THE IMPACT OF MERGER ON SBI FINANCIAL PERFORMANCE: A CAMEL MODEL ANALYSIS

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Abstract: Merger is the most common method employed by banks (or any other company) to enhance and maintain their market positions. The main objective of the paper is to examine the impact of the merger on the financial performance of SBI before and after the merger. The paper also compares the pre- and post-merger effects caused by its financial performance by the Camel approach. Secondary data is used in the paper covering the total period of eight years which includes four-year prior merger (2012-16) and four-year post-merger (2017-2021). The Camel analysis technique is used and a paired sample t-test has been conducted to check the statistical significance difference between before and after merger Camel ratios. The analysis shows that the financial performance of SBI increased after the merger and was positively impacted by merger activity.

Keywords: Merger, Financial Performance, Camel Analysis, T-Test

Introduction: The banking sector is a rapidly growing sector in India nowadays. A merger is a business deal where two existing independent companies combine to form a new entity. The primary objective of a merger is to acquire the benefits of economies of scale. It allows banks to gain a world-class position and overcome financial struggles. Mergers have benefits like a brand-new customer base, empowering business, increased holding of the market share, and opportunity for technology to upgrade. Financial performance is a measurement of how well an organization can use assets and generate revenues. It measures the overall financial health of a business for a given period.

The govt. in 2017 announced the six-way mega-merger of five associates of SBI along with Bhartiya Mahila Bank to be merged with SBI. The objective behind this mega-merger is to make SBI the country's largest lender among the top 50 banks in the world with a combined business of Rs. 26 lakh crores. The five associates of SBI namely State Bank of Bikaner and Jaipur (SBBJ), State Bank of Hyderabad (SBH), State Bank of Mysore (SBM), State Bank of Patiala (SBP), and State Bank of Travancore (SBT) along with Bhartiya Mahila Bank merged with SBI with effect from April 1, 2017.

This mega-merger has helped the bank optimize its operations and improve profitability. It was difficult for smaller banks to sustain competition and various risk norms. This merger has decreased the unhealthy competition among PSBs. SBI has now more than 23000 branches and employs more than 270,000 people. The deposit of SBI has also increased and the asset size of SBI became the largest in the world. SBI first merged State Bank of Saurashtra with itself in 2008 and secondly, State Bank of Indore merged with SBI in 2010 reducing the number of associates to five.

Literature Review:

Banks are very important financial institutions in the nation. The economic health of the nation is closely affected by its banking system. Various scholars have made several studies on the financial performance of the banking sector using the CAMEL approach.

(J. Kaur & Kaur, n.d.) Analyzed the financial performance of 10 public sector banks using the Camel approach. The analysis showed that Bank of Baroda and Punjab National Bank are the most stable banks whereas SBI, Canara Bank, IDBI Bank, and Indian Bank as average, and Union Bank of India, Bank of India, Syndicate Bank, and CBI are counted below average.

(Tripathi et al., 2014) Examined the significant difference between two private sector banks namely Kotak Mahindra Bank and Axis Bank using Camel model analysis. The result shows that Kotak Mahindra Bank's performance is slightly less compared with Axis Bank and there is no significant difference between the Axis and Kotak Mahindra Bank's financial performance. Both the banks are good concerning capital adequacy as it is above the Basel norms.

(Majumder & Rahman, 2016) Examined the performance of 15 selected banks in Bangladesh for the period 2009-2013 using the Camel model. Considering all the parameters, EBL is the top position assessed followed by EIBBL, DBBL, AIBL, IBBL, and other banks on Camel ratios. Whereas, RBL is at the lowest position in the study because of its poor performance. The study suggested that RBL should improve the weaknesses of Camel ratios.

(Kumar & Malhotra, 2017) Evaluated the performance and financial soundness of the top five private sector banks in India for the period 2007-2017 by applying the Camel approach. For the comparative and significant analysis, he applied composite ranking, average, and covariance techniques. The analysis showed Axis Bank assessed at the topmost position followed by ICICI Bank. Kotak Mahindra Bank ranked third and HDFC Bank

occupied the fourth rank whereas IndusInd Bank was assessed at the lowest position. The study has suggested that lowest lowest-ranking banks should improve their weak areas.

