The Impact of Merger on SBI's Financial Performance: A CAMEL Model Analysis

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Abstract: *Bank plays a significant role in economy development of any country. Five (05) associates banks and BMB merged with the State Bank of India (SBI) in the year 2017. After merger, SBI has undergone a lot of financial changes which need to be examined. In this contest, the study examines the financial performance of both pre-merger and post-merger of State Bank of India (SBI). To study the comparative financial performance, year 2012 to 2017 are used as pre-merger period and year 2017 to 2022 are used as post-merger period. CAMEL model having capital adequacy, asset quality, liquidity position, management efficiency and earnings efficiency used as performance indicators to measure the financial performance of SBI for pre- and post-merger period. The findings reveal that the merger had a marked impact on SBI's financial performance. Capital adequacy, earnings quality, and liquidity position improved significantly post-merger, indicating strengthened financial resilience and better resource allocation. However, asset quality and management efficiency showed no statistically significant changes, suggesting that these areas were not as directly affected by the merger. Overall, the results underline the transformative potential of strategic mergers in enhancing a bank's financial robustness and operational scale. This analysis contributes to understanding the merger's role in consolidating SBI's market position and provides insights for future mergers in the banking sector. The study's outcomes emphasize the role of mergers in enhancing capital strength and liquidity while indicating potential areas for continued improvement in asset quality and management practices. It was found that overall there is a positive impact of merger on SBI's financial performance but some parameter like Return On Asset (ROA), Return On Equity (ROE) and Profit Per Employee (PPE) shows negative indicator in short term i.e. in the Year of immediate merger FY 2017-18 due to absorption of bad loans of its associate banks.*

Keywords: *CAMEL Model, Pre and post-merger, SBI Mega merger, Global economy, NPA*

Introduction

The SBI is the India's largest public sector bank but after mage merger with its five associate banks such as State Bank of Hyderabad (SBH) State Bank of Travancore (SBT), State Bank of Mysore

(SBM), State Bank of Patiala (SBP), State Bank of Bikaner and Jaipur (SBBJ), and the three-year-old Bharatiya Mahila Bank (BMB) was approved by the Central Government on June 15, 2016 w.e.f 1st Apr 2017. This is the biggest merger in the Banking sector till date known as SBI mega merger which gives a global bank from India. Strengthening banking sector and robust banking system builds investor's confidence and develops formalised economy. The Indian banking sector has seen an extensive transformation in the last few years. The banking business is seeing increased competition due to several factors such as innovations in technology, deregulation, liberalization, and economic changes. The Indian government is working ceaselessly to strengthen the banking system in order to boost the country's economy as a result of the growing competition. Getting the advantages of economies of scale is the main goal of a merger. It enables banks to overcome their financial difficulties and achieve a world-class standing. Benefits of mergers include access to new markets, enhanced market share, empowered businesses, and the chance to advance technology. The Indian Govt. and RBI led the recommendations given by Narasimhan committee of 1991 towards banking sector reform. These reforms postulated with a view of establishing a strong financial system that would help boost growth. This paper aims to analyse the long term capital adequacy, Asset quality, Management Efficiency, Earning quality and Liquidity overall five parameters of SBI by taking 13 set of ratios from all five parameters. M&As create impacts on various aspects in banking sector like the Return to Equity (ROE), Return on Assets (ROA), Debt equity ratio, profitability position, return to shareholders, Return On Capital Employed (ROCE) and Non-Performing Assets (NPA) (Aggarwal & Garg, 2022). As NPA is the significant issue in Indian PSBs which hinders economic growth can be analysed by Gross NPA Ratio and Net NPA Ratio. Capital adequacy ratio is most important for the depositors to safeguard their money. This paper also focuses on Management Efficiency to know the technological synergy as well as operational synergy by identifying the Business per Employee and Profit per Employee. Similarly the Liquidity position of SBI needs to be studied to know the ability of bank to meet its short term obligation which drastically may change after the merger with weak banks.

Literature review

Mathur (2021) used the CAMEL model to assess the financial condition of SBI. He considered secondary data both before and after the merger. The analysis used data collected two years prior to the merger and three years following the merger. According to the study's findings, SBI's managerial effectiveness, earnings quality, and liquidity have all improved since the merger. On the other hand, SBI wishes to concentrate on improving the asset quality and capital adequacy ratio. Bhattacharya & Biswas, (2021) examine how M&A affect the share prices and financial performance of the Indian acquirer banks. The author comprises M&A of twenty Eight banks listed in NSE. After an announcement of a merger or acquisition, event study analysis is used to determine the market price of the banking company's share, which represents the wealth generated by the acquiring company's shareholders. In spite of the fact that the merged firm's financial performance was examined using DuPont (DP) analysis, no significant changes were found in return on assets (ROA), return on equity (ROE), net profit margin, financial leverage, or asset turnover. The results show that market activity and acquirer banks' performance declined after the merger which may be a short term analysis. Pandit & Gandhi (2021) conducted an analysis comparing the performance of SBI and HDFC banks. This research is a comparative analysis based on the findings from 23 financial ratios utilized in the study, leading to the

