 were created. The model also makes recommendations for how acquisitions and mergers affect Indian banks' core variables both before and after the merger. The criteria used in the study to assess financial performance were chosen after a thorough examination of the literature on the crucial elements of mergers and acquisitions in the Indian banking sector. The CAMEL framework—which stands for Capital Adequacy, Asset Quality, Management Quality, Earning Quality, and Liquidity—is used to choose the variables. There are two types of variables that have occurred: independent and dependent. The study analysed the effects of mergers and acquisitions on the post-merger performance of acquiring banks as well as the pre- and post-merger performance of the acquiring banks.

Table 2.1 The CAMEL Model Representation [7]

C	Capital Adequacy	➢ Capital Adequacy Ratio ➢ Total Adv. To total Asset Ratio ➢ Govt. Securities to total investment
A	Asset Quality	➢ Total Advance to Total Deposit Ratio ➢ Credit Deposit Ratio ➢ Investment deposit Ratio ➢ Cash Deposit Ratio ➢ Net NPA to Net Advances
M	Management Efficiency	➢ Business Per Employee ➢ Profit Per employee
E	Earnings Quality	➢ Dividend Payout Ratio ➢ Return on Assets ➢ Operating profit by average working fund ➢ Return on equity ➢ Return on Net Worth ➢ Net Profit to total funds ➢ P/E Ratio
L	Liquidity	➢ Liquid Assets to Total Assets ➢ Approved Securities to Total Assets ➢ Liquid Assets to Demand Deposits ➢ Liquid Assets to Total deposits

In order to attain these objectives following hypothesis was developed.

- H_{01} - There is no significance difference between capital adequacy in the pre and post merger period of bank.
- H_{02} - There is no significance difference between the asset quality in the pre and post merger period of bank.
- H_{03}- There is no significance difference between Management quality in the pre and post merger period of Banks
- H_{04} - There is no significance difference between Earning quality in the pre and post merger period of Banks

• Banks H_{05} - There is no significance difference between liquidity position in the pre and post merger period of Banks

3. RESULTS AND DISCUSSIONS

3.1.1 Analysis & Interpretation of Punjab National Bank based on T-Test

The sample size, mean, standard deviation, and standard error for Punjab National Bank's Pre- and Post-Merger Levene's Test of Equality of Error Variance are shown in Descriptive Table 3.1. Following the merger, there was an average increase of 4.42% in the Multivariate Tests of Punjab National Bank's capital adequacy ratio and a 9.08% increase in the overall advance Tests of Between-Subjects Effects of the bank on total assets. Levene's Test of Equality of Error Variance of Punjab National Bank describes the relationship between government securities and total investment ratio as follows: total advances to total deposit ratio increased by 11.21%, credit deposit ratio increased by 11.44%, investment deposit ratio decreased by Tests of Between-Subjects Effects of Punjab National Bank 4.89%, and total advances to total deposit ratio increased by 11.26%. Cash deposit Ratio decreased by 1.00%, Net NPA to NET advances ratio decreased by 5.23%, Business per employee increased by 2.365 (Cr.).

3.1 Levene's Test of Equality of Error Variance of Punjab National Bank

Levene's Test of Equality of Error Variancesa				
	F	df1	df2	Sig.
Capital Adequacy Ratio	4.258	1	9	.065
Total Adv. to Total Asset Ratio	5.632	1	9	.049
Govt. Securities to total Investment	1.352	1	9	.293
Total Deposit to Total Deposit ratio	4.561	1	9	.056
,Credit Deposit Ratio (%)	4.992	1	9	.056
Investment ratio (%)	9.214	1	9	.015
Cash Deposit Ratio (%)	3.358	1	9	.099
Net NPA tp Net Advances	3.446	1	9	.106
Business Per Employee (Cr.)	1.475	1	9	.211
Profit Per employee(Cr.)	8.123	1	9	.020
Divident Payout ratio	.056	1	9	.824
Return on Assets (%)	3.242	1	9	.105
Operating Profit by Average Working fund (%)	.632	1	9	.351
Return on equity (%)	1.752	1	9	.230
Return on Net Worth(%)	1.751	1	9	.230
Net Profit 2 Total Funds(%)	1.896	1	9	.202
P/E Ratio (%)	4.254	1	9	.076
Liquid Assets to Total Assets	.255	1	9	.626
Approved Securities to Total Assets	2.452	1	9	.185
Liquid Assets to Demand Deposits	.059	1	9	.813
Liquid Assets to Total deposits	.520	1	9	.520

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.a. Design: Intercept + Category

The pre-merger profit per estimated marginal mean of Punjab National Bank employees saw a rise of.1087 (Cr.). This results in an increase of 5.43% in the dividend payout ratio, a rise of 0.39% in return on assets, an increase of 1.07% in operating profit by average working fund, a decrease of 5.53% in return on equity, a decrease of 5.53% in return on net worth, an increase of 0.19% in net profit to total funds, an increase of 8.15% in price earnings ratio, a decrease of 0.75% in liquid assets to total assets, a decrease of 3.73% in approved securities to total assets, a decrease of 12.68% in liquid assets to demand deposit ratio, and a decrease of 0.32% in liquid assets to total deposits.

With the exception of the capital adequacy ratio, total advances to total assets ratio, credit deposit ratio, investment ratio, cash deposit ratio, profit per employee, and P/E ratio, which all have significance values greater than 0.10 (the government securities to total investment ratio is 0.293 > 0.10 and the capital adequacy ratio is 0.065 < 0.10), the researcher has assumed that the groups have equal variances and has chosen to ignore the second test in the case of Punjab National Bank. Therefore, "unequal variances" are displayed in certain tables while "equal variances" are only displayed in many where "equal variances" are anticipated. Researcher can safely conclude that average change in bank ratios after merger is not due to chance alone if variables (ratios) have significance values of less than (for example, investment ratio is greater at 0.170 > 0.05 and not significant, but total Advance to Total Asset ratio is 0.017 < 0.05 and significant). Decisions about future bank mergers may be made by the government or bank boards.

