ROA & ROE OF SBI: A STUDY WITH PRE- AND POST-MERGER ANALYSIS

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Abstract
One of the best ways to increase efficiency and profitability in the banking sector is through mergers and acquisitions. In recent times, the Indian banking industry had numerous large mergers. The study involves one of the biggest bank mergers in the country. On April 1, 2017, five associates of SBI and Bhartiya Mahaila Bank were combined with SBI in the greatest merger to create SBI a significant bank. The study analyses SBI's performance using return on assets (ROA) and return on equity (ROE). ROA is useful for evaluating out how well an organization uses its resources to make a profit. While ROE aids in concentrating on the crucial areas of financial performance to pinpoint the organization's strengths and weaknesses. Mean and standard deviation (SD) are used to compare the results between before and after M&A. Prior period and post period are divided into two segments in the study. The pre-merger period runs from April 2012 to March 2017, and the post-merger research period is from April 2017 to March 2022.

Keywords: Merger and Acquisition, ROA, ROE

Introduction

The largest and most diverse democracy in the world has definitely benefited greatly from India's banking sector in a relatively short period of time. The banking sector is India's economic backbone and the banking industry of India had undergone numerous reforms, and numerous fruitful mergers and acquisitions have assisted in its tremendous growth **Mishra (2019) and Muthukrishnan (2021).** The world has come to understand that mergers and acquisitions are among the most productive ways to obtain a strategic advantage both nationally and internationally **Smirnova (2014) and Kumar (2022).**

14 commercial banks were nationalized as a result of legislation the Indian government implemented in 1968. Even then, a startling 85% of all bank deposits in our country were held in these fourteen banks. Six more commercial banks were nationalized in a second round in 1980, this time by the government. With this substantial expansion, the Indian government now has direct control over 90% of the banking sector **Mishra (2019).** With this, India has twenty functional nationalized banks. Later, in 1993, the government turned to bank mergers as part of yet further effort to promote economic stability. The New Bank of India (NBI) and the Punjab National Bank (PNB) merged. This was the first merger of nationalized banks ever witnessed in Indian history, and as a result, the number of nationalized banks in India declined from twenty to nineteen.

One of the largest companies in the world SBI, a significant public sector banking and financial services company managed by the Government of India, is listed beneath 250 on the Fortune Global 500 list. Since the State Bank of Jaipur and the State Bank of Bikaner merged to establish the State Bank of Bikaner and Jaipur after that, SBI has seven associates instead of the eight it had in 1959. The idea to combine all of the associate banks was introduced in an effort to form a single, exceptionally big bank and boost productivity **Kaur (2019).** On August 13, 2008, the Indian government decided to merge the State Bank of India and the State Bank of Saurashtra. State Bank of Indore also joined SBI on August 27, 2010. The Indian government welcomed the merger of the Bhartiya Mahaila Bank with the State Bank of India, together with its five subsidiary banks, as a major achievement. The five subsidiary banks that amalgamated into the State Bank of India in February 2017 are the State Bank of Bikaner and Jaipur, State Bank of Mysore, State Bank of Travancore, State Bank of Patiala, and State Bank of Hyderabad. As a result of the merger, the State Bank of India is now among the top 50 banks in the world.

Banking firms have significantly broadened and complicated their operations in the modern international economy, and they must deal with a regulatory environment that is constantly growing and getting more complex. The majority of research has been used accounting performance to compare the positions before and after mergers **Aggarwal and Garg (2022)**. Risk management has the primary issue and every nation's financial sector has required to do an appropriate risk assessment to maintain a balance between its deposit and credit balances **Botis (2013) and Sinha (2015).** The entire spectrum of industries is searching for strategic acquisitions both locally and internationally because it has been acknowledged on a worldwide scale that mergers and acquisitions are the sole means of getting a comparative benefit. Numerous banking mergers happened as a result of financial stress Rao (2016). Non-financial factors played a role in mergers and acquisitions as well **Darayseh (2022).**

