

A Study on Comparative Analysis of Selected Banks: Pre and Post Merger Performance

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Abstract

This study analyses the pre- and post-merger financial performance of three Indian public sector banks: Canara Bank (merged with Syndicate Bank), Union Bank of India (merged with Andhra Bank and Corporation Bank), and Indian Bank (merged with Allahabad Bank). Using financial ratios (ROA, ROE, NPA ratio, and CAR) for three years before and after each merger (2017-2024), the research investigates the impact of mergers on profitability, asset quality, and capital adequacy. A paired t-test is employed to determine the statistical significance of changes in these ratios. The analysis reveals mixed results. While some banks showed improvements in ROA and ROE post-merger, these improvements were not always statistically significant. However, the study found statistically significant improvements in NPA ratios and CAR for several banks, suggesting that mergers can positively impact asset quality and capital adequacy.

The study concludes that while mergers may not always lead to immediate and statistically significant improvements in profitability, they can contribute to enhanced financial stability through improved asset quality and stronger capital positions.

Introduction

The banking sector has witnessed significant growth in mergers and acquisitions due to globalization, technological advancements, and competitive pressures. Mergers aim to enhance market reach, financial stability, efficiency, and competitiveness by consolidating resources and streamlining operations. Assessing the impact of mergers on financial performance, operational efficiency, and customer satisfaction is crucial in determining their success.

Banks merge to achieve economies of scale, expand customer bases, and leverage complementary strengths. Financial stability is a key driver, as larger entities can better withstand economic shocks and regulatory challenges. Mergers also boost operational efficiency by reducing redundancies, optimizing resources, and investing in advanced banking technologies. However, challenges such as cultural integration, technological alignment, and temporary service disruptions can affect employee morale and customer trust.

Customer satisfaction post-merger varies—while improved digital capabilities and broader services can enhance experience, transition periods may lead to inefficiencies. The study will compare pre- and post-merger performance using financial ratios like ROA, ROE, NIM, cost-to-income ratio, and NPA levels to evaluate profitability and efficiency.

Government policies often influence bank mergers, as seen in India's push for PSB consolidation to strengthen financial stability and reduce NPAs. This study will analyze the effectiveness of mergers in enhancing financial strength, efficiency, and customer experience, contributing to a deeper understanding of M&A strategies in banking.

Statement of Problem

Bank mergers in India are aimed at enhancing competitiveness, efficiency, and financial stability. However, integration challenges, restructuring costs, and technological adjustments often strain profitability. The impact on key financial indicators like ROA, NPAs, and net profit remains uncertain.

This study analyzes pre- and post-merger financial performance to determine whether mergers improve stability or create new challenges. The findings will aid policymakers, investors, and analysts in assessing the effectiveness of bank consolidations.

Literature Review

Goyal & Joshi (2012) explored the impact of mergers and acquisitions (M&A) on India's banking sector post-liberalization, analyzing financial, HR, and legal aspects. They highlighted ICICI Bank's use of mergers to expand into rural markets.

Kuriakose & Gireesh Kumar (2010) examined strategic and financial similarities in mergers, finding that private banks favor voluntary mergers, while public banks remain cautious. They noted that mergers often fail to optimize capital structure, except in cases like the HDFC-CBoP merger (2007).

Soewignyo (2010) discussed the financial challenges in M&A, emphasizing that while mergers increase bank size, sustained profitability is not guaranteed.

Anand & Singh (2008) analyzed five Indian bank mergers, finding that merger announcements positively impacted shareholder wealth.

Kumar (2013a) developed a framework for post-merger performance, concluding that mergers succeed if efficiency surpasses non-merging banks and improves over time. About half of the mergers analyzed were deemed successful.

Mohan et al. (2005) found that merged banks improved operational performance, with larger mergers yielding better results.

Kumar (2013b) predicted an increase in bank mergers, especially among private and foreign banks, as competition intensifies.

Angwin & Vaara (2005) reviewed 71 bank mergers in India (1960–2004), noting that pre-reform mergers aimed at restructuring weak banks, while post-liberalization mergers were market-driven responses to competition.

The literature suggests that while bank mergers in India have led to financial expansion and operational efficiencies, they also present challenges in capital structure optimization, cost control, and sustained profitability. This study aims to build on these insights by analyzing the financial performance of selected banks before and after their mergers.

Research Methodology

- **Data Type:** Secondary
- **Data Period:** 2017–2024 (three years before and after mergers)
- **Population:** Public sector banks
- **Nature of Data:** Quantitative
- **Methodology:** Comparative financial analysis using ROA, ROE, NPAs, and capital adequacy ratios, sourced from annual reports and financial statements.