3.1.2 Analysis & Interpretation of Correlation and MANOVA of Punjab National Bank

For every model effect, there are four tests of significance shown in the multivariate tests table 3.2. A statistic with a positive value is Pillai's trace. The statistic's increasing values (1.000) denote impacts that add more to the model. The following factors are impacted by mergers and acquisitions: "CAR," "TATA," "GSTI," "TDTD," "CDR," "IDR," "CaDR," "NNNA," "BPR," "PPR," "DPR," "ROA," "OPAW," "ROE," "RNW," "NPTF," "P/E,"

"LATA," "ASTA," "LADD," "LATD," and the overall financial position of the banks that have been acquired or merged with other banks. A positive-valued statistic with a range of 0 to 1 is Wilks' Lambda. Effects that contribute more to the model are indicated by decreasing values (0.000) of the statistic. The total of the test matrix's eigenvalues is Hotelling's trace.

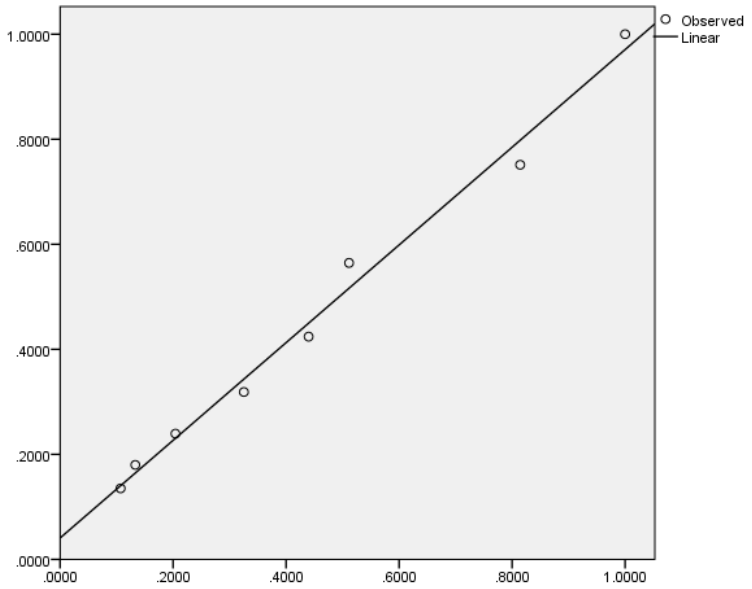

Figure 3.1 Significance variation of observed and predicted correlation for Punjab National Bank

Table 3.2 Multivariate Tests of Punjab National Bank

Multivariate Testsa						
Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	1.000	2042668.042b	9.000	1.000	.001
	Wilks' Lambda	.000	2042668.042b	9.000	1.000	.001
	Hotelling's Trace	18384012.379	2042668.042b	9.000	1.000	.001
	Roy's Largest Root	18384012.379	2042668.042b	9.000	1.000	.001
Category	Pillai's Trace	1.000	22242.175b	9.000	1.000	.005
	Wilks' Lambda	.000	22242.175b	9.000	1.000	.005
	Hotelling's Trace	200179.579	22242.175b	9.000	1.000	.005
	Roy's Largest Root	200179.579	22242.175b	9.000	1.000	.005

a.Design: Intercept + Category
b. Exact statistic

Increasing values for this positive-valued (200179.579) statistic suggest influences that add more to the model. Hotelling's trace is always greater than Pillai's trace (200179.579 > 1.000), although these two statistics will be almost equal if the test matrix's eigen values are low. This suggests that the effect most likely makes little contribution to the model. The largest eigenvalue of the test matrix is the largest root of Roy. As a result, the statistic (200179.579) has a positive value, and increasing values denote effects that add more to the model. Hotelling's trace is always equal to or less than Roy's largest root. When these two statistics are equal, either only one of the dependent variables is primarily affected by the effect, the dependent variables have a significant connection with one another, or the effect has little impact on the model. A test statistic with an exact or approximate F distribution is created from each multivariate statistic. Table 3.3 shows the estimated marginal mean of Pre-Post-Merger of Punjab National Bank.

Table 3.3 Estimated Marginal Mean of Pre-Post-Merger of Punjab National Bank.Pre-Post-Merger

Dependent Variable		Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Capital Adequacy Ratio	Pre-Merger	8.012	1.398	4.850	11.174
	Post-Merger	12.850	1.276	9.964	15.736
Total Adv. to Total Asset Ratio	Pre-Merger	42.876	2.267	37.749	48.003
	Post-Merger	51.897	2.069	47.216	56.577
Govt. Securities to total Investment	Pre-Merger	68.910	1.575	65.347	72.473
	Post-Merger	79.770	1.438	76.517	83.023
Total Deposit to Total Deposit ratio	Pre-Merger	48.678	2.768	42.416	54.940
	Post-Merger	61.420	2.527	55.704	67.136