conclusion that both banks excelled in certain aspects. HDFC outperformed in areas such as Capital Adequacy, Asset Quality, and Management Efficiency, while SBI demonstrated superior performance regarding Liquidity. In terms of earnings quality, both banks achieved comparable results. Jose & Jegadeeshwaran (2024) compare the performance of SBI through CAMEL model during the Pre and PoM period with associate banks. The study period is 2012 to 2022. This paper also used paired sample t-test. The study reveals that SBI's financial competency is improving PoM. Author found that attention required on the Asset quality and Liquidity position in terms of GNPA, NNPA and total loans to total deposits. The study conclude that PoM earning quality is improved but liquidity did not. Upadhyay & Kurmi (2020) examine the impact of consolidation on this largest bank's performance through the lens of CAMELS framework. The study was conducted 3 year pre and 3 year PoM of SBI from the secondary data source. The study's conclusions confirm that State Bank of India has not significantly benefited from the merger because the associate banks already had a substantial amount of non-performing assets. Capital adequacy ratios show no appreciable improvements in the post-merger phase. The bank has also not been able to raise the quality of its assets. All management efficiency ratios, with the exception of business per employee, have not advanced far enough. Following the merger, the bank's overall earnings capacity and liquidity have also declined. Overall, in short run, it can be said that the merger hasn't had a major impact on SBI's financial performance. Singh (2016) conducted an analytical analysis of mergers and acquisitions in India's banking sector. As a sample, four scheduled commercial banks were chosen. There are two from the public and two from the private sectors. The CAMEL model was used by the researcher to examine financial performance, and a t-test was used to determine significance. According to the study, mergers are a profitable strategy for banks since they allow them to grow their operations and increase profitability, liquidity, and efficiency. However, mergers cannot address general growth or financial sickness. Meghani, Karri, and Mishra (2015) used the CAMEL Model to examine and contrast the performance and financial standing of two public sector banks, Bank of Baroda and Punjab National Bank. Both banks have been successful in keeping their Capital Adequacy Ratios over the required threshold. Bank of Baroda is the best bank for 6 ratios out of the 14 ratios of the CAMEL model that was used in the study, followed by Punjab National Bank for 5 ratios during the period of 2010–14. Among the chosen public sector banks, Bank of Baroda was found to be the best.

Theoretical framework

Merger and Acquisition (M&A) now a days a common phenomena in any sector as well as Banking Sector. But in our Indian banking sector the way Public Sector Banks (PSBs) are going through the consolidation process , it really shows the intention of Govt. and a forwarding step towards the recommendation of Narasimham Committee (Ishwariya, 2019). There are 24 PSBs in 2014 but in the year 2022 there only left 12 PSBs which drastically reduced to increase operational as well as technological efficiency. One more aspect is that there is a need of Global banks in our country to showcase India for its global presence and impact on global policy making. After the mega merger of SBI with its Associates, India got one global bank in top fifty banks in the world (Nair 2017). In these two perspectives, an empirical study needs to be done to analyses the impact of merger on efficiency.

Research objectives

- To measure the impact of SBI's merger with its associate banks on Capital Adequacy, Asset Quality, Management Efficiency,

Earning quality and Liquidity position of SBI using CAMEL Model analysis

- To compare the PrM and PoM effect on the financial performance of SBI

Hypothesis Statement

- H1: There is a significant diff b/w PrM and PoM capital adequacy ratio of SBI
- H2: There is a significant diff b/w PrM and PoM asset quality ratio of SBI
- H3: There is a significant diff b/w PrM and PoM management ratio of SBI
- H4: There is a significant diff b/w PrM and PoM earning quality of SBI
- H5: There is a significant diff b/w PrM and PoM liquidity position of SBI

Research Methodology

Data and Sample: The State Bank of India has been selected for the analysis of pre and PoM, because of mega merger happened in banking sector. Data has been collected from secondary sources. That means data has been collected from the annual report of the SBI. RBI , Money Control etc. The study period for the research purpose is eight years. The PrM period is five years i.e., 2012-13 to 2016-17, and the PoM period is five years from 2017-18 to 2021-22.To know the long term impact on financial performance. (Dash & Das, 2012) (Gupta, 2014) studied the performance of Private and public sector banks operating in India and taken the study period of 5 years like 2003-08 and 2009-13 respectively. (Kaur & Kaur, 2016) studied the financial performance from 2004-14 of 10 Indian public sector banks using Camel model. (Jose & Jegadeeshwaran, 2024) compares the financial performance of SBI using Camel model for the study period 2012-22. So there are many literatures found whose study period is 3 years pre and 3 years Post to study the short term impact and 5 years pre and 5 years post to compare the long term impact. On the basis of that here author has taken period of study 2012-22 as an ideal study period to analyse the long term impact of merger of SBI on its financial performance. There is no data limitation.