.An arrangement that joins two existing firms to create a single, larger company is known as a merger. Businesses merge for a variety of reasons, and there are several sorts of mergers. The majority of mergers bring together two already-running enterprises under one new identity. Mergers and acquisitions have frequently been used to gain market share, expand into new markets, and diversify a company's customer **Kuccukkocaouglu (2018)**. While an acquisition is a business operation in which a company buys most or all of the ownership interests of another company in order to take control of it. An acquisition occurs when a buying corporation buys more than 50% of a target business. The acquiring business frequently purchases the target company's stock and other assets as part of the exchange, giving it the freedom to choose how to use the newly acquired assets without engaging the target company's shareholders.

In 2017, there were twenty-seven Public Sector Banks (PSB) in India. Nirmala Sitharaman, the finance minister, announced the enormous merger in the banking sector in August 2019, and it became effective on April 1 of the following year. However, just twelve PSBs—including the State Bank of India (SBI) and the Bank of Baroda (BOB) remain following a enormous merger in 2019. There are twelve public sector banks in India, and their names are SBI, BOB, PNB, Canara Bank (CB), Union Bank of India (UBI), Indian Bank (IB), Indian Overseas Bank (IOB), UCO Bank, Bank of Maharashtra (BOM), Punjab and Sind Bank (P&SB), Central Bank of India (CBI), and Bank of India (BOI). There are now a total of twelve public sector banks following the major consolidation of ten public sector banks (PSBs) into four.

Table 1
List of merged banks with State Bank of India (SBI)

Sr. No.	Bidder / Acquirer bank	Target Bank	Merger or Acquisition
1.	State Bank of India (SBI)	Bank of Bihar Ltd. (BOB)	November 8, 1969
2.	State Bank of India (SBI)	National Bank of Lahore Ltd. (NBL)	February 20, 1970
3.	State Bank of India (SBI)	Bank of Cochin Ltd. (BOC)	August 26, 1985
4.	State Bank of India (SBI)	Kashi Nath Seth Bank Ltd. (KNSB)	January 1, 1996
5.	State Bank of India (SBI)	State Bank of Saurashtra (SBS)	August 13, 2008
6.	State Bank of India (SBI)	State Bank of Indore (SBI)	August 27, 2010
7.	State Bank of India (SBI)	State Bank of Travancore (SBT)	April 1, 2017
8.	State Bank of India (SBI)	State Bank of Hyderabad (SBH)	April 1, 2017
9.	State Bank of India (SBI)	State Bank of Bikaner and Jaipur (SBB&J)	April 1, 2017
10.	State Bank of India (SBI)	State Bank of Patiala (SBP)	April 1, 2017
11.	State Bank of India (SBI)	State Bank of Mysore (SBM)	April 1, 2017
12.	State Bank of India (SBI)	Bharatiya Mahila Bank (BMB)	April 1, 2017

Source: India's Banking Trend and Progress report

Literature Review

Ishwarya J (2019) investigated to understand the efficiencies that emerged and the long-term impacts of the merger, in Indian banking industry. The merger of SBI and its associates was included in the analysis for this reason. The paper employed secondary data and included several financial indicators before and after the merging of the institutions. It also discussed the benefits and drawbacks of merging banks. The study's conclusion was that because M&As

have had some success in the Indian banking industry, so policymakers and the government shouldn't support mergers of healthy and failing institutions.

Singh and Das (2018) evaluated the effects of merger and acquisition activity on the outcome of the Indian banking sector before & after six years of M&A. The banks' merger had a number of goals in mind including growth, diversification, technological advancement, becoming financially stronger, increasing earnings, gaining market share, etc. From 2010–11 to 2015–16, the Basel I and II rules' prescribed CAMELS was used to evaluate the post–merger performance of a few chosen banks. On the day of the M&A announcement, investors' stockholder wealth in public or private sector banks has either dropped or grown, but after adopting a cautious merger approach, positive abnormal returns on the acquired banks shares were attained. Results showed that procedural, physical, and sociocultural circumstances played a significant role in the post-M&A process.