Credit Deposit Ratio (%)	Pre-Merger	47.946	2.468	42.363	53.529
	Post-Merger	59.938	2.253	54.842	65.035
Investment ratio (%)	Pre-Merger	45.740	2.319	40.493	50.987
	Post-Merger	41.053	2.117	36.264	45.843
Cash Deposit Ratio (%)	Pre-Merger	11.416	1.144	8.828	14.004
	Post-Merger	10.415	1.044	8.053	12.777
Net NPA tp Net Advances	Pre-Merger	6.030	1.207	3.300	8.760
	Post-Merger	1.122	1.102	-1.370	3.614
Business Per Employee (Cr.)	Pre-Merger	.984	.433	.004	1.964
	Post-Merger	3.240	.396	2.345	4.135
Profit Per employee(Cr.)	Pre-Merger	.132	.083	-.056	.320
	Post-Merger	.023	.076	-.148	.195
Divident Payout ratio	Pre-Merger	9.354	2.270	4.220	14.488
	Post-Merger	14.782	2.072	10.095	19.468
Return on Assets (%)	Pre-Merger	.690	.131	.393	.987
	Post-Merger	1.083	.120	.813	1.354
Operating Profit by Average Working fund (%)	Pre-Merger	1.462	.292	.802	2.122
	Post-Merger	2.537	.266	1.934	3.139
Return on equity (%)	Pre-Merger	27.154	2.936	20.512	33.796
	Post-Merger	21.628	2.680	15.565	27.692
Return on Net Worth(%)	Pre-Merger	27.154	2.936	20.512	33.796
	Post-Merger	21.628	2.680	15.565	27.692
Net Profit 2 Total Funds(%)	Pre-Merger	.920	.069	.764	1.076
	Post-Merger	1.113	.063	.971	1.256
P/E Ratio (%)	Pre-Merger	0.000	.864	-1.955	1.955
	Post-Merger	8.147	.789	6.362	9.931
Liquid Assets to Total Assets	Pre-Merger	11.228	1.245	8.412	14.044
	Post-Merger	10.480	1.136	7.910	13.050
Approved Securities to Total Assets	Pre-Merger	5.174	.608	3.798	6.550
	Post-Merger	1.445	.555	.189	2.701
Liquid Assets to Demand Deposits	Pre-Merger	114.134	10.144	91.186	137.082
	Post-Merger	101.463	9.260	80.515	122.412
Liquid Assets to Total deposits	Pre-Merger	12.748	1.527	9.294	16.202
	Post-Merger	12.437	1.394	9.283	15.590

3.2.1 Analysis & Interpretation of Canara Bank based on T-Test

The sample size, mean, standard deviation, and standard error for the pre- and post-merger banks are shown in Descriptive Table 3.4. Canara Bank experienced an average increase in its capital adequacy ratio of 1.98% following the merger, along with an increase in total advances to total asset ratio of 11.82%, government securities to total investment ratio of 15.98%, total advances to total deposit ratio of 12.47%, credit deposit ratio of 10.52%, and investment deposit ratio of 8.006%, respectively.

The ratio of cash deposits to advances decreased by.14%; the ratio of net non-performing assets to net advances decreased by.6.50%; the business per employee decreased by.3037 (Cr.); the profit per employee increased by.0343 (Cr.); the dividend payout ratio decreased by.91%; the return on assets increased by 1.25%; the operating profit by average working fund increased by.047%; the return on equity increased by 4.58%; the return on net worth increased by the same percentage, i.e. 4.58%; the net profit to total funds increased by 0.89%; the price-earnings ratio increased by 3.30%; the ratio of approved securities to total assets increased by 0.45%; the ratio of liquid assets to demand deposits increased by 23.60%; and the ratio of liquid assets to total deposits increased by 1.05%.

Table 3.4 Levene's Test of Equality of Error Variance of Canara Bank

Levene's Test of Equality of Error Variancesa				
	F	df1	df2	Sig.
Capital Adequacy Ratio	3.516	1	9	.094
Total Adv. to Total Asset Ratio	8.965	1	9	.015
Govt. Securities to total Investment	9.312	1	9	.014
Total Deposit to Total Deposit ratio	11.854	1	9	.007
Credit Deposit Ratio (%)	28.725	1	9	.000
Investment ratio (%)	1.815	1	9	.211
Cash Deposit Ratio (%)	1.513	1	9	.250
Net NPA tp Net Advances	11.245	1	9	.008
Business Per Employee (Cr.)	5.234	1	9	.048
Profit Per employee(Cr.)	6.649	1	9	.030
Divident Payout ratio	.317	1	9	.587
Return on Assets (%)	4.648	1	9	.059
Operating Profit by Average Working fund (%)	.135	1	9	.722
Return on equity (%)	.719	1	9	.419
Return on Net Worth(%)	.719	1	9	.419
Net Profit 2 Total Funds(%)	4.068	1	9	.074
P/E Ratio (%)	.025	1	9	.879

Liquid Assets to Total Assets	.005	1	9	.948
Approved Securities to Total Assets	14.426	1	9	.004
Liquid Assets to Demand Deposits	.125	1	9	.732
Liquid Assets to Total deposits	.023	1	9	.884

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.a. Design: Intercept + Category

Two tests of the two groups' differences are produced by the technique. The variances of the two groups are assumed to be equal in one test. The significance values of all the statistical variables in the case of Canara Bank are greater than 0.10 (for the investment ratio,.211>.10, and the business per employee, 0.048<.10), with the exception of the capital adequacy ratio, total advances to total asset ratio, government securities to total investment, total advances to total deposit ratio, credit deposit ratio, Net NPA to Net Advances, and business per employee and profit per employee. Ignoring the second test, the researcher has assumed that the groups have equal variances. Therefore, "unequal variances" are displayed in certain tables while "equal variances" are only displayed in many where "equal variances" are anticipated. Researcher can safely conclude that average change in bank ratios after merger is not due to chance alone if variables (ratios) have significance values below (capital adequacy ratio is greater,.431>.05 and not significant, but total Advance to Total Asset ratio is 0.003<0.05 and significant). Decisions about future bank mergers may be made by the government or bank boards.