Sample Size

For this study, the following five banks will be selected:

- 1.Canara Bank (merged with Syndicate Bank)
- 2.Union Bank (merged with Andhra Bank & Corporation Bank)
- 3.Indian Bank (merged with Allahabad Bank)

Hypothesis

The study employs a paired t-test to analyse the pre- and post-merger performance of the selected banks. The hypotheses being tested are:

Return on Assets (ROA):

- **Null Hypothesis (H01):** There is no significant difference in ROA before and after the merger.
- **Alternative Hypothesis(H1):** There is a significant difference in ROA before and after the merger.

Return on Equity (ROE):

- **Null Hypothesis (H02):** There is no significant difference in ROE before and after the merger.
- **Alternative Hypothesis(H2):** There is a significant difference in ROE before and after the merger.

Non-Performing Assets (NPA):

- **Null Hypothesis (H03):** There is no significant difference in NPA Ratio before and after the merger.
- **Alternative Hypothesis(H3):** There is a significant difference in NPA Ratio before and after the merger.

Capital Adequacy Ratio (CAR):

- **Null Hypothesis (H04):** There is no significant difference in CAR before and after the merger.

- **Alternative Hypothesis(H4):** There is a significant difference in CAR before and after the merger.

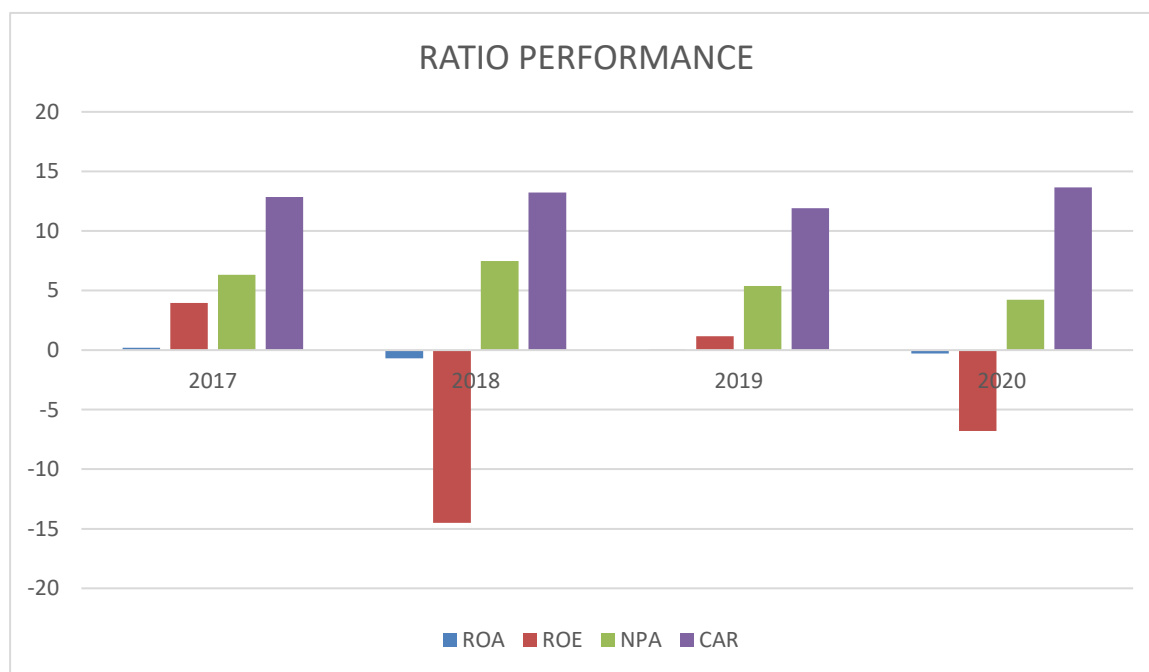
Data Analysis

Comparative Analysis and Interpretation

I. CANARA BANK (Syndicate Bank merger with Canara Bank)

Per-Merger

Years	ROA	ROE	NPA Ratio	Capital Adequacy Ratio(%)
2017	0.19	3.96	6.33	12.86
2018	-0.68	-14.51	7.48	13.22
2019	0.04	1.16	5.37	11.90
2020	-0.30	-6.78	4.22	13.65