(Chaudhuri, 2018) Made a comparative analysis between SBI and ICICI Bank using the Camel model. The analysis showed that both banks are performing profitably. However, ICICI Bank performing better than SBI in terms of profitability and management efficiency.

(J. Kaur et al., 2015) Measured and compared the performance of five public sector banks from 2009-2014. The result shows that BOB is performing better in all aspects of Camel ratios followed by Punjab National Bank and Bank of India. Whereas SBI has not performed well although it holds the highest amount of assets and cash reserves. Canara Bank has remained in the middle position. Due to the passage of time, there is a fluctuation in the performance of other banks.

(Srinivasan & Saminathan, 2016) Assessed the financial performance of 25 public sector, 18 private sector, and 8 foreign banks operating in India. The finding shows that public sector banks viz. Andhra Bank, BOB, Allahabad Bank, PNB, IDBI, State Bank of Bikaner, and Jaipur and UCO Bank ranked in the top five positions on Camel analysis. Whereas private sector banks viz. Tamilnad Mercantile Bank, Kotak Mahindra Bank, HDFC, Axis Bank, Karur Vysya Bank, ICICI, Citi Union Bank, and IndusInd Bank ranked in the top five positions. The foreign banks namely Bank of Bahrain & Kuwait, HSBC Bank, The Royal Bank of Scotland, Deutsche Bank, CIBS Bank, Citi Bank, and DBS Bank secured top five positions. The empirical study shows there is a significant difference between the Camel ratios of selected public, private, and foreign sector banks in India.

(Gandhi et al., 2020) Evaluated the financial performance of ICICI Bank taking three years of pre-merger and three years of post-merger data on a Camel model basis. The result shows that the merger with the Bank of Sangli has shown significant improvement in capital adequacy. Merger with the Bank of Rajasthan has shown significant improvement in asset quality and earning ability. Whereas under management efficiency, Bank of Madura has shown significant improvement while under liquidity none Bank has shown any significant improvement. According to the study, sufficient data was not taken to understand synergistic benefits while ICICI Bank has been improving over the years.

(H. V. Kaur, 2010) Ranked the public sector, private sector, and foreign banks in India based on the Camel analysis technique. For the study purpose, he took 28 public sector banks, 20 private sector banks, and 28 foreign banks. The analysis showed that Andhra Bank and State Bank of Patiala resulted first among public sector banks, Jammu &Kashmir followed by HDFC Bank ranked first among private banks and Antwerp Bank and JP Morgan Chase Bank secured first among foreign banks.

(Divya Priya & Manjula, 2016) Evaluated the financial performance of IDBI Bank through Camel analysis. It was found that IDBI has considerable growth in net profits but needs to improve its position concerning asset quality, capital adequacy, management efficiency, and earning capacity.

(Karthikeyan & Hema, 2020)   Analyzed the financial performance of 3 banks namely Bank of Baroda, Dena Bank, and Vijaya Bank before the merger. Secondary data are collected for ten years from 2009-2018 using the Camel approach. The result showed that the Bank of Baroda is better in capital adequacy. Dena Bank is better in asset quality and Vijaya Bank is better in management efficiency, earning quality, and liquidity. Hence, it is fruitful to merge two better-performing banks Bank of Baroda and Vijaya Bank with a weak one Dena Bank.

The objective of the Study:

- To measure the effect of pre-and post-merger on the financial performance of SBI using Camel analysis
- To compare the pre-and post-merger effect on the financial performance of SBI

   Hypothesis Statement:

   H1: There is a significant difference b/w pre- and post-merger capital adequacy ratio of SBI

   H2: There is a significant difference b/w pre- and post-merger asset quality ratio of SBI

   H3: There is a significant difference b/w pre- and post-merger management ratio of SBI

   H4: There is a significant difference b/w pre- and post-merger earning quality of SBI

   H5: There is a significant difference b/w pre- and post-merger liquidity position of SBI

   H6: There is a significant difference b/w pre- and post-merger CAMEL ratios of SBI

   Research Methodology:

   Sample Selection: The State Bank of India has been selected for the analysis of pre- and post-merger.