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 L-Liquidity Position. According to (Uyen,2011), The CAMEL method is a valuable tool for assessing banks performance and predicting the inefficiencies. This analysis helps the bank to avoid bank failure and take preventive steps. There are large number of measurement tools, out of which CAMEL method is a five point tool widely accepted by the banking organisation or financial institutions and is recommended by BASEL committee for bank supervision and International Monetary Fund (Baral, 2005).

Data Analysis and Interpretation

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 , and liquidity. It assesses the strength of a bank through these five categories. (Reddy, murugananthi, Palanichamy, & Vasanthi, 2022) assess the impact of merger on the bank's performance and compared to judge its effectiveness. One of the crucial practices of evaluating the performance of a bank involves critical examination of account statement and assessment of CAMEL model ratio.

- **Capital Adequacy:** Capital Adequacy Ratio (CAR) is the ratio of a bank's capital to its risk. It refers to the bank readiness with guidelines about the appropriate conservation of least capital funds for safeguarding depositor's money. The

Capital Adequacy parameters help us to assess the SBI's compliance with the regulations. This helps in understanding the capital position of an institute and how safe is people's money (kandi & Anvitha, 2022) SBI is the largest public sector bank, so it needs a strong capital base to withstand economic shocks and meet regulatory requirements. CAR (Capital Adequacy Ratio) – As per RBI mandates, Scheduled commercial banks are required to maintain a CAR of 9% and public sector banks (PSB) are required to maintain a CAR of 12%.

CAR= Tier I Capital + Tier II Capital / Risk Weighted Assets × 100

$$Debt\ equity\ ratio = \frac{Total\ Debt}{Share\ holder's\ Equity} \times 100$$

A. Asset Quality: Asset quality is a key element of the CAMEL framework, used to evaluate the financial condition of banks and other financial institutions. It involves assessing a bank's assets, especially its loan portfolio, to gauge the level of risk and potential for losses. Strong asset quality signifies a lower risk of default, enhancing the institution's overall stability and profitability.

$$Gross\ NPA = \frac{Gross\ NPA}{Gross\ Advances}$$

$$Net\ NPA\ Ratio = \frac{Net\ NPA}{Net\ Advances}$$

B. Management Efficiency: Management Efficiency is an essential part of the CAMEL framework, used to measure the effectiveness and capability of a financial institution's management team.

This CAMEL parameter is most important for SBI as it has gone through a recent mega merger. Absorption of weak banks and its management really need a special focus on advance and deposit accounts. Manpower and branches also increased so its long term output calculation must be relevant to know the impact of merger. This is the way through which SBI can gain a momentum of efficiency.

$$Total\ expenditure\ to\ total\ income\ ratio = \frac{Total\ expenditure}{total\ income}$$

$$Credit\ Deposit\ Ratio = \frac{Total\ Advances}{Total\ Deposits}$$

$$Profit\ Per\ Employee = \frac{Net\ Income}{Total\ Number\ of\ Employees}$$

$$Business\ Per\ Employee = \frac{Total\ Business}{Total\ Number\ of\ Employees}$$

C. Earning Efficiency: It refers to the sustainability and growth in earnings in the future and how a bank earns its profits. Earning is a profitability measure and there exist an evaluation of incomes and their degree of association with peers. The purpose of earning quality is examining the impact of reserves generated from within on the bank's capital. Common measures of earning quality include the Non-interest Income to Total Income, Interest Income to Total Income, Spread to Total Asset, Return on Equity (ROE), Return on Investment (ROI), Return on Assets (ROA) and Dividend Pay-out Ratio are all important financial ratios. Banks can increase their growth and productivity by increasing their earning capacity.

$$DPAR = \frac{Dividend\ per\ share\ (DPS)}{Earning\ Per\ Share\ (EPS)}$$

$$ROA = \frac{Earning\ before\ interest\ and\ tax}{Total\ Assets}$$

$$ROE = \frac{Net\ Income}{Average\ Shareholder's\ Equity}$$

• **Liquidity Position:** Liquidity position refers to the ability of an individual, company, or organization to fulfill short-term obligations and cover immediate expenses using readily available liquid assets. Large asset base SBI affected by its liquidity position. High liquidity ensures that SBI can meet depositor needs, withstand funding pressures, and provide loans to drive economic growth. Cash-to-deposit ratio and loan-to-deposit ratio is essential for SBI to manage its role as a reliable and stable bank, particularly during economic downturns or market fluctuations.

$$GSTAR = \frac{Government\ Securities}{Total\ Assets}$$

$$CDR = \frac{Cash\ in\ hand\ and\ balance\ with\ RBI}{Total\ Deposit}$$

The CAMEL model is a framework used by financial regulators to evaluate the health and performance of banks and other financial institutions. (Divya & Manjula)

1. Capital Adequacy:

Table 1 Capital Adequacy Ratio

Period	PrM					PoM				
Financial Year(FY)	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
CAR	12.92	12.44	12	13.12	13.11	12.6	12.72	13.06	13.74	13.83
Mean (M)	12.718					13.19				
% Change	0.472									

Source: Data collected from the annual report of SBI

1. PrM Period (2013–2017):

- The CAR during the PrM years shows a slight decline from 12.92% in 2013 to 12.00% in 2015, followed by a moderate recovery to 13.11% in 2017.