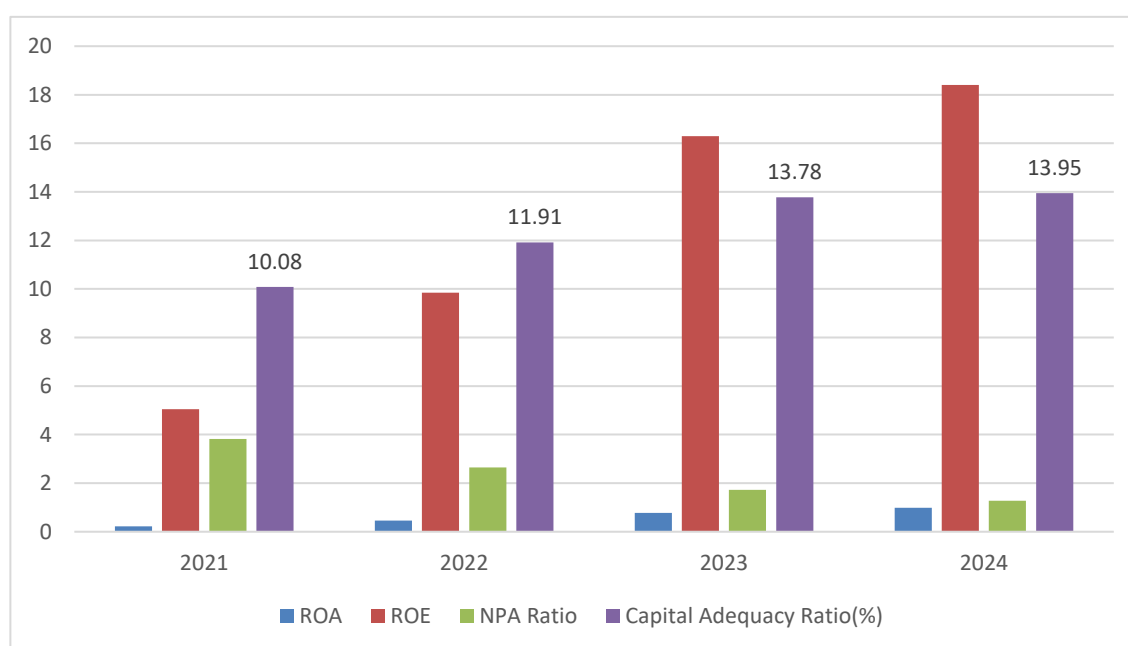
Pre-Merger Interpretation

From 2017 to 2020, Canara Bank exhibited fluctuating financial health, facing significant challenges before merging with Syndicate Bank. The most critical year was 2018, marked by heavy losses, a negative ROA (-0.68%) and ROE (-14.51%), and a peak NPA ratio of 7.48%, reflecting poor profitability and rising loan defaults. Although 2019 showed slight improvement, profitability remained weak. By 2020, the NPA ratio declined to 4.22%, and the Capital Adequacy Ratio improved to 13.65%, signalling better risk management. However, negative ROA and ROE indicated ongoing struggles. These efforts at stabilizing asset quality and strengthening capital buffers positioned Canara Bank for future growth post-merger.

CANARA BANK (Syndicate Bank merger with Canara Bank)

Post-Merger

Years	ROA	ROE	NPA Ratio	Capital Adequacy Ratio(%)
2021	0.22	5.05	3.82	10.08
2022	0.46	9.85	2.65	11.91
2023	0.78	16.3	1.73	13.78
2024	0.99	18.40	1.27	13.95