   Source of Data: Data has been collected from secondary sources. That means data has been collected from the annual report of the concerned bank.

   Period of Study: The study period for the research purpose is eight years. The pre-merger period is four years i.e., 2012-13 to 2015-16, and the post-merger period is four years from 2017-18 to 2020-21.2017 is the merger year so the merger year is not considered for the research study purpose.

   Research Technique: CAMEL analysis is used to analyze before and after merger financial performance of SBI. The CAMEL method has been widely accepted as a tool for evaluating the financial performance of banks. CAMEL is an acronym for C- Capital Adequacy, A- Asset Quality, M- Management Efficiency, E-Earning Efficiency, and Liquidity Position. A paired t-test is used to check the significance difference and to compare the pre-and post-merger performance.

   CAMEL Model:

   The camel model is used to focus on financial performance. It helps to measure the performance of banks from each of the important parameters like capital adequacy, asset quality, management efficiency, earning quality, and liquidity. It assesses the strength of a bank through these five categories.

A. Capital Adequacy: It suggests the ability of the management to fulfill the requirement of additional capital and to maintain the depositor's confidence. It prevents the bank from bankruptcy.

➢ CAR (Capital Adequacy Ratio) – As per RBI rules, commercial banks are required to maintain a CAR of 9% and PSBs are required to maintain a CAR of 12%.

CAR= Tier I Capital + Tier II Capital / Risk Weighted Assets $\times$ 100

➢ Total Debt to Equity Ratio = Total Debt / Shareholder's funds

B. Asset Quality: The financial soundness and strength of any asset can be measured by its quality. The quality of assets determines the kind of debtors.

➢ Gross NPA to Gross Advances = Gross NPA/ Gross Advances $\times$100

➢ Net NPA to Net Advances = Net NPA/ Net Advances $\times$ 100

C. Management Efficiency: This involves subjective analysis to measure the efficiency and effectiveness of management.

➢ Return on Asset = Net Profit / Total Asset $\times$ 100

➢ Return on Equity = Net Income / Shareholder's Wealth

➢ Total Advances to Total Deposits = Total Advances / Total Deposits $\times$ 100

D. Liquidity Position: Liquidity risk is not good for the banks. Liquidity can neither be very high nor very high because very low liquidity is not capable of meeting its current liabilities and very high liquidity is not properly utilizing cash. So, maintaining a proper balance in liquidity is important for generating high profits and providing liquidity to depositors.

➢ Liquid Asset to Total Asset = Liquid Asset / Total Asset $\times$ 100

➢ Liquid Asset to Total Deposit = Liquid Asset / Total Deposit $\times$100

E. Earning Efficiency: It refers to the sustainability and growth in earnings in the future and how a bank earns its profits. Banks can increase their growth and productivity by increasing their earning capacity.

➢ Interest Expenses to Total Assets = Interest expense/ Total Asset $\times$10

➢ Interest income to Total Asset = Interest Income/ Total Asset $\times$ 100

➢ Non-Interest Income to Total Asset = Non-Interest Income/ Total asset$\times$100

Hypothesis Testing:

T-Test: A paired sample for means at a 5% significance level (0.05) has been used for testing the hypothesis.

Data Analysis and Interpretation:

➤ **Capital Adequacy**

Table 1 Pre and Post-merger capital adequacy of SBI from 2012-13 to 2020-21

PRE-MERGER				POST-MERGER			
RATIOS	2012-13	2013-14	2014-15	2015- 16	2017- 18	2018- 19	2019- 20	2020- 21
Capital Adequacy	12.92	12.96	12.00	13.12	12.60	12.72	13.06	13.74
Debt Equity Ratio	13.87	13.34	13.87	13.55	14.00	15.00	15.33	16.14

Source: Data collected from the annual report of SBI

Table 2 T-test paired two samples for means

Ratios	Merger	Mean	S.D.	DF	T-value	P-value	Hypothesis
Capital Adequacy	Pre	12.75	0.2574	3	-0.83	0.465	Rejected
	Post	13.03	0.262				
Debt Equity Ratio	Pre	13.6575	0.0675	3	-2.88	0.064	Rejected
	Post	15.1175	0.7844				