2. PoM Period (2018–2022):

- After the merger, the CAR starts at 12.60% in 2018 and shows a consistent upward trend, reaching 13.83% in 2022.

3. % Change:

- The percentage change in the mean CAR from the PrM to the PoM period is calculated as 0.472%. This represents a modest increase in the average capital adequacy ratio following the merger.

Interpretation: CAR increased in PoM which indicates that the bank has strengthened its capital base to avoid any kind of risk. While the percentage change in the mean CAR is 0.472%, the consistent improvement in CAR PoM is more significant.

Debt Equity Ratio

Table 2: Debt Equity Ratio

Period	PrM					PoM				
FY	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
DER	1.46	1.55	1.6	1.55	1.69	1.65	1.82	1.36	1.64	1.52
M	1.57					1.598				
% Change	0.028									

Source: Data collected from the annual report of SBI

The **Debt Equity Ratio (DER)** is a financial metric that compares a company's total debt to its shareholders' equity. It measures the proportion of debt financing relative to equity financing, indicating the financial leverage and risk level of the organization.

1. PrM Period (2013–2017):

- The DER shows an upward trend from 1.46 in 2013 to a peak of 1.69 in 2017.
- The mean DER for the PrM period is 1.57, suggesting a relatively high level of debt in relation to equity.

2. PoM Period (2018–2022):

- The DER starts at 1.65 in 2018, decreases to 1.36 in 2020, and then slightly increases to 1.52 in 2022.
- The mean DER for the PoM period is 1.598, which indicates a slight increase in leverage compared to the PoM mean but remains lower than the peak observed in the PrM period.

3. % Change:

- The percentage change in the mean DER from the PrM to the PoM period is 0.028, indicating a slight increase in the average ratio.

Interpretation: Bank has able to maintain its improved risk management and financial strategies, contributing to enhance stability.

Asset quality

Net NPA Ratio

The Net NPA ratio (NNPAR) compares Net NPA to Net Advances after deducting provisions from gross advances. The main purpose of merger is to lower the amount of NPA.

Table 3: NNPAR

Period	PrM					PoM				
FY	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
NNPAR	2.1	2.57	2.12	3.81	3.71	5.73	3.01	2.23	1.5	1.02
Mean	2.862					2.698				
% Change	-0.164									

Source: Data collected from the annual report of SBI

1. PrM Period (2013–2017):

- The NNPAR shows fluctuations during the PrM period, with values starting at 2.1 in 2013, peaking at 3.81 in 2016, and slightly declining to 3.71 in 2017.
- The mean NNPAR for the PrM period is 2.862, indicating a moderate level of non-performing assets relative to net assets. The fluctuations suggest challenges in managing asset quality, particularly in 2016 when the ratio peaked.

2. PoM Period (2018–2022):

- The NNPAR starts significantly higher at 5.73 in 2018, indicating an increase in non-performing assets immediately following the merger.
- The mean NNPAR for the PoM period is 2.698, which is lower than the mean NNPAR during the PrM period, despite the initial spike.

3. % Change:

- The percentage change in the mean NNPAR from the PrM to the PoM period is -0.164, indicating a slight decrease in the average ratio.

Interpretation: The overall reduction in the mean NNPAR reflects a successful effort to enhance asset quality and reduce credit risk, supporting the bank's long-term financial health.

Gross NPA Ratio

The Gross NPA Ratio (GNPAR) is calculated by dividing Gross NPA by Gross Advances. The banks aim to decrease the gross non-performing assets ratio.

Table 4: Gross NPA Ratio

Period	PrM					PoM				
FY	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
GNPAR	4.75	4.95	4.25	6.5	9.11	10.91	7.53	6.15	4.98	3.97
M	5.912					6.708				
% Change	0.796									

Source: Data collected from the annual report of SBI

1. **PrM Period (2013–2017)**:

- The mean GNPAR for the PrM period is **5.912%**, indicating a moderate level of non-performing assets relative to total assets.

2. **PoM Period (2018–2022)**:

- It then declines to **3.97% by 2022**, showing a significant improvement in asset quality over time.
- The mean GNPAR for the PoM period is **6.708%**, which is higher than the PrM mean.

3. **% Change**:

- The percentage change in the mean GNPAR from the PrM to the PoM period is **0.796**, indicating a slight increase in the average ratio.

Interpretation: The sharp increase in Gross NPA in the base year of merger and simultaneously in just few years of time period significantly decrease in figure indicates that SBI has taken effective measures to manage and reduce NPA. The long term effectiveness towards asset quality can easily be seen.