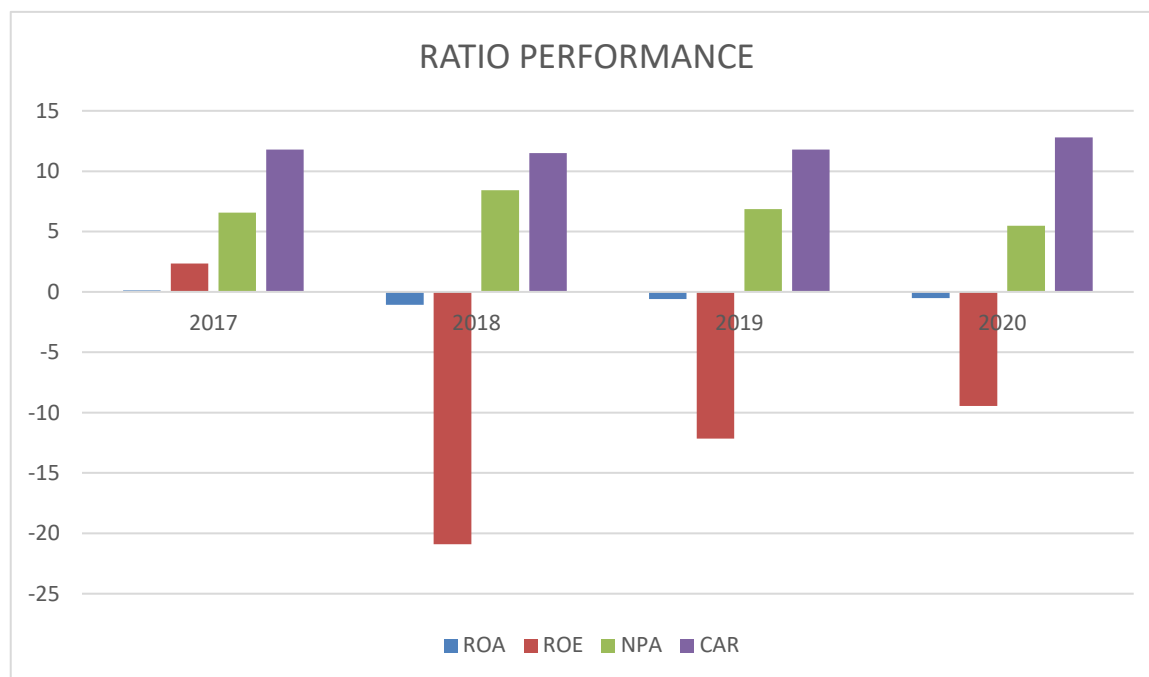
Post-merger Interpretation

After the merger with Syndicate Bank, Canara Bank's financial performance improved steadily from 2021 to 2024. ROA increased from 0.22% to 0.99%, and ROE increased significantly from 5.05% to 18.40%, indicating that the bank is efficiently utilizing its assets and that the profitability for shareholders is much higher. Non-Performing Assets (NPA) improved from 3.82% in 2021 to 1.27% in 2024; this is an evident increase in asset quality and successful risk management. The Capital Adequacy Ratio increased from 10.08% to 13.95%, hence a stronger capital base, and an enhanced capability for risk management in financial areas. These trends emphasize successful post-merger integration for Canara Bank toward the development of stability, profitability, and assets.

II. UNION BANK OF INDIA (Andhra Bank and Corporation Bank merger with Union Bank of India)

Pre-Merger

Years	ROA	ROE	NPA Ratio	Capital Adequacy Ratio(%)
2017	0.12	2.36	6.57	11.79
2018	-1.07	-20.90	8.42	11.50
2019	-0.59	-12.15	6.85	11.78
2020	-0.52	-9.46	5.49	12.81



Pre- Merger Interpretation

Union Bank of India was facing some financial issues, especially in profitability and quality of assets, before the merger with Andhra Bank and Corporation Bank. In 2018, the bank reported its performance lower than other years with its negative ROA being -1.07% and its ROE standing at -20.90%, the ratios were still huge loss. It coincides with high NPA ratio 9.02% that depicts huge NPA percent of loans that are classified as NPA. For the years of 2019 and 2020, there was not shown much more worsening, but there was minimal growth of both indicators. ROE remained negative at -9.46% in the year 2020. The NPA ratio was still on upwards trend recording 9.48% by the year 2020 depicting the struggle with defaults was still prevalent.