Edward & Manoj (2019) the study included the consideration of SBI and its associates merging, and pre-merger data from 2012 to 2017 and the post–merger data from 2017 to 2019 were collected. The study's main finding was that the banking industry generated greater profits after. to examine the combined institutions' financial status overall, operational performance, profitability position, and liquidity position. Market Model and Market Adjusted Model had been used to calculate returns. The study's findings indicated that although actual performance could deviate from market expectations, stock prices had revealed the market's anticipation of future cash flows.

Kaur (2019) observed that a decision has been made to merge SBI and its associates with Bhartiya Mahaila banks. The study noted that SBI increased its branches, assets, deposits, and lending market and joined the top 50 worldwide banks. State Bank of India's market share climbed by 6%. State Bank of India's asset base was 5 times higher than Industrial Credit Investment of India’s (ICICI) after the merger. The capital adequacy ratio, gross NPA, and net NPA have all been considered. Results showed that economic growth, rapid industrialization, and the provision of capital for investment has the primary functions of bank mergers.

Ghosh and das (2022) SBI and its associated firms' merger have been included in the study. The research obsereved the effects of the merger on SBI's operational performance as well as the effects on post-merger shareholder wealth. The information has been gathered from a secondary source. The operating performance was calculated using ratio analysis. Data from 2013 to 2017 was collected in order to determine the importance of stock price variables like bank nifty, banker, and nifty fifty. The result was that the amalgamated company faced numerous obstacles; as a result, it would prepare for upcoming challenges.

Jose and Paldon (2021) observed that after the M&A of the State Bank of India (SBI) and its subsidiaries, synergy was successful. The study's primary focus was on revenue, and it was discovered that, starting in the second year following the merger, there had been a considerable change in revenue with a positive growth. Both linear regression and trend analysis have been employed. Study included secondary data and it has been collected between 2014 and 2020. The outcome showed that there was an improvement in revenue following the merger.

Dhara and Basu (2020) analyzed the economic activity of the prior and after merger SBI with its associated. Data has been taken from 2014 to 2019 and ratio analysis has been applied to check the financial performance. A Paired Sample T-test has been run at the 5% level of significance to see if there is a significant difference statistically between the financial performance during the pre-merger and post-merger periods. The State Bank of India's net profit has been predicted using regression analysis for the years 2020–2025. The result was that SBI's profitability increased following the merger and would continue to do so steadily over time.

Tripathi and Ahuja (2020) studied that the merger of State Bank of India (SBI) with its subsidiaries due to the worldwide recession, the government decided to merged the banks in 2017 to help the financial sector. Study revealed the impact of the merger on SBI's profitability and productivity. Data has been collected between 2015 and 2019. Ratios were utilized to examine profitability while branch and labor productivity had been used to analyze productivity. The result was a decrease in productivity and a gain in profitability after the merger.

Liargovas and Repousis (2011) analyzed the M&A of the Greek banking sector between 1996 and 2009, used the event study approach for ten days before and after the announcement to calculate the return of stock prices and took into account positive abnormal return. Financial ratios were employed to measure favorable results from diversified or horizontal agreements, but operating performance did not increase. The results showed that after M&A, banks had not increased operating performance or shareholder wealth; this could only be done by setting up an organization to reduce knowledge leaks before the M&A transaction.

Nazim and Junaidah (2018) observed the 1993–2007 period of Islamic bank mergers and acquisitions. The study is theoretical and analytical in character, and secondary data collection techniques have been used. Study contained theories and examined performance through a number of elements for the success of M&A; more than thirty observations were made for this aim. The conclusion was that different factors and strategies had varying effects on M&A activity.