Management Efficiency

Total Expenditure to Total Income Ratio (TETIR)

Table 5: TETIR

Period	PrM					PoM				
FY	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
TETIR	0.92	0.929	0.925	0.948	0.95	1.024	0.996	0.952	0.933	0.899
Mean	0.9344					0.9608				
% Change	0.0264									

Source: Data collected from the annual report of SBI

1. **PrM Period (2013–2017)**:

- The TETIR shows a stable trend during the PrM years, starting at **0.92 in 2013** and gradually increasing to **0.95 in 2017**.
- The mean TETIR for the PrM period is **0.9344**, indicating that approximately 93.44% of the bank's income was consumed by expenses on average during these years.

2. **PoM Period (2018–2022)**:

- The TETIR begins at **1.024 in 2018**, indicating that total expenses exceeded total income in that year, which is a concerning sign of reduced operational efficiency.
- The mean TETIR for the PoM period is **0.9608**, which is higher than the PrM mean, indicating that expenses took up a larger share of income on average PoM.

3. **% Change**:

- The percentage change in the mean TETIR from the PrM to the PoM period is **0.0264**, indicating a slight increase in the average ratio.

Interpretation: The significant increase in TETIR in **2018** suggests that the merger negatively impacted the bank's operational efficiency initially, as total expenses surpassed total income. But Subsequent decline in ration gives hope of long term operational efficiency. The overall reduction in TETIR reflects a positive trend toward better expense management and income generation, which is essential for the bank's financial health.

Total Advances to Total Deposit Ratio (Credit deposit Ratio)

A bank's advances-to-deposit ratio shows the proportion of funds mobilized as deposits that have been lent out. A high ratio signifies a strong dependence on deposits for lending.

Table 6: Total Advances to Total Deposit Ratio

Period	PrM					PoM				
FY	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
TATDR	0.860	0.867	0.824	0.845	0.768	0.715	0.750	0.717	0.665	0.675
Mean	0.8328					0.7044				
% Change	-0.1284									

Source: Data collected from the annual report of SBI

1. **PrM Period (2013–2017)**:

- The TATDR shows a relatively stable trend, starting at **0.860 in 2013** and gradually declining to **0.768 in 2017**.

2. **PoM Period (2018–2022)**:

- The TATDR decreases significantly from **0.715 in 2018** to **0.675 in 2022**, reflecting a consistent decline in the bank's credit utilization of deposits.

3. **% Change**:

- The percentage change in the mean TATDR from the PrM to the PoM period is **-0.1284**, indicating a **12.84% decrease** in the average ratio.

Interpretation: Table 6 suggests that the bank has used more conservative lending policy after merger or tightening the creditworthiness checking which results the decrease in average credit deposit ratio. Strategic decision taken to mitigate the risk of credit quality. A lower TATDR indicates that the bank is maintaining higher liquidity levels relative to its deposits, which can be beneficial in uncertain economic conditions.

Profit per Employee

Table 7: Profit per Employee

Period	PrM					PoM				
FY	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
PPE	0.0645	0.0485	0.0602	0.047	0.0511	-0.0243	0.0033	0.0578	0.0828	0.1292
Mean	0.054					0.049				
% Change	0.00526									

Source: Data collected from the annual report of SBI

1. **PrM Period (2013–2017)**:

- The Profit per Employee values show variability, starting at **0.0243** in 2013, peaking at **0.0645** in 2014, then fluctuating down to **0.047** in 2017.

2. **PoM Period (2018–2022)**:

- The Profit per Employee initially drops to **0.0511 in 2018**, then declines further to **-0.0243 in 2019**, indicating that the bank experienced a loss per employee during that year.

3. **% Change**:

- The percentage change in the mean Profit per Employee from the PrM to the PoM period is **0.00526**, which indicates a marginal increase in average profit per employee, despite the fluctuations in the individual years.
- **Interpretation**: After a drop in profit per employee ratio shows a strong recovery substantial improvement in profitability per employee. A consistent increase in profit generation per employee is crucial for sustaining growth and profitability in the long run. The recovery in profit generation per employee is a positive sign for the bank's overall financial health and workforce productivity.

Business per Employee

Table 8: Business per Employee

Period	PrM					PoM				
FY	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
BPE	9.43	10.64	12.34	14.11	16.24	16.7	18.77	21.05	23.73	25.74
Mean	12.552					21.198				
% Change	8.646									

Source: Data collected from the annual report of SBI

1. **PrM Period (2013–2017)**:

- The BPE shows a steady increase from **9.43 in 2013** to **16.24 in 2017**. This growth indicates that the bank was successfully increasing its business volume relative to its employee base during this period.
- The mean BPE for the PrM period is **12.552**, suggesting that each employee was generating approximately **12.55 units** of business.