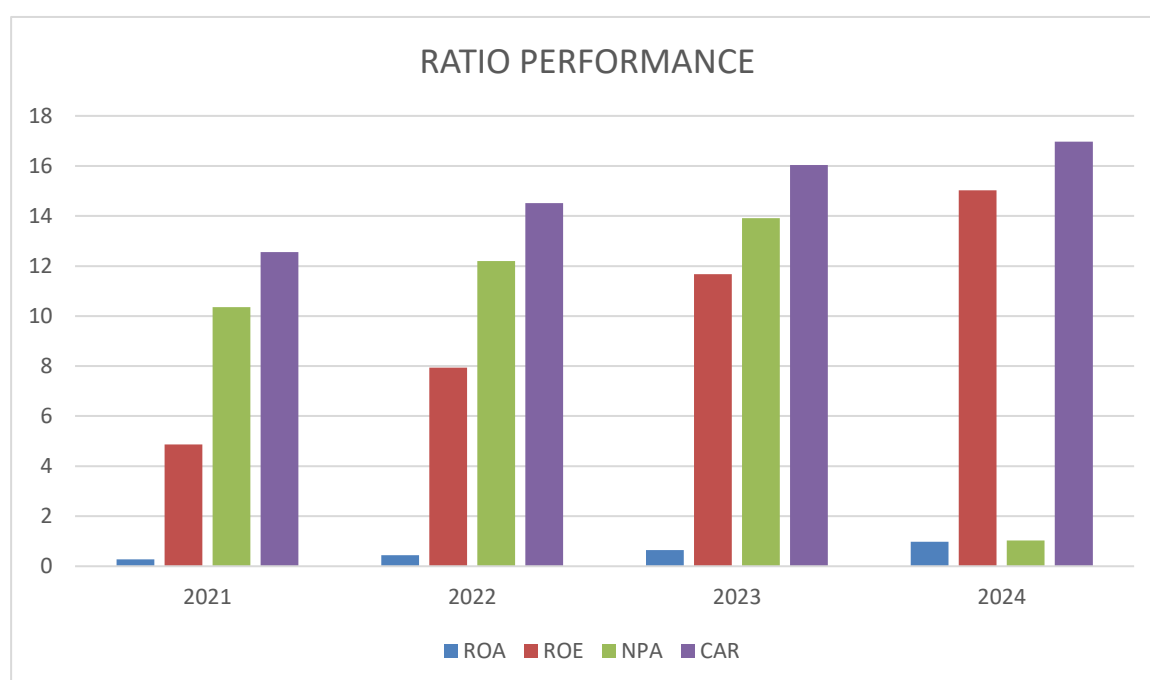
However, the UBI managed to preserve and enhance its CAR which rose from 11.79% in 2017 to 12.81% in 2020. This means that the bank has been striving to preserve its capital base to build its ability to absorb potential future financial risks. The rise in NPA ratio necessitates effective credit risk management and control of loan origination activities. Similarly, the poor return on profitability can be traced back to the poor operation of the bank and the effect of cost of checking bad loans. The financial situation of the bank before merging looked like supporting its objective to increase the strength of equity. However, through several attempts on

net income growth and improving asset quality, this move was not realized. This shows the growing need to reassess and revise the bank's long-term strategic plans.

UNION BANK OF INDIA (Andhra Bank and Corporation Bank merger with Union Bank of India)

Post-Merger

Years	ROA	ROE	NPA Ratio	Capital Adequacy Ratio(%)
2021	0.27	4.87	10.35	12.56
2022	0.44	7.94	12.20	14.52
2023	0.65	11.68	13.91	16.04
2024	0.98	15.02	1.03	16.97



Post-merger Interpretation

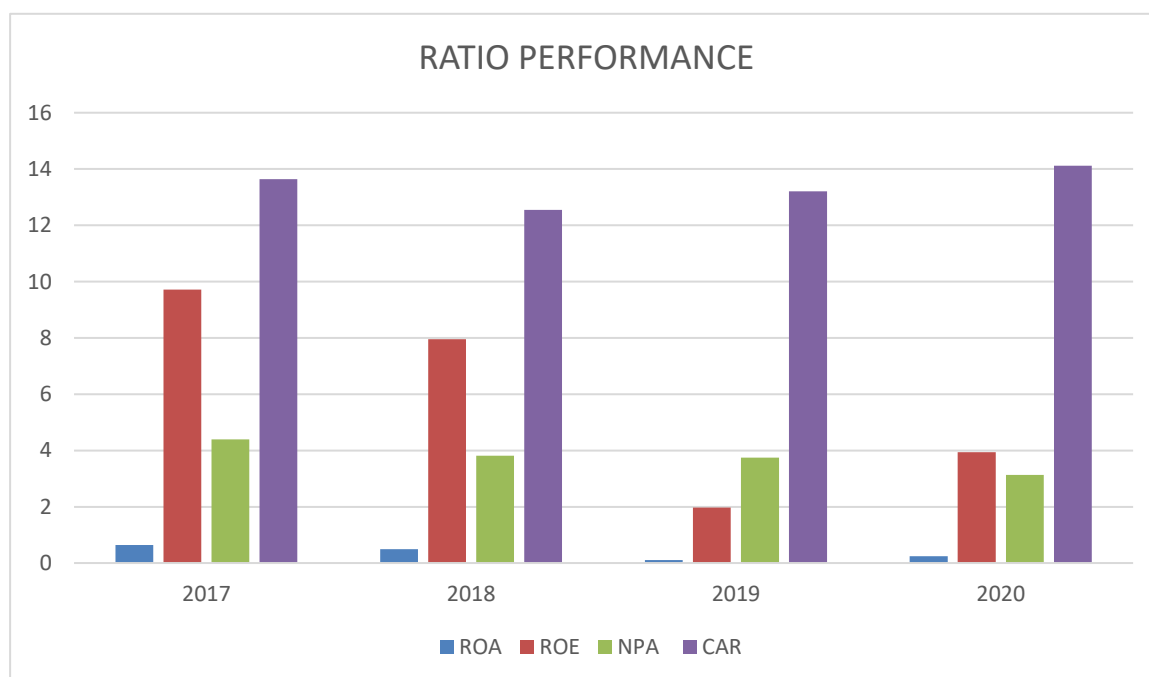
Post-merger, the amalgamated entity, Union Bank of India, is the result of the merger of Andhra Bank and Corporation Bank. Between 2021 and 2024, the entity has been growing progressively. Return on Assets improved gradually from 0.27% in 2021 to 0.98% in 2024, which is an improvement in profitability. Likewise, Return on Equity rose significantly from 4.87% to an impressive 15.02% in the same period, indicating the efficient use of shareholder equity. Whereas the NPA ratio had been mounting up from 10.35% in 2021 to 13.91% in 2023, it corrected very significantly as it declined to 1.03% in 2024. On the other hand, CAR has been moving upwards very steadily from 12.56% to 16.97%, indicating sound financial stability.