Source: Researcher's calculations

Interpretation:

Table 2 indicates that the capital adequacy ratio during pre-merger is 12.75 which increased in post-merger to 13.03 Which means that the capital adequacy ratio saw an increase after the merger. Hence it can be said that SBI was able to manage the minimum requirement of capital adequacy ratio. On the other hand, debt equity ratio also increased from 13.6575 to 15.1175 after the merger. This means SBI is at financial risk of covering its liabilities.

The t-test reveals that the t-value of the capital adequacy ratio is -0.83 and the p-value is 0.465 which is more than 0.05 level of significance so the null hypothesis is rejected. Whereas the t-value of the debt-equity ratio is -2.88 and the p-value is 0.064 which is more than 0.05 level of significance so the null hypothesis is rejected in this case and the alternative hypothesis is accepted. This clearly states that both the capital adequacy ratio and debt-equity ratio have shown an insignificant increase after the merger.

➢ **Asset Quality**

Table 3. Pre- and post-merger asset quality ratio of SBI from 2012-13 to 2020-21

	PRE-MERGER				POST-MERGER			
RATIOS	2012-13	2013-14	2014-15	2015-16	2017-18	2018-19	2019-20	2020-21
Gross NPA to gross advances	4.89	5.09	4.36	6.71	11.55	7.90	6.41	5.16
Net NPA to net advances	2.10	2.57	2.12	3.81	5.73	3.01	2.23	1.50

Source: Data collected from the annual report of SBI

Table 4. T-test paired two samples for means

Ratios	Merger	Mean	S.D.	DF	T-value	P-value	Hypothesis
Gross NPA to gross advances	Pre	5.2625	1.0260	3	-1.48	0.235	Rejected
	Post	7.755	7.6553				
Net NPA to net advances	Pre	2.65	0.6451	3	-0.38	0.73	Rejected
	Post	3.1175	3.4135				

Source: Researcher's calculations

Interpretation:

Table 4 indicates that the mean value of both asset quality ratios increases in the post-merger period. The pre-merger mean value of gross NPA to gross advances and net NPA to net advances are 5.2625 and 2.65 respectively which increased to 7.755 and 3.1175 respectively in the post-merger period. This depicts that SBI non-performing assets decrease which leads to an increase in asset quality ratio. The t-test reveals that the t-value of gross NPA to gross advances is -1.48 and the p-value is 0.235 which is more than 0.05 level of significance so the null hypothesis is rejected whereas, the t-value of net NPA to net advances is -0.38 and the p-value is 0.73 which is more than 0.05 level of significance so null hypothesis is rejected and the alternative hypothesis is accepted. This clearly states that gross NPA to gross advances and net NPA to net advances showed an insignificant increase after the merger.

➢ **Management Efficiency**

Table 5. Pre and Post-merger management efficiency of SBI from 2012-2013 to 2020-21

	PRE-MERGER				POST-MERGER2			
RATIOS	2012-13	2013-14	2014-15	2015-16	2017-18	2018-19	2019-20	2020-21
Return on asset	0.83	0.59	0.62	0.39	-0.12	0.05	0.47	0.46
Total advances to total deposit	0.87	0.87	0.82	0.85	0.71	0.75	0.72	0.67
Return on equity	15.94	10.94	11.17	7.74	-3.78	0.48	7.74	9.94

Source: Data collected from the annual report of SBI

Table 6. T-test paired two samples for means

Ratios	Merger	Mean	S.D.	DF	T-value	P-value	Hypothesis
Return on asset	Pre	0.6075	0.0324	3	1.74	0.178	Rejected
	Post	0.215	0.0881				
Total advances to total deposit	Pre	0.8525	0.0005	3	7.66	0.004	Accepted
	Post	0.7125	0.001				
Return on Equity	Pre	11.4475	11.4208	3	1.66	0.195	Rejected
	Post	3.595	40.5113				

Source: Researcher's calculations

Interpretation:

Table 6 indicates that the mean value of all the ratios of management efficiency decreases after the merger. The mean value of return on assets decreased from 0.6075 to 0.215 which means SBI has over-invested in assets that have failed to generate revenue growth. SBI might be struggling financially due to poor investment decisions. The mean value of total advances to total deposit also decreased from 0.8525 to 0.7125 which means SBI is not earning as much as it could be. The mean value of return on equity decreased from 11.4475 to 3.595 which indicates that SBI is not as profitable and not using its resources efficiently.