2. **PoM Period (2018–2022)**:

- The BPE continues to rise significantly, starting at **16.7 in 2018** and reaching **25.74 in 2022**. This substantial growth demonstrates that the bank has improved its overall business efficiency and employee productivity after the merger.
- The mean BPE for the PoM period is **21.198**, indicating that each employee generated an average of **21.20 units** of business, significantly higher than the PrM average.

3. **% Change**:

- The percentage change in the mean BPE from the PrM to the PoM period is **8.646**, reflecting an **8.65% increase** in business generated per employee on average.

Interpretation: In summary, the analysis of Business per Employee indicates that the bank experienced consistent growth prior to the merger, followed by a significant increase in productivity afterward. The increase in BPE reflects successful operational integration and enhanced efficiency, positioning the bank favorably for future growth and profitability.

Earning Quality

Dividend Pay-out Ratio (%)

Table 9: Dividend Pay-out Ratio

Period	PrM					PoM				
FY	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
DPAR	20.12	20.56	20.21	20.28	20.11	0	0	0	17.49	20
M	20.258					7.498				
%Change	-12.76									

Source: Data collected from the annual report of SBI

1. **PrM Period (2013–2017)**:

- The Dividend Payout Ratio (DPR) remains relatively stable, ranging from **20.11% in 2017** to **20.56% in 2014**.
- The mean DPR for the PrM period is **20.258%**, indicating that, on average, the bank paid out approximately **20.26%** of its earnings as dividends to shareholders during these years.

2. **PoM Period (2018–2022)**:

- The mean DPR for the PoM period is **7.498%**, which is significantly lower than the PrM average.

3. **% Change**:

- The percentage change in the mean DPR from the PrM to the PoM period is **-12.76%**, indicating a substantial decrease in the average dividend payout ratio.

Interpretation: In summary, the Dividend Payout Ratio analysis reveals that while the bank

maintained a stable dividend policy prior to the merger, the immediate aftermath of the merger resulted in a complete suspension of dividends. The gradual return to dividends indicates an improving financial position, but the average payout remains significantly lower than PrM levels, reflecting a cautious approach in balancing shareholder returns and financial stability.

Return on Asset (ROA) (%)

Table 10: ROA

Period	PrM					PoM				
FY	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
ROA	0.66	0.65	0.68	0.46	0.41	-0.19	0.02	0.38	0.48	0.67
Mean	0.572					0.272				
% Change	-0.3									

Source: Data collected from the annual report of SBI

1. **PrM Period (2013–2017)**:

- The ROA shows a generally positive trend, starting at **0.66% in 2013** and fluctuating between **0.65% and 0.68%** in the subsequent years, before declining to **0.41% in 2017**.
- The mean ROA for the PrM period is **0.572%**, indicating that, on average, the bank generated **0.572%** profit for every unit of assets.

2. **PoM Period (2018–2022)**:

- The ROA drops significantly to **-0.19% in 2018**, indicating that the bank incurred losses relative to its assets immediately following the merger. This reflects the challenges and disruptions that often accompany mergers, such as integration issues and potential loss of customer confidence.
- The mean ROA for the PoM period is **0.272%**, which is substantially lower than the PrM average.

3. **% Change**:

- The percentage change in the mean ROA from the PrM to the PoM period is **-0.3**, indicating a decline in average profitability relative to assets.
- **Interpretation: ROA** is an important parameter to judge the financial performance of the bank. The SBI has gone through a mega merger with the weak banks that affects the return on asset. But after taking certain measures, using potential disruption, and improving operational efficiency. The fluctuations in ROA highlight the critical importance of effective management and operational efficiency, especially during periods of transition like mergers. The ability of the bank to improve its ROA PoM indicates successful adjustments in strategy and operations.

Return on Equity (ROE)

Table 11: ROE

Period	PrM					PoM				
FY	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
ROE	15.94	10.49	11.17	7.74	7.25	-3.78	0.48	7.74	9.94	13.92
M	10.518					5.66				
%Change	-4.858									

Source: Data collected from the annual report of SBI

1. **PrM Period (2013–2017)**:

- The ROE begins at **15.94% in 2013** and remains relatively high during the following years, although it shows a declining trend, dropping to **7.25% in 2017**.
- The mean ROE for the PrM period is **10.518%**, indicating that, on average, the bank generated approximately **10.52%** profit for every unit of equity.

2. **PoM Period (2018–2022)**:

- The ROE experiences a sharp decline to **-3.78% in 2018**, indicating that the bank faced significant challenges and incurred losses relative to its equity immediately after the merger. This reflects common difficulties during the integration phase of a merger, which can disrupt profitability.
- The mean ROE for the PoM period is **5.66%**, which is significantly lower than the PrM average.

3. % Change:

- The percentage change in the mean ROE from the PrM to the PoM period is **-4.858**, indicating a decline in average profitability relative to equity.