These metrics mark the successful integration and operational efficiency achieved post-merger. The drastic improvement in NPA ratio in 2024 indicates effective asset management and risk control measures are being followed. With a strengthening CAR, the bank has been posited as a robust one capable of sustaining growth as well as managing risks suitably. This turnaround embodies the benefits of consolidation with strategic focus on financial discipline and operational synergies.

III. INDIAN BANK (Allahabad Bank merger with Indian Bank)

Pre-Merger

Years	ROA	ROE	NPA Ratio	Capital Adequacy Ratio (%)
2017	0.64	9.72	4.39	13.64
2018	0.49	7.95	3.81	12.55
2019	0.11	1.97	3.75	13.21
2020	0.24	3.94	3.13	14.12



Pre-Merger Interpretation

The pre-merger financial performance of Indian Bank, incorporating metrics such as ROA, Return on Equity (ROE), NPA Ratio, and CAR, reveals notable trends from the period 2017-2020. Even as ROA and ROE have declined sharply, indicating the decrease in profitability, a marked improvement in the NPA ratio does indicate efforts toward asset quality enhancement. For example, ROA declined from 0.64% in 2017 to 0.24% in 2020, and ROE declined from 9.72% to 3.94%. However, the NPA ratio improved from 4.39% to 3.13% during the same period, reflecting progress in managing bad loans. CAR steadily increased, reaching 14.12% in 2020, showcasing enhanced financial stability and compliance with regulatory norms.

Pre-merger, the performance data is mixed. While profitability had weakened, improvement in the management of NPA and a stronger capital base have been positive indicators. CAR increased upwardly, and that shows the focus of the bank on resilience building for the challenging market conditions leading up to the merger with Allahabad Bank. This transition aimed to challenge the operational challenges, enhance profitability, and strengthen the bank's market position.

Indian Bank (Allahabad Bank Merged with Indian Bank)

Post-Merger

Years	ROA	ROE	NPA Ratio	Capital Adequacy Ratio(%)
2021	0.47	9.34	3.37	15.71
2022	0.58	10.63	2.27	16.53
2023	0.74	12.83	0.90	16.49
2024	1.05	15.51	0.43	16.44



Post-Merger Interpretation

Indian Bank made the significant strides across the key financial parameters post-merger, between 2021 and 2024. Return on Assets and Return on Equity have seen an upward curve; hence, this indicates enhanced profitability along with efficient utilization of resources. ROA went up from 0.47% in 2021 to 1.05% in 2024, whereas ROE has moved up from 9.34% to 15.51% in the same period. Most remarkably, the Non-Performing Assets (NPA) ratio dropped drastically from 3.37% in 2021 to a remarkable 0.43% in 2024, showing robust

improvement in asset quality. CAR stood constant at more than regulatory requirement levels, which also showed excellent financial resilience for the bank.

This excellent post-merger performance highlights how the integration process and operational synergies with Allahabad Bank have been successful. The steady progress in profitability and sharp decline in NPA levels reflect effective management strategies and a focus towards strengthening core banking operations. The consistent CAR further emphasizes its ability to sustain growth while ensuring financial stability, setting a positive trend for its future endeavors.