3.2.2 Analysis & Interpretation of Canara Bank based on MANOVA

For every model effect, there are four tests of significance shown in the multivariate tests table 3.5. A statistic with a positive value is Pillai's trace. The statistic's increasing values (1.000) denote impacts that add more to the model. The following factors are impacted by mergers and acquisitions: "CAR," "TATA," "GSTI," "TDTD," "CDR," "IDR," "CaDR," "NNNA," "BPR," "PPR," "DPR," "ROA," "OPAW," "ROE," "RNW," "NPTF," "P/E," "LATA," "ASTA," "LADD," "LATD," and the overall financial position of the banks that have been acquired or merged with other banks. A positive-valued statistic with a range of 0 to 1 is Wilks' Lambda. Effects that contribute more to the model are indicated by decreasing values (0.000) of the statistic.

Table 3.5 Multivariate Tests of Canara Bank

Multivariate Testsa						
Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	1.000	1952.114b	9.000	1.000	.018
	Wilks' Lambda	.000	1952.114b	9.000	1.000	.018
	Hotelling's Trace	17569.030	1952.114b	9.000	1.000	.018
	Roy's Largest Root	17569.030	1952.114b	9.000	1.000	.018
Category	Pillai's Trace	1.000	310.918b	9.000	1.000	.044
	Wilks' Lambda	.000	310.918b	9.000	1.000	.044
	Hotelling's Trace	2798.263	310.918b	9.000	1.000	.044
	Roy's Largest Root	2798.263	310.918b	9.000	1.000	.044

a. **Design: Intercept + Category**
b. **Exact statistic**

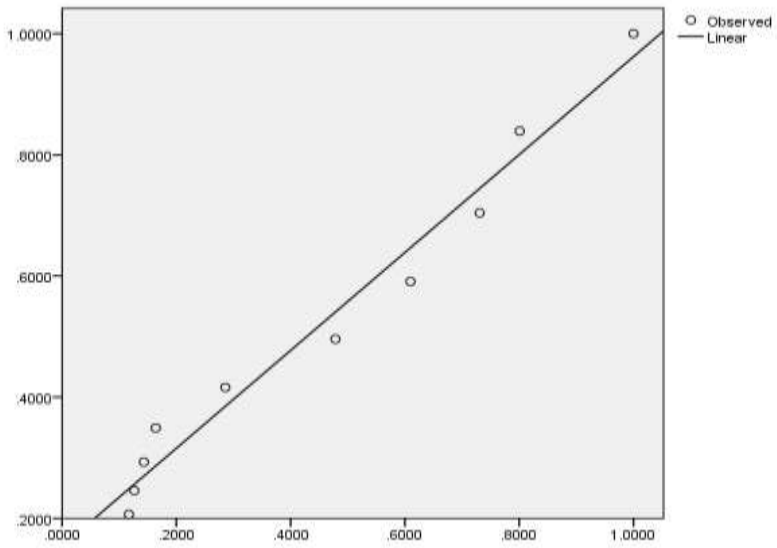

Figure 3.2 Significance variation of observed and predicted correlation for Canara Bank

The total of the test matrix's eigenvalues is Hotelling's trace. Increasing values for this positive-valued (2798.263) statistic signify influences that contribute more to the model. Hotelling's trace is always greater than Pillai's trace (2798.263>1.000), however these two statistics will be almost equal if the test matrix's eigen values are tiny. This suggests that the effect most likely makes little contribution to the model. The largest eigenvalue of the test matrix is the largest root of Roy. As a result, the statistic (2798.263) has a positive value, and rising values denote effects that add more to the model. Hotelling's trace is always equal to or less than Roy's largest root. When these two statistics are equal, either only one of the dependent variables is primarily affected by the effect, the dependent variables have a significant connection with one another, or the effect has little impact on the model showed in table 3.6.

Table 3.6 Estimated Marginal Mean of Pre-Post-Merger of Canara BankPre-Post-Merger

Dependent Variable		Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Capital Adequacy Ratio	Pre-Merger	9.914	1.771	5.907	13.921
	Post-Merger	11.892	1.617	8.234	15.550
Total Adv. to Total Asset Ratio	Pre-Merger	43.496	2.202	38.514	48.478
	Post-Merger	55.323	2.011	50.775	59.871
Govt. Securities to total Investment	Pre-Merger	65.860	3.761	57.352	74.368
	Post-Merger	81.842	3.433	74.075	89.608
Total Deposit to Total Deposit ratio	Pre-Merger	51.453	2.692	45.363	57.544
	Post-Merger	63.922	2.458	58.362	69.481
Credit Deposit Ratio (%)	Pre-Merger	52.044	2.551	46.273	57.815
	Post-Merger	62.562	2.329	57.294	67.830
Investment ratio (%)	Pre-Merger	44.478	2.750	38.256	50.700
	Post-Merger	36.472	2.511	30.792	42.151
Cash Deposit Ratio (%)	Pre-Merger	9.160	.607	7.787	10.533
	Post-Merger	9.020	.554	7.766	10.274
Net NPA tp Net Advances	Pre-Merger	7.154	2.312	1.923	12.385
	Post-Merger	.652	2.111	-4.123	5.427
Business Per Employee (Cr.)	Pre-Merger	7.482	.955	5.322	9.642
	Post-Merger	7.178	.872	5.206	9.150
Profit Per employee(Cr.)	Pre-Merger	.024	.038	-.063	.111
	Post-Merger	.058	.035	-.021	.138
Divident Payout ratio	Pre-Merger	21.030	4.783	10.211	31.849
	Post-Merger	20.120	4.366	10.244	29.996
Return on Assets (%)	Pre-Merger	.128	.640	-1.320	1.576
	Post-Merger	1.368	.584	.046	2.691
Operating Profit by Average Working fund (%)	Pre-Merger	2.238	.504	1.098	3.378
	Post-Merger	2.285	.460	1.244	3.326
Return on equity (%)	Pre-Merger	14.358	4.727	3.665	25.051
	Post-Merger	18.930	4.315	9.168	28.692
Return on Net Worth(%)	Pre-Merger	14.358	4.727	3.665	25.051
	Post-Merger	18.930	4.315	9.168	28.692
Net Profit 2 Total Funds(%)	Pre-Merger	.202	.686	-1.350	1.754
	Post-Merger	1.087	.626	-.331	2.504
P/E Ratio (%)	Pre-Merger	5.478	1.533	2.011	8.945
	Post-Merger	8.782	1.399	5.617	11.947
Liquid Assets to Total Assets	Pre-Merger	9.534	.765	7.804	11.264
	Post-Merger	10.712	.698	9.133	12.291
Approved Securities to Total Assets	Pre-Merger	.078	.127	-.211	.366
	Post-Merger	.528	.116	.265	.791
Liquid Assets to Demand Deposits	Pre-Merger	111.210	11.645	84.867	137.553
	Post-Merger	134.818	10.630	110.771	158.866
Liquid Assets to Total deposits	Pre-Merger	11.296	.887	9.290	13.302
	Post-Merger	12.352	.810	10.520	14.183