The t-test reveals that the t-value of return on asset is 1.74 and p value is 0.178 which is more than 0.05 level of significance so the null hypothesis is rejected as it has shown an insignificant decrease after the merger. Whereas, the t-value of total advances to total deposit is 7.66 and p value is 0.004 which is less than 0.05 level of significance so the null hypothesis is accepted as it has shown a significant decrease after the merger. The t-value of return on equity is 1.66 and the p-value is 0.195 which is more than 0.05 level of significance so the null hypothesis is rejected in this case as it has shown an insignificant decrease after the merger.

➢ **Earning Efficiency**

Table 7. Pre- and post-merger earnings ratio of SBI from 2012-13 to 2020-21

	PRE-MERGER				POST-MERGER			
RATIOS	2012-13	2013-14	2014-15	2015-16	2017-18	2018-19	2019-20	2020-21
Interest expenses to total asset	5.00	5.06	4.93	4.65	4.05	4.00	3.83	3.21
Interest in total asset	7.87	7.88	7.70	7.17	6.33	6.51	6.42	5.73
Non-interest to total asset	1.5 2	1.58	1.82	1.71	2.14	1.97	2.33	2.21

Source: Data collected from the annual report of SBI

Table 8. T-test paired two samples for means

Ratios	Merger	Mean	S.D.	DF	T-value	P-value	Hypothesis
Interest expenses to total asset	Pre	4.91	0.0328	3	10.76	0.001	Accepted
	Post	3.7725	0.1494				
Interest in total asset	Pre	7.655	0.1113	3	25.59	0.0001	Accepted
	Post	6.2475	0.1244				
Non-interest to total asset	Pre	1.6575	0.018	3	-10.74	0.0017	Accepted
	Post	2.1625	0.0226				

Source: Researcher's calculations

Interpretation:

Table 8 suggests that the pre-merger mean value of interest expenses to total assets is 4.91 which decreases to 3.7725 in the post-merger period similarly mean value of interest to total assets decreases from 7.665 to 6.2475 whereas the non-interest to total asset ratio increases from 1.6575 to 2.1625 which indicates that earning efficiency of SBI increased after the merger.

The t-test reveals that the t-value of interest expenses to total asset and interest to total asset ratio is 10.76 and 25.59 respectively and the p-value is 0.001 and 0.0001 respectively which is less than 0.05 level of significance so the null hypothesis is accepted for both cases. It states that interest expenses to total asset ratio and interest to total asset ratio have shown a significant decrease after the merger. Whereas the t value of non- non-interest to total asset ratio is -10.74 and the p value is 0.0017 which is less than 0.05 level of significance so the null hypothesis is accepted. It means the non-interest to total asset ratio has shown a significant increase after the merger.

➢ **Liquidity Position**

Table 9. Pre- and post-merger liquidity position of SBI from 2012-13 to 2020-21

RATIOS	PRE-MERGER				POST-MERGER			
	2012-13	2013-14	2014-15	2015-16	2017-18	2018-19	2019-20	2020-21
Liquid assets to total assets	0.10	0.10	0.12	0.14	0.12	0.13	0.14	0.15
Liquid assets to total deposits	0.14	0.13	0.15	0.18	0.15	0.17	0.17	0.19

Source: Data collected from the annual report of SBI

Table 10. T-test paired two samples for means

Ratios	Merger	Mean	S.D.	DF	T-value	P-value	Hypothesis
Liquid assets to total assets	Pre	0.115	0.0003	3	-4.89	0.016	Accepted
	Post	0.135	0.0001				
Liquid assets to total deposits	Pre	0.15	0.0004	3	-2.82	0.066	Rejected
	Post	0.17	0.0002				

Source: Researcher's calculations

Interpretation:

Table 10 finds that the mean value of liquidity ratios increased from pre-merger to post-merger. The mean value of liquid assets to total assets has increased from 0.115 to 0.135 which indicates that SBI is in a better position to meet its current obligations. The mean value of liquid assets to total deposits also increased from 0.15 to 0.17 which suggests that the liquidity position of SBI increased after the merger and SBI is in a better situation to provide sufficient liquidity to its depositors.