Statistical Analysis

The paired t-test is the most appropriate statistical tool for this study because it is specifically designed to compare the means of two related groups. A t-test is a statistical test used to determine if there is a significant difference between the means of two groups. It's useful when there are two sets of data and wants to know if the difference between their averages is statistically significant.

In the analysis of financial performance before and after the merger, a t-test is employed to compare the means of each financial ratio (ROA, ROE, NPA Ratio, and CAR) between the two periods. This allowed me to determine if the observed differences were statistically significant or not.

CANARA BANK

RATIO	DURATION	MEAN	SD	T VALUE	P VALUE	df	S/N
ROA	PRE-MERGER	-0.188	0.387	-2.840	0.066	3	N
	POST-MERGER	0.613	0.341				
ROE	PRE-MERGER	-4.043	8.330	-2.936	0.061	3	N
	POST-MERGER	12.400	6.103				
NPA	PRE-MERGER	5.850	1.387	6.885	0.006	3	S
	POST-MERGER	2.368	1.126				
CAR	PRE-MERGER	12.908	0.745	0.474	0.668	3	N
	POST-MERGER	12.430	1.819				

Significance level: 0.05

*S=Significant Difference

*N=No Significant Difference

INTERPRETATION

ROA (Return on Assets)

Given that the p-value 0.066 is above the level of significance set at 0.05, we do not reject the null hypothesis. This means there is no statistical difference between ROA pre and post-merger.

ROE (Return on Equity)

The p-value 0.061 is just slightly above 0.05. Therefore, we do not reject the null hypothesis; there is no statistically significant difference between ROE pre and post-merger, but the result is borderline.

NPA (Non-Performing Assets)

The p-value (0.006) is less than 0.05; therefore, we reject the null hypothesis. This signifies that the NPAs declined statistically after the merger and improved the asset quality.

Capital Adequacy Ratio (CAR)

The p-value of 0.668 signifies failure to reject the null hypothesis. There is no statistical significance in CAR between the periods pre- and post-merger. This suggests that the capital adequacy was stable.

The merger seems to have improved the asset quality considerably as indicated by the reduction in NPAs, to a considerable extent. In terms of profitability metrics-ROA and ROE-improvements have occurred, though not statistically significant at 5% levels of significance. Capital adequacy does not indicate any marked change; thus, one cannot conclude that the merger affected its risk absorption capability.

UNION BANK OF INDIA

RATIO	DURATION	MEAN	SD	T VALUE	P VALUE	df	S/N
ROA	PRE-MERGER	-0.515	0.489	-3.408	0.042	3	S
	POST-MERGER	0.585	0.306				
ROE	PRE-MERGER	-10.03	9.600	-3.371	0.043	3	S

	POST-MERGER	9.878	4.417				
NPA	PRE-MERGER	6.833	1.210	-1.033	0.377	3	N
	POST-MERGER	9.373	5.749				
CAR	PRE-MERGER	11.970	0.576	-3.763	0.033	3	S
	POST-MERGER	15.023	1.927				

Significance level: 0.05

*S=Significant Difference

*N=No Significant Difference

INTERPRETATION

ROA (Return on Assets)

The p-value (0.042) is less than 0.05, thus, we reject the null hypothesis. This means that there is a significant enhancement of ROA post-merger and implies that the merger has been positive for profitability.

ROE (Return on Equity)

The p-value (0.043) is less than 0.05, thus, we reject the null hypothesis. This indicates that there is a significant improvement in ROE post-merger, thus proving that the merger had positive effects on the return on equity of the bank.

NPA (Non-Performing Assets)

We fail to reject the null hypothesis because the p-value 0.377 is more than 0.05. This simply implies that there are no differences in NPA before and after the merger.

CAR (Capital Adequacy Ratio)

Since the p-value (0.033) is less than 0.05, we reject the null hypothesis. The findings clearly show a better improvement of CAR after the merger and means the bank improved its capital with the help of a merger.

The merger seems to have improved profitability significantly (ROA and ROE) and strengthened the capital base of the bank (CAR), which shows a positive impact on the financial health of the bank. But there was no

significant improvement in NPA post-merger; instead, NPAs increased, which means that asset quality may not have improved significantly due to the merger.