3.3.1 Analysis & Interpretation of Union Bank based on T-Test

The sample size, mean, standard deviation, and standard error for the pre- and post-merger banks are shown in Descriptive Table 3.7. Union Bank's capital adequacy ratio increased by 3.48% on average following the merger, as did the total advance to total asset ratio, the ratio of government securities to total investment, the ratio of total advances to total deposit, the ratio of credit deposits to total deposits, the ratio of credit deposits to total deposits, the reduction of the investment deposit ratio by 7.67%, the reduction of the cash deposit ratio by 1.11%, the reduction of the net NPA to NET advances ratio by 2.38%, the business per employee decreased by 1.4333 (Cr.), and the profit per employee decreased by.0100 (Cr.). The reduction in dividend payment ratio is 28.95%; return on assets is 0.25%; operating profit by average working fund is 10.19%; return on equity is 7.63%; and return on net worth is once more reduced by the same amount, i.e., 7.63%. The Price Earning Ratio increased by 46.27%, the Liquid Assets to Total Assets decreased by 2.17%, the Approved Securities to Total Assets increased by 0.0023%, the Liquid Assets to Demand Deposits Ratio decreased by 12.90%, and the Liquid Assets to Total Deposits decreased by 1.16%. The Net Profit to Total Funds increased by 0.26%.

Table 3.7 Levene's Test of Equality of Error Variance of Union Bank

Levene's Test of Equality of Error Variancesa				
	F	df1	df2	Sig.
Capital Adequacy Ratio	10.706	1	7	.014
Total Adv. to Total Asset Ratio	.515	1	7	.496
Govt. Securities to total Investment	.084	1	7	.781
Total Deposit to Total Deposit ratio	.773	1	7	.408
Credit Deposit Ratio (%)	3.642	1	7	.098
Investment ratio (%)	.165	1	7	.697
Cash Deposit Ratio (%)	.017	1	7	.899
Net NPA tp Net Advances	2.562	1	7	.153
Business Per Employee (Cr.)	3.184	1	7	.118
Profit Per employee(Cr.)	2.154	1	7	.186
Divident Payout ratio	9.129	1	7	.019
Return on Assets (%)	1.994	1	7	.201
Operating Profit by Average Working fund (%)	6.551	1	7	.038
Return on equity (%)	.931	1	7	.367
Return on Net Worth(%)	.931	1	7	.367
Net Profit 2 Total Funds(%)	1.365	1	7	.281
P/E Ratio (%)	7.103	1	7	.032
Liquid Assets to Total Assets	.468	1	7	.516
Approved Securities to Total Assets	13.891	1	7	.007
Liquid Assets to Demand Deposits	2.485	1	7	.159
Liquid Assets to Total deposits	1.036	1	7	.343

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.a. Design: Intercept + Category

3.3.2 Analysis & Interpretation of Union Bank based on Correlation and MANOVA

For every model effect, there are four tests of significance shown in the multivariate tests table 3.8. A statistic with a positive value is Pillai's trace. The statistic's increasing values (1.000) denote impacts that add more to the model. The following factors are impacted by mergers and acquisitions: "CAR," "TATA," "GSTI," "TDTD," "CDR," "IDR," "CaDR," "NNNA," "BPR," "PPR," "DPR," "ROA," "OPAW," "ROE," "RNW," "NPTF," "P/E," "LATA," "ASTA," "LADD," "LATD," and the overall financial position of the banks that have been acquired or merged with other banks. A positive-valued statistic with a range of 0 to 1 is Wilks' Lambda.