Interpretation: SBI is gradually returning to its PrM pace of ROE after a drastical changes taken place. The negative ROE indicates that the bank was not only failing to generate profits but was also incurring losses, suggesting challenges related to the merger, such as integration issues and potential loss of customer confidence. The ability to recover ROE PoM suggests that the bank has taken positive steps toward enhancing its profitability and utilizing its equity more effectively. The average ROE PoM remains below PrM levels, indicating that there are still areas for improvement in achieving optimal performance.

Liquidity

Cash to Deposit Ratio (CDR)

Table 12: Cash to Deposit Ratio

Period	PrM					PoM				
FY	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
CDR	5.47	6.09	7.35	7.49	6.26	5.56	6.08	5.14	5.79	6.36
Mean	6.532					5.786				
% Change	-0.746									

Source: Data collected from the annual report of SBI

1. PrM Period (2013–2017):

- The CDR shows a general upward trend during this period, starting at **5.47% in 2013** and peaking at **7.49% in 2016**, indicating that the bank was increasing its cash reserves relative to its total deposits.
- The mean CDR for the PrM period is **6.532%**, suggesting a solid liquidity position, as the bank maintained a higher proportion of cash in relation to its deposits.

2. PoM Period (2018–2022):

- The CDR declines to **5.56% in 2018**, indicating a reduction in liquidity immediately following the merger, which might reflect the bank's shift toward deploying more of its deposits into loans or investments rather than holding cash.
- The mean CDR for the PoM period is **5.786%**, which is lower than the PrM average, indicating a shift toward a less liquid position on average.

3. % Change:

- The percentage change in the mean CDR from the PrM to the PoM period is **-0.746**, indicating a decline in the average cash to deposit ratio.

Interpretation: In summary, the analysis of the Cash to Deposit Ratio shows that the bank had a solid liquidity position prior to the merger, but the subsequent decline in the ratio indicates a shift towards more aggressive asset utilization PoM. While some recovery is evident in recent years, the overall lower average CDR PoM reflects a reduced liquidity position, which carries potential risks that need to be managed effectively.

Govt. Securities to Total Assets Ratio (GSTAR)

Table 13: GSTAR

Period	PrM					PoM				
FY	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
GSTAR	20.6	20.67	18.72	20.78	21.58	24.86	21.01	20.76	23.67	23.7
M	20.47					22.8				
% Change	2.33									

Source: Data collected from the annual report of SBI

1. **PrM Period (2013–2017)**:

- The GSTAR shows relatively stable values, starting at **20.6% in 2013** and peaking at **21.58% in 2017**.
- The mean GSTAR for the PrM period is **20.47%**, indicating a healthy level of standard assets relative to total assets during these years.

2. **PoM Period (2018–2022)**:

- The GSTAR increases notably to **24.86% in 2018**, indicating a significant improvement in the quality of the bank's assets immediately after the merger. This could suggest effective management of the loan portfolio or a strategic shift towards maintaining a higher proportion of standard assets.
- The ratio remains relatively stable in subsequent years, with slight fluctuations, ending at **23.7% in 2022**.
- The mean GSTAR for the PoM period is **22.8%**, which is higher than the PrM average.

3. **% Change**:

- The percentage change in the mean GSTAR from the PrM to the PoM period is **2.33%**, indicating an improvement in the average proportion of standard assets relative to total assets.

Interpretation: In summary, the analysis of the Gross Standard Asset Ratio shows that the bank maintained stable asset quality before the merger, followed by a significant improvement in asset quality immediately after the merger. The PoM GSTAR indicates that the bank has effectively managed its asset portfolio, resulting in a higher proportion of standard assets, which is favorable for long-term financial health and stakeholder confidence.

Table 14: Camel Model Summary

CAMEL	Parameter	Impact of Merger on the variables
Capital Adequacy	CAR	Increased
	DER	Decreased
Asset Quality	NNPAR	Decreased
	GNPAR	Decreased
Management Efficiency	TETIR	Increased
	TATDR	Decreased
	PPE	Increased
	BPE	Decreased
Earnings Quality	DPR	Decreased
	ROA	Decreased
	ROE	Decreased
Liquidity	CDR	Increased
	GSTAR	Increased

Overall, while the merger has led to significant improvements in certain areas, there are notable challenges in earnings quality and management efficiency that the bank will need to address to ensure long-term success. The results highlight the importance of effective integration strategies and ongoing performance monitoring in the PoM phase.