Khan (2011) investigated the prior- and post-analysis of Indian banks & this study also looked at the financial changes taking place in the bidder companies and the effects of mergers and acquisitions on bidder banks. It highlighted the beneficial impacts using a variety of financial metrics, including the debt-to-equity ratio, operating profit margin, return on equity, return on capital employed, and return on equity. The independent t-test was employed in the study to evaluate the statistical significance, and it was applicable to both the ratio analysis and the effect of acquisitions and mergers on performance of banks. Result indicated that equity stockholders received a dividend after the merger and acquisition (M&A) of banks.

Lahoti (2016) observed that in a globalized market, mergers and acquisitions (M&A) have become increasingly frequently employed to increase market share, diversity investments to reduce business risk, explore new markets and geographic locations, and take benefit of scale economies to boost a company's performance. The banking industry is the most significant sector for foreign investors which helped to elevate the shareholders status to a global scale and raise their worth. The study's primary focus was on how efficiently banks performed financially following mergers, particularly in the areas of earnings, leverage, liquidity, and capital market norms. The results showed that The Indian banking system underwent a number of innovations that helped it achieve outstanding success after merging.

Joshi et al. (2021) studied the effect on ICICI Bank's non-performing assets (NPAs) of M&A between Industrial Credit and Investment Corporation of India (ICICI) and the Bank of Rajasthan (BOR) before and post. The study used descriptive statistics, and from 2005 to 2015, secondary data was gathered from the ICICI Bank's official websites. Ratio analysis has been utilized to examine the current position. The result was that after the merger, NPA climbed while the outstanding loans could be recovered by ICICI., but there was no discernible improvement in EPS.

Girnara (2016) observed that mergers and acquisitions performed the best function in the banking industry for considerable expansion in operations, reduced rivalry, boosted customer base, and minimize cost. The merger of ING Vyas Bank and Kotak Mahindra Bank has been selected as the sample size for this research. The merger and acquisition effect on banks performance was included in the paper. Simple random sampling & descriptive research methods have been used. After the merger, there were some constraints, but there were also more clients, more profitable sales, higher share prices, and more liquidity.

Shakoor (2014) bankers, government officials, investors, banking staff, and other shareholders found this information useful in studies to determine if merger and acquisition (M&A) improved or worsened the Pakistani bank performance. The effects of M&A on the performance of Pakistani banks two years previous to the merger and two years after it were examined using financial ratios such as profitability ratios (PR), liquidity ratios (LR), investment ratios (IR), and solvency ratios (SR). As a result of the findings, Pakistani banking corporation have to examine the financial analysis prior to entering into an M&A agreement because all banks had not improved their performance as much as they had hoped before the merger.

Objectives of the research

- To compare the return on asset performance of a specific bank before and after a merger.
- To compare the return on equity performance of a specific bank before and after a merger.
- To evaluate the favorable position following the merger of a few Indian banks.

Hypothesis

A research-based research hypothesis is generated in order to accomplish the objectives.

H0[1]: There is no significant difference in the ROA of the specific banks prior and after mega merger.

H0[2]: There is no significant difference in the ROE of the specific banks prior and after mega merger.

H0[3]: There is no significant difference in positive situation after mega merger & acquisition in banks of India.

Research Gap

It is clear that the majority of research has focused on patterns, structures, human factors, earnings, and revenues rather than the necessity to analyze return on assets and return on equity of mergers. The objective of current study is to examine merger and acquisition (M&A) details with a particular emphasis on the State Bank of India. The performance of the bank five years prior to and five years following the merger would be examined. An attempt is made to predict the outcome of the ongoing merger and acquisitions using financial performance with a major focus on the Indian banking sector (M&As).

Data Collection and Research methodology

Data Collection

The research conclusions are based on data from merger and acquisitions (M&As) in the Indian banking sector. The financial and accounting data of the bank is gathered from its annual report to examine the effects of M&As on the performance of the sample bank. Money control and the National Stock Exchange (NSE) have provided financial data for the investigation.