Table 3.8 Multivariate Tests of Union Bank Multivariate Testsa

Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	1.000	39453.494b	7.000	1.000	.004
	Wilks' Lambda	.000	39453.494b	7.000	1.000	.004
	Hotelling's Trace	276174.458	39453.494b	7.000	1.000	.004
	Roy's Largest Root	276174.458	39453.494b	7.000	1.000	.004
Category	Pillai's Trace	1.000	667.109b	7.000	1.000	.030
	Wilks' Lambda	.000	667.109b	7.000	1.000	.030
	Hotelling's Trace	4669.762	667.109b	7.000	1.000	.030
	Roy's Largest Root	4669.762	667.109b	7.000	1.000	.030

a. Design: Intercept + Category
b. Exact statistic

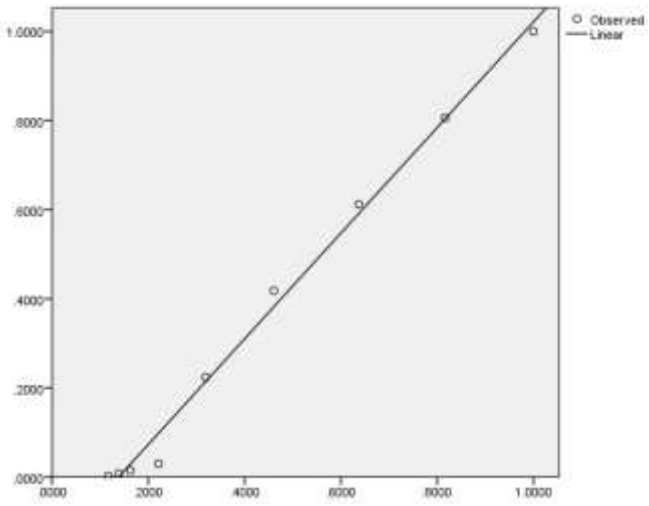

Figure 3.3 Significance variation of observed and predicted correlation for Union Bank

Effects that contribute more to the model are indicated by decreasing values (0.000) of the statistic. The total of the test matrix's eigenvalues is Hotelling's trace. Growing values for this positive-valued (4669.762) statistic signify influences that contribute more to the model. Hotelling's trace is always greater than Pillai's trace (4669.762>1.000), however these two statistics will be almost equal if the test matrix's eigen values are tiny. This suggests that the effect most likely makes little contribution to the model.
The largest eigenvalue of the test matrix is the largest root of Roy. Consequently, the statistic (4669.762) has a positive value, and rising values signify effects that add more to the model. Hotelling's trace is always equal to or less than Roy's largest root. When these two statistics are equal, either only one of the dependent variables is primarily affected by the effect, the dependent variables have a significant connection with one another, or the effect has little impact on the model showed in the table 3.9.

Table 3.9 Estimated Marginal Mean of Pre-Post-Merger of Union Bank Pre-post-merger

Dependent Variable		Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Capital Adequacy Ratio	Pre-Merger	11.518	1.368	8.283	14.753
	Post-Merger	14.997	1.935	10.421	19.572
Total Adv. to Total Asset Ratio	Pre-Merger	43.695	1.914	39.168	48.222
	Post-Merger	55.280	2.707	48.878	61.682
Govt. Securities to total Investment	Pre-Merger	73.360	2.105	68.382	78.338
	Post-Merger	87.123	2.977	80.084	94.163
Total Deposit to Total Deposit ratio	Pre-Merger	51.720	1.956	47.094	56.346
	Post-Merger	69.043	2.767	62.501	75.586
Credit Deposit Ratio (%)	Pre-Merger	51.093	2.095	46.140	56.047
	Post-Merger	65.953	2.962	58.948	72.959
Investment ratio (%)	Pre-Merger	42.900	2.113	37.903	47.897
	Post-Merger	35.233	2.989	28.166	42.300
Cash Deposit Ratio (%)	Pre-Merger	8.660	.523	7.423	9.897
	Post-Merger	7.550	.740	5.800	9.300
Net NPA tp Net Advances	Pre-Merger	4.010	.671	2.424	5.596
	Post-Merger	1.627	.948	-.616	3.869
Business Per Employee (Cr.)	Pre-Merger	5.240	.467	4.136	6.344
	Post-Merger	3.807	.660	2.246	5.367
Profit Per employee(Cr.)	Pre-Merger	.030	.011	.004	.056
	Post-Merger	.020	.015	-.016	.056
Divident Payout ratio	Pre-Merger	28.950	6.480	13.627	44.273
	Post-Merger	-2.481E-15	9.164	-21.669	21.669
Return on Assets (%)	Pre-Merger	.540	.312	-.198	1.278
	Post-Merger	.790	.441	-.253	1.833
Operating Profit by Average Working fund (%)	Pre-Merger	11.518	.625	10.040	12.997
	Post-Merger	1.333	.884	-.757	3.424
Return on equity (%)	Pre-Merger	15.337	2.763	8.802	21.871
	Post-Merger	7.713	3.908	-1.528	16.955
Return on Net Worth(%)	Pre-Merger	15.337	2.763	8.802	21.871
	Post-Merger	7.713	3.908	-1.528	16.955
Net Profit 2 Total Funds(%)	Pre-Merger	.587	.322	-.174	1.348
	Post-Merger	.847	.455	-.230	1.923
P/E Ratio (%)	Pre-Merger	4.198	2.034	-.612	9.009
	Post-Merger	50.463	2.877	43.660	57.266
Liquid Assets to Total Assets	Pre-Merger	11.302	.470	10.191	12.413
	Post-Merger	9.130	.664	7.559	10.701
Approved Securities to Total Assets	Pre-Merger	0.000	.001	-.001	.001
	Post-Merger	.002	.001	.000	.004
Liquid Assets to Demand Deposits	Pre-Merger	91.555	7.843	73.009	110.101
	Post-Merger	78.650	11.092	52.422	104.878
Liquid Assets to Total deposits	Pre-Merger	13.383	.559	12.062	14.705
	Post-Merger	12.220	.790	10.351	14.089

3.4.1 Analysis & Interpretation of Indian Bank based on T-Test

The sample size, mean, standard deviation, and standard error for the pre- and post-merger banks are shown in Descriptive Table 3.10. Indian Bank's capital adequacy ratio increased by 5.13% on average following the merger, as did the total advance to total asset ratio, the ratio of government securities to total investment, the ratio of total advances to total deposit, the ratio of credit deposits to total deposits, the ratio of credit deposits to total deposits, the ratio of investment deposits to total deposits, the ratio of cash deposits to total advances, the ratio of net NPA to NET advances, the ratio of business per employee to total assets, the ratio of government securities to total investment, and the ratio of government securities to total investment increased by 10.66%.