INDIAN BANK

RATIO	DURATION	MEAN	SD	T VALUE	P VALUE	df	S/N
ROA	PRE-MERGER	0.370	0.239	-1.487	0.234	3	N
	POST-MERGER	0.710	0.252				
ROE	PRE-MERGER	5.895	3.563	-2.078	0.129	3	N
	POST-MERGER	12.078	2.704				
NPA	PRE-MERGER	3.770	0.515	4.551	0.020	3	S
	POST-MERGER	1.743	1.337				
CAR	PRE-MERGER	13.380	0.667	-6.602	0.007	3	S
	POST-MERGER	16.293	0.390				

Significance level: 0.05

*S=Significant Difference

*N=No Significant Difference

INTERPRETATION

ROA (Return on Assets)

The p-value (0.234) is higher than the significance level of 0.05, meaning that the alteration of ROA is not statistically significant. This means that the merge was not significantly influential to the bank's ability to raise profit in relation to assets.

ROE (Return on Equity)

The p-value (0.129) is above 0.05. Hence, statistically, there is no change in the ROE. Though there was an improvement post-merger in terms of ROE, it couldn't conclude that the returns of the bank's equities got a marked effect following the merger.

NPA (Non-Performing Assets)

The p-value at 0.020 less than 0.05 means that the reduction of NPA post-merger was statistically significant. This means that the merger brought in a reduction in assets' quality, which reduced NPA proportion significantly.

Capital Adequacy Ratio -CAR

The p-value of 0.007 is less than 0.05, which is statistically significant and shows an improvement in CAR. This implies that the merger has had a positive effect on the capital adequacy of the bank, making it more absorptive of financial risks and compliant with the regulations.

It had indeed improved the asset quality as well as the capital adequacy of Indian Bank because the reduction of NPA has become significant, along with a hike in CAR. Although there has been growth in ROA and ROE, changes in profitability aren't statistically significant; so, there was a much greater effect of this amalgamation on stability and risk control rather than on profitability.

Findings

1. Post-merger Financial Strength:

- The post-merger financial strength of the bank has been assessed through several parameters such as profitability, capital adequacy, and asset quality.
- CAR had a substantial increase post-merger, thus indicating a better capital base and more robust resilience to financial shocks. This would imply that the merger was instrumental in enhancing the bank's ability to absorb potential losses and to comply with regulatory capital requirements.
- NPA went down considerably after the merger, thus indicating better quality of assets. The fact that the NPAs came down suggests that the bank has improved in terms of managing its non-performing loans and reducing credit risk after the merger.

2. Profitability and Asset Quality:

- Return on Assets (ROA) and Return on Equity (ROE) improved; however, the improvements are not statistically significant in all instances. This suggests that the profitability indicators were moving upward, but the merger had an insignificant impact on them.
- NPA was significantly reduced post-merger. The T-test results confirm that this change is statistically significant. It indicates that the merger significantly improved the quality of the loan portfolio of the bank, reducing the risk associated with non-performing assets.

3. Trends in Financial Performance:

- ROA and ROE showed a positive trend after the merger, which increased. Yet, since the change was not statistically significant, the improvement in performance could have been influenced by other factors apart from the merger.
- Capital Adequacy Ratio improved remarkably, implying that the merger enhanced the bank's financial stability, allowing it to better comply with the set standards on risk management.
- The NPA ratio witnessed a significant downward movement post-merger, which may be construed as an improvement in the credit risk management and effectiveness of loan recovery processes, leading to a better asset quality.

4. Statistical Analysis (T-test):

- The results of the T-test for ROA and ROE are not statistically significant, and hence the observed improvements might be due to random movements or other extraneous influences rather than the merger process.
- The results for NPA and CAR, however, were statistically significant, meaning that the merger had an actual and measurable impact on improving asset quality and enhancing the bank's capital adequacy.

Conclusion

Based on the findings from the statistical analysis, the merger has had a positive impact on Indian Bank's financial performance, particularly in terms of capital adequacy and asset quality. The significant reduction in NPAs and improvement in CAR demonstrate the merger's effectiveness in strengthening the bank's ability to manage risks and maintain financial stability.

While profitability improved (ROA and ROE), improvements in profitability were not significant at the statistical level; this means that the profitability effect of the merger could not be substantial, or perhaps other factors contributed more significantly to the improvement in profitability. The results indicate the consolidation has strengthened the financial position of the bank through enhancements in asset quality and its capital base, thus making it more resistant to changes in the market and regulations.

Overall, though profitability improvements were seen, the most significant benefits of the merger lie in the enhanced capital adequacy and reduced NPA ratio, which indicates a stronger, more stable financial position post-merger. These findings support the view that mergers can significantly improve a bank's financial resilience, especially in terms of risk management and capital strength, but their effects on profitability may take longer to materialize or require additional strategic adjustments.

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