Research Methodology

Financial indicators like financial leverage (FL), return on assets (ROA), and return on equity (ROE) have been used to compare the pre and post performances of State Bank of India (SBI) with its associates and Bhartiya Mahaila Bank before and after merger and acquisitions in order to test the research prediction. The financial ratios have examined before the merger (5 years earlier) and after the merger (5 years later). Prior to the merger, the acquiring and acquired banks conducted individual activities in the market, and following the merger, the acquiring bank SBI continued the operations of the acquired banks. The paired t-test is used in this study while keeping in mind its goals and purpose. The combined ratios of SBI is taken into consideration for the pre-merger period (5 years prior) and, while the acquiring bank's (SBI's) ratios are utilized for the post-merger period (5 years afterwards).

Analysis and Interpretations

This study takes into account the April 1, 2017, merger & acquisition of the State Bank of India with the State Banks of Bikaner and Jaipur, State Banks of Mysore, State Banks of Travancore, State Banks of Patiala, State Banks of Hyderabad, and Bhartiya Mahaila Bank. in order to compare SBI's financial performance prior to and following mergers and acquisitions. Financial leverage, return on assets, and return on equity have been calculated as accounting ratios. The profile of SBI before the merger with its subsidiaries and Bhartiya Mahaila Bank is shown in Table 2 for the period of March 2013 to March 2017. The combined performance of the bidder bank (SBI) is shown in Table 3 prior to the merger. Table 4 displays the profile of SBI performance from March 2018 to March 2022 following the merger. Table 5 displays the combined financial results of SBI following the merger. The researcher has computed ratios in this case.

The merger of State Bank of India with its subsidiaries and Bhartiya Mahaila Bank is displayed, and the financial results before and after the merger have been compared using key ratios. The combined means and standard deviations of all the prior-merger and after merger variables are shown in Table 6. The average level of financial leverage (16.579% vs. 16.826%) and the t-value of -0.5025 are found to be quite similar. the mean value of financial leverage has increased, and it is assumed that this is a result of the merger, thus it is regarded as significant. The ROA has the mean value (0.514%Vs 0.3345%) and t-value 0.6374, however the mean value of ROA declined fewer after the merger, it is believed that the merger had no impact on it. The mean value of ROE reveals a considerable fall in the mean (8.6202% Vs 5.8116%) and a t-value of 0.5830, indicating that the merger had no impact and that the ROE has not statistically significant. Calculating the value of return on equity (ROE) is aided by both financial leverage and return on assets. ROA is the cause of the decline in ROE; if the bank had increased the value of its assets through earnings, ROE would have increased in the future. Either the ROE of SBI has no increased after merger, but after the merger of five subsidiaries and Bhartiya Mahaila Bank SBI became strongest bank in the world.

Table 2
Profile of SBI of last five years (March 2013 to March 2017) before the merger with its associates and Bhartiya Mahaila Bank.

	March-2013	March-2014	March-2015	March-2016	March-2017
Net Income (₹ in crores) (1)	14,105	10,891	13,102	9,951	10,484
Total assets (in crores) (2)	1,566,211	1,792,235	2,047,714	2,357,145	2,705,538
Equity (in crores) (3)	98,884	118,283	128,439	144,274	156,700
FL (2÷3)	15.83887181	15.15209286	15.94308582	16.33797496	17.26571793
ROA % (1÷2) × 100	0.900581084	0.607677007	0.639835446	0.422163253	0.387501488
ROE % (1÷3)	14.26418834	9.207578435	10.20095142	6.897292651	6.690491385

Source: Researcher's collection from annual report of SBI retrieved from NSE and money control

Table 3
Combined Profile of SBI of last five years (March 2013 to March 2017) before the merger with its associates and Bhartiya Mahaila Bank

	March-2013	March-2014	March-2015	March-2016	March-2017
Net Income (₹ in crores) (1)	18,555	14,807	17,832	13,019	-97
Total assets (in crores) (2)	2,132,514	2,395,556	2,699,161	3,072,321	3,441,760
Equity (in crores) (3)	125,033	147,371	161,388	180,592	217,192
FL (2÷3)	17.05560932	16.2552741	16.72466974	17.01249779	15.84662419
ROA % (1÷2) × 100	0.870099798	0.618102854	0.660649735	0.423751294	-0.002818326
ROE % (1÷3)	14.84008222	10.04743131	11.04914864	7.209067954	-0.044660945