Table 3.10 Levene's Test of Equality of Error Variance of Indian Bank

Levene's Test of Equality of Error Variancesa				
	F	df1	df2	Sig.
Capital Adequacy Ratio	.199	1	6	.671
Total Adv. to Total Asset Ratio	.341	1	6	.581
Govt. Securities to total Investment	1.205	1	6	.314
Total Deposit to Total Deposit ratio	3.419	1	6	.114
Credit Deposit Ratio (%)	4.389	1	6	.081
Investment ratio (%)	1.856	1	6	.222
Cash Deposit Ratio (%)	1.450	1	6	.274
Net NPA tp Net Advances	2.957	1	6	.136
Business Per Employee (Cr.)	10.261	1	6	.019
Profit Per employee(Cr.)	24.000	1	6	.003
Divident Payout ratio	4.000	1	6	.092
Return on Assets (%)	14.629	1	6	.009
Operating Profit by Average Working fund (%)	.012	1	6	.918
Return on equity (%)	1.576	1	6	.256
Return on Net Worth(%)	1.576	1	6	.256
Net Profit 2 Total Funds(%)	5.634	1	6	.055
P/E Ratio (%)	.171	1	6	.694
Liquid Assets to Total Assets	7.119	1	6	.037
Approved Securities to Total Assets	.665	1	6	.446
Liquid Assets to Demand Deposits	1.911	1	6	.216
Liquid Assets to Total deposits	1.555	1	6	.259

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.Design: Intercept + Category

There has been an 8.70% decrease in the dividend payout ratio, a 2.02% increase in return on assets, an increase in operating profit by average working fund of.54%, a 3.25% increase in return on equity, a 1.80% increase in net profit to total funds, an increase in the price-earning ratio of 43.94%, a 4.63% decrease in liquid assets to total assets, a 0.003% decrease in approved securities to total assets, a 77.90% decrease in liquid assets to demand deposits ratio, and a 4.77% decrease in liquid assets to total deposits. It is safe to conclude that the average change in the bank's ratios after the merger was not the result of pure chance for variables (ratios) where the significance value of the test is less than 0.05 (for example, the capital adequacy ratio, which is greater at.272>.05 and not significant, but the total Advance to Total Asset ratio, which is 0.004<0.05 and significant). Decisions about future bank mergers may be made by the government or bank boards.

3.4.2 Analysis & Interpretation of Indian Bank based on MANOVA

Four tests of significance for each model effect are shown in the multivariate tests table 3.11. A statistic with a positive value is Pillai's trace. The statistic's increasing values (0.984) suggest influences that add more to the model. The following are affected by mergers and acquisitions: "CAR," "TATA," "GSTI," "TDTD," "CDR," "IDR," "CaDR," "NNNA," "BPR," "PPR," "DPR," "ROA," "OPAW," "ROE," "RNW," "NPTF," "P/E," "LATA," "ASTA," "LADD," "LATD," and the overall financial position of the banks that have been acquired or merged with other banks. A positive-valued statistic with a range of 0 to 1 is Wilks' Lambda.

Table 3.11 Multivariate Tests of Indian Bank

Multivariate Testsa						
Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	1.000	433.112b	6.000	1.000	.037
	Wilks' Lambda	.000	433.112b	6.000	1.000	.037
	Hotelling's Trace	2598.672	433.112b	6.000	1.000	.037
	Roy's Largest Root	2598.672	433.112b	6.000	1.000	.037
Category	Pillai's Trace	.984	10.447b	6.000	1.000	.233
	Wilks' Lambda	.016	10.447b	6.000	1.000	.233
	Hotelling's Trace	62.682	10.447b	6.000	1.000	.233
	Roy's Largest Root	62.682	10.447b	6.000	1.000	.233
a. Design: Intercept + Category						
b. Exact statistic						

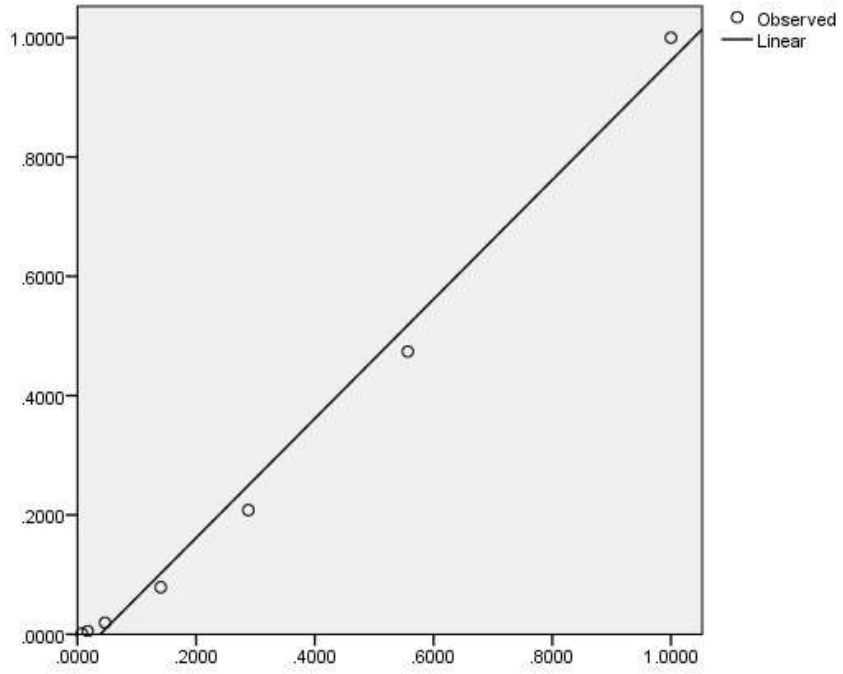

Figure 3.4 Significance variation of observed and predicted correlation for Indian Bank