The independent t-test reveals that the t- t-value and p value of liquid assets to total assets is -4.89 and 0.016 respectively which is less than 0.05 level of significance so the null hypothesis is accepted as it has shown a significant increase after the merger. Whereas the t-value and the p value of liquid assets to total deposits is -2.82 and 0.066 respectively which is more than 0.05 level of significance so the null hypothesis is rejected as it has shown an insignificant increase after the merger.

Table 11. Overall analysis of the Camel Model and its independent t-test analysis and interpretation

Ratios	Merger	Mean	S.D.	P-value	Hypothesis
C	Pre	13.203	0.374	0.044	**Accepted**
	Post	14.082	1.673		
A	Pre	3.956	2.666	0.196	**Rejected**
	Post	5.436	10.888		
M	Pre	4.3025	30.980	0.146	**Rejected**
	Post	1.5075	13.494		
E	Pre	4.74	6.599	0.023	**Accepted**
	Post	4.06	3.16		
L	Pre	0.132	0.0007	0.001	**Accepted**
	Post	0.152	0.0005		

Source: Researcher's calculations

Interpretation:

Table 11 depicts all the components of CAMEL ratios which involve pre-merger and post-merger mean value, standard deviation, and p-value. The three components of Camel ratios which are Capital adequacy ratio (C), Earning efficiency ratio (E), and Liquidity ratio (L) have shown a significant performance after the merger. The null hypothesis is accepted for all the three components' ratios for having a p-value less than 0.05 level of significance.

The two components of CAMEL ratios which are Asset quality (A) and Management efficiency ratio have shown an insignificant performance after the merger. The null hypothesis is rejected for asset quality and management efficiency ratio having a p-value less than 0.05 level of significance. Capital adequacy, earning efficiency, and Liquidity show a significant increase after the merger whereas, Asset quality shows an insignificant increase after the merger and lastly management efficiency shows an insignificant decline in the post-merger value. Overall, we can say that the financial performance of SBI has been positively impacted by the merger of its five associates' along with Bhartiya Mahila Bank.

Conclusion:

The main purpose of conducting this study is to know the impact on the financial performance of SBI after its merger with its five associates along with Bhartiya Mahila Bank and also to know whether the merger benefited the Banking sector or not. For achieving this objective CAMEL model is used to assess the impact of pre- and post-merger financial performance. A paired sample t-test for the mean is conducted to know the significant difference between the pre and post-merger period at a 0.05 level of significance. The final result has shown that a significant increase has been seen in Capital adequacy, Earning efficiency, and liquidity position. Whereas, an insignificant increase is seen in asset quality and an insignificant decline is seen in the management efficiency of SBI after the merger. Overall, it can be concluded that merger impacts the financial performance of banks in a positive manner. Finally, it is found that SBI needs to improve its position concerning asset quality and management efficiency while SBI has considerable growth in earnings and liquidity. It has a good Capital adequacy ratio to absorb potential losses and less risk of becoming insolvent and losing depositor's money.

Suggestion:

A strong Banking system is the foundation for sustainable economic growth. Merger gives the bank access to a larger pool of money, allowing it to make decisions relating it to high lending requirements. Merger helps banks more effectively in terms of operations and efficiency. Merger creates larger banks, which are better equipped to face global competition. Merger in the banking sector gives the benefit of growth, eliminate competition, and minimize expenses. This study focuses on only one aspect of a merger which is financial performance. Other aspects of the merger like operating performance, shareholder's wealth, or profitability analysis are not taken into account. So, Researchers can study based on other aspects of the merger.

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