Source: Researcher's collection from annual report of SBI retrieved from NSE and money control

Table 4
Profile of SBI of five years (March 2018 to March 2022) after the merger with its associates and Bhartiya Mahaila Bank

	March-2018	March-2019	March-2020	March-2021	March-2022
Net Income (₹ in crores) (1)	-6,547	862	14,488	20,410	31,676
Total assets (in crores) (1)	3,454,749	3,680,912	3,951,388	4,534,427	4,987,595
Equity (in crores) (1)	194,280	196,259	208,244	230,297	256,709
FL (2÷3)	17.78231933	18.75537937	18.97479879	19.6894749	19.42898379
ROA % (1÷2) × 100	- 0.189507255	0.023418109	0.36665597	0.450111999	0.635095672
ROE % = (1÷3)	- 3.369878526	0.439215526	6.957223257	8.862468899	12.33926352

Source: Researcher's collection from annual report of SBI retrieved from NSE and money control

Table 5
Combined Profile of SBI of five years (March 2018 to March 2022) post-merger with its associates and Bhartiya Mahaila Bank

	March-2018	March-2019	March-2020	March-2021	March-2022
Net Income (₹ in crores) (1)	-3,749	3,351	21,140	23,888	37,183
Total assets (in crores) (1)	3616439	3888460	4197486	4845615	5360878
Equity (in crores) (1)	230321	234495	251060	275561	305588
FL (2÷3)	15.70173367	16.58227254	16.71905521	17.58454571	17.54282891
ROA % (1÷2) × 100	- 0.103665512	0.086178076	0.503634795	0.492981799	0.693599071
ROE % = (1÷3)	- 1.627728258	1.429028337	8.420297937	8.668860978	12.16768983

Source: Researcher's collection from annual report of SBI retrieved from NSE and money control

Table 6

The combined profile of SBI with its associates and Bhartiya Mahaila Bank pre-merger and post-merger ratios' mean and standard deviation

Variables		Mean	SD	t-value	Result
FL	Pre	16.5789350	0.519006073	-0.5025	significant
	Post	16.8260872	0.778468093		
ROA	Pre	0.51395707	0.329543858	0.6374	Insignificant
	Post	0.33454565	0.330275637		
ROE	Pre	8.62021384	5.560908747	0.5830	Insignificant
	Post	5.81162977	5.699115336		

Source: Compiled by a researcher using tables 3 and 5, significance level of 5%

Results and discussions

With a t-value of 0.6374, the outcome indicates that the performance of SBI has declined in terms of ROA since it acquired the five associate banks and Bhartiya Mahaila Bank. As a result, the HO^1 is not rejected or accepted, which states that there is no statistically significant difference between return on assets (ROA) before and after the merger. The HO^2 is acceptable because the performance of SBI in terms of Return on Equity (ROE) declined following the M&A with a t-value of 0.5830, which has no significance. HO^2 states that there is no difference between ROE before and after the M&A. Although following the M&A, the SBI's position has improved overall. Since the merger, SBI's profits have increased, which has an effect on ROE. The bank made a loss following the merger in March 2018, but after then, its profits have recovered, therefore the HO3 is rejected. HO^3 denotes that there is no positive relationship between the merger's before and after periods. The analysis's conclusions imply that SBI's merger of the acquired banks has benefited equity shareholders and improved overall bank profitability.

Limitation and future dimension

The study excludes information of acquired banks; only State Bank of India (SBI), both pre and post the merger, has been used for data collection. To examine the position of the prior and post-merger, several other ratios can be included. The comparison of pre- and post-merger performance to analyze the consequences of the merger of acquired banks with acquiring banks is indicated as prospective future research in this area. And add additional banks to the study's sample size for a bigger sample that would have produced better results.

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