The statistic's declining values (0.016) reflect influences that add more to the model. The total of the test matrix's eigenvalues is Hotelling's trace. Increasing values for this positive-valued (62.682) statistic signify factors that contribute more to the model. Hotelling's trace is always greater than Pillai's trace (62.682 > 0.984), however these two statistics will be almost identical if the test matrix's eigen values are low. This suggests that the effect most likely makes little contribution to the model. The largest eigenvalue of the test matrix is the largest root of Roy. Thus, it is a positive valued statistic (62.682) for which increasing values indicate affects that contributes more to the model. Roy's largest root is always less than or equal to Hotelling's trace. When these two statistics are equal, the effect is predominantly associated with just one of the dependent variables, there is a strong correlation between the dependent variables, or the effect does not contribute much to the model is showed in the table 3.12.

Table 3.12 Estimated Marginal Mean of Pre-Post-Merger of Indian Bank Pre-Post-Merger

Dependent Variable		Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Capital Adequacy Ratio	Pre-Merger	9.872	2.596	3.519	16.225
	Post-Merger	14.997	3.352	6.795	23.199
Total Adv. to Total Asset Ratio	Pre-Merger	39.192	2.212	33.779	44.605
	Post-Merger	55.280	2.856	48.291	62.269
Govt. Securities to total Investment	Pre-Merger	76.468	5.760	62.375	90.561
	Post-Merger	87.123	7.436	68.929	105.317
Total Deposit to Total Deposit ratio	Pre-Merger	47.830	1.888	43.210	52.450
	Post-Merger	69.043	2.437	63.079	75.008
Credit Deposit Ratio (%)	Pre-Merger	48.600	2.314	42.938	54.262
	Post-Merger	65.953	2.987	58.644	73.262
Investment ratio (%)	Pre-Merger	38.138	7.490	19.811	56.465
	Post-Merger	35.233	9.669	11.573	58.893
Cash Deposit Ratio (%)	Pre-Merger	6.410	1.349	3.110	9.710
	Post-Merger	7.550	1.741	3.290	11.810
Net NPA tp Net Advances	Pre-Merger	4.766	.813	2.777	6.755
	Post-Merger	1.627	1.050	-.941	4.195
Business Per Employee (Cr.)	Pre-Merger	5.178	.509	3.932	6.424
	Post-Merger	3.807	.657	2.198	5.415
Profit Per employee(Cr.)	Pre-Merger	.040	.014	.007	.073
	Post-Merger	.020	.018	-.023	.063
Divident Payout ratio	Pre-Merger	8.700	7.104	-8.682	26.082
	Post-Merger	3.018E-16	9.171	-22.440	22.440

Return on Assets (%)	Pre-Merger	-1.236	.689	-2.923	.451
	Post-Merger	.790	.890	-1.387	2.967
Operating Profit by Average Working fund (%)	Pre-Merger	.800	.255	.177	1.423
	Post-Merger	1.333	.329	.529	2.138
Return on equity (%)	Pre-Merger	4.472	3.117	-3.155	12.099
	Post-Merger	7.713	4.024	-2.133	17.560
Return on Net Worth(%)	Pre-Merger	4.472	3.117	-3.155	12.099
	Post-Merger	7.713	4.024	-2.133	17.560
Net Profit 2 Total Funds(%)	Pre-Merger	-.958	.583	-2.385	.469
	Post-Merger	.847	.753	-.996	2.689
P/E Ratio (%)	Pre-Merger	6.528	4.448	-4.356	17.412
	Post-Merger	50.463	5.742	36.413	64.514
Liquid Assets to Total Assets	Pre-Merger	13.754	1.462	10.178	17.330
	Post-Merger	9.130	1.887	4.513	13.747
Approved Securities to Total Assets	Pre-Merger	.006	.001	.004	.008
	Post-Merger	.002	.001	.000	.005
Liquid Assets to Demand Deposits	Pre-Merger	156.552	16.737	115.599	197.505
	Post-Merger	78.650	21.607	25.780	131.520
Liquid Assets to Total deposits	Pre-Merger	16.994	2.098	11.860	22.128
	Post-Merger	12.220	2.709	5.592	18.848

CONCLUSION

In the Indian banking industry, consolidations are a highly helpful strategy for restructuring. Combining with larger banks helps weaker banks survive much longer. The analysis of whether consolidations enhance financial performance is limited to Indian public banks. The current study used a variety of study characteristics in an effort to determine the effect of consolidations on the financial performance of 4 Indian public banks. Analysis has been done on the financial performance of each bank five years prior to and five years following the consolidations. The CAMEL grading approach has been used to measure financial performance, followed by the application of pertinent statistical tools. Based on the results of correlation (sample size, mean, standard deviation, and standard error) for the pre- and post-merger banks shows that the increase of capital adequacy ratio and the ratio of government securities to total investment. From the result of multivariate analysis, a positive-valued statistic with a range of 0 to 1 is Wilks' Lambda. It shows the Net Profit to Total Funds increased during consolidations. The study concluded that expanding market share and profitability are the primary drivers of Indian public banks' consolidations of other banks. This is accomplished by combining two or more banks. Additionally, the consolidations have increased the banks' capital base and shareholder value, giving them access to greater resources, particularly credit facilities that guarantee the business's liquidity. This improves the organization's operational stability and efficacy, which raises customer satisfaction.

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