Pre and Post-Merger Comparison using Paired t-test (Pre-2012-2017 and Post-2017-2022)						
CAMEL Model Parameters		Pre	Post	T-test	P-Value	Significant/Not significant
Capital Adequacy	CAR	12.718	13.190	1.408*	0.090	Significant
	DER	1.598	1.570	0.329	0.375	Not significant
Asset Quality	NNPAR	2.862	2.698	0.180	0.431	Not significant
	GNPAR	5.912	6.708	0.532	0.305	Not significant
Management Efficiency	TETIR	0.934	0.961	1.144	0.143	Not significant
	TATDR	0.833	0.704	5.450***	0.000	Not significant
	PPE	0.054	0.050	0.162	0.438	Not significant
	BPE	12.552	21.198	4.253***	0.001	Not significant
Earning Quality	DPR	20.256	7.498	2.768***	0.012	Not significant
	ROA	0.572	0.272	1.802*	0.055	Significant
	ROE	10.518	5.660	1.360	0.105	Not significant
Liquidity Position	CDR	6.532	5.786	1.696*	0.064	Significant
	GSTAR	20.470	22.800	2.482**	0.019	Significant

* , **, *** Indicates 0.10, 0.05 and 0.001 level of significance

Source- Author's Own Calculation

Interpretation- Capital Adequacy Ratio (CAR) showed a significant improvement post-merger (p-value = 0.090), suggesting a strengthened capital position, although the Debt equity Ratio decreased very less of (p-value = 0.375) which indicates very negligible changes. SBI tries to maintain its DER though out the study period is a good sign of compliance. In terms of **Asset Quality**, neither the Net NPA Ratio (NNPAR) nor the Gross NPA Ratio (GNPAR) showed significant changes, indicating that SBI's asset quality remained largely unaffected by the merger. SBI tries to maintain the immediate impact of merger in next years i.e 2019-2022. There is significant improvement was observed in Business per Employee (BPE) (p-value = 0.001), suggesting operational productivity gains, while Total Expenditure to Total Income Ratio (TETIR), Credit Deposit Ratio (CDR), and Profit per Employee (PPE) did not change significantly. The Dividend Pay-out Ratio (DPR) saw a significant decline (p-value = 0.012), potentially reflecting a more conservative approach to profit distribution, while Return on Assets (ROA) showed a marginally significant decline (p-value = 0.055), hinting at reduced profitability. However, Return on Equity (ROE) was not significantly impacted. Both the Government Securities to Total Assets

Ratio (GSTAR) and the Cash to Deposit Ratio (CDR) in the Liquidity Position demonstrated notable changes, with GSTAR rising (p-value = 0.019) and CDR slightly declining (p-value = 0.064), suggesting a move toward larger investments in government securities after the merger in an effort to possibly fortify liquidity buffers. Overall, SBI's capital adequacy and operational efficiency saw significant increases, although its profitability and liquidity metrics showed both gains and areas for improvement after the merger.

Conclusion

The results of the study reveal that the State Bank of India has attained better financial performance in terms of asset quality, management efficiency, earning capacity, and liquidity. The bank has able to maintain the CAR after merger as per BASEL-III report and RBI guidelines. Profit per Employee increased after merger which indicates the better efficiency and synergy of technological parameters. The most important concern of Public sector banks is the NPA which is seemingly addressed by the restructuring of banking sector and introduction of IBC (Insolvency and Bankruptcy Code). Bank has created an environment of honest willfulness between lender and borrower. As per CAMELS parameters SBI gets its best position during 2021 to 2022. SBI's overall position in post-merger began to improve year after year. The bank management should concentrates on management quality and liquidity quality to enhance its performance to get better performance in future (Jose & Jegadeeshwaran, 2024). Capital Adequacy ratios have improved post-merger except Debt Equity ratio & the asset quality of bank has deteriorated in post-merger years FY 17-18, FY 18-19. But SBI has managed its lending policy and recovery policy to reduce the willful defaulters. Provision for NPA continuously decreased (Yadagiri & Macharla, 2022) in post-merger period simultaneously NNPA also reduced which shows SBI's integration of better lending policy. It shows that mega merger have a positive impact on minimizing its NPA of the bank year on year. Quality of assets is an important parameter to measure the degree of its financial strength. Earning quality and Management efficiency has short term negative impact of merger but SBI is slowly improving its performance in all areas and showing positive results after the merger. Hence it proved that merger has some synergy ((kandi & Anvitha, 2022). Most of the analysed parameters showing and upward trend after a sudden drop in post-merger period. The optimum utilization of resources can be seen by the by studying the increasing liquidity position and asset quality of the bank. The bank may not shown full proof positive sign in all the parameters, but it shows all the indicators as upward trend in just five years of merger. Author can be easily foreseen that the SBI will perform better financial stability and operational efficiency in near future. SBI should emphasize the importance of external conditions as well as internal banking procedures in forecasting the financial condition of loan assets. The lack of relevance of credit risk management, loan monitoring and industry specific downturns in forecasting NPA. (Ratnavalli & al, 2024). Policy makers can enhance M&A success in banking by creating robust integration strategies and policies that encourage synergy gain and financial performance improvement. Strengthen creditor rights, focused ultimate goal, emphasis on empirical research will lead to a more efficient and resilient banking sector. This study evaluate only the 13 ratios of CAMEL parameters. Nevertheless employing alternative approaches such as all ratio analysis, DEA model, Event study methodology could yield more comprehensive conclusion over extended period. Also M&A success depends upon various macro-economic factors, which could also be investigated separately in future research.

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