IMPACT OF MERGER ON BANK PROFITABILITY AND ASSET QUALITY: EVIDENCE FROM BARODA BANK

Mr. Dhanraj

Research Scholar, Department of Studies in Commerce, Vijayanagara Sri Krishnadevaraya University, Ballari, Karnataka – 583 105 E-mail: dkdhanu.62@gmail.com ,
ORCID: 0009-0004-6606-8830

Dr. Megharaja B

Assistant Professor, Department of Studies in Commerce, Vijayanagara Sri Krishnadevaraya University, Jnana Sagara, Ballari, Karnataka- 583 105 E-mail: meghaapvskub@gmail.com

Abstract

This study analyses the impact of financial interventions on asset quality and profitability in the banking sector. Key metrics, including GNPA, NNPA, NPM, ROE, and ROA, showed significant improvements in the POST period. GNPA dropped from 12.26% (2018/2023) to 2.92% (2019/2024), while NPM increased from -12.24% (2016/2021) to 15.79%. CAGR values reflected strong growth in profitability and a decline in asset quality stress. Although improvements were visible and consistent, statistical analysis revealed no significant differences, indicating a need for further research with larger datasets. Overall, intervention positively impacted asset quality management and financial performance, stabilizing the banking institution's operations. These findings provide valuable insights into the effectiveness of financial reforms in addressing systemic challenges in the banking sector.

Introduction

The merger of Bank of Baroda with Dena Bank and Vijaya Bank in April 2019 was a transformative step in the Indian banking sector. It marked the first three-way consolidation of public sector banks, creating India's third-largest lender by business size, with over ₹15 trillion in combined business. This merger expanded BoB's branch network to nearly 9,500, significantly strengthening its presence in key regions such as western, southern, and northeastern India. The integration enhanced Bank of Baroda's retail loan portfolio, operational efficiency, and market competitiveness. Challenges like technology integration and managing the non-performing assets (NPAs) of the merged banks were addressed through strategic measures. This consolidation aligned with the government's agenda of creating larger, globally competitive banking institutions in India. Bank of Baroda (BoB) is one of India's largest and oldest public sector banks, founded in 1908 in Vadodara, Gujarat. It has grown significantly over the decades, establishing a strong domestic and international presence with branches in over 25 countries. A landmark event in its history was the 2019 merger with Dena Bank and Vijaya Bank, which created India's third-largest bank by business size. This was the first three-way merger in the Indian banking sector. The consolidated entity now operates with approximately 9,500 branches and holds a total business exceeding ₹15 trillion, including a market share of 6.9% in advances and 7.4% in deposits. The merger has strengthened BoB's retail loan portfolio and broadened its geographical reach, particularly in western, southern, and northeastern India. This amalgamation aligned with the Indian government's vision of consolidating public sector banks to create globally competitive institutions. Despite initial challenges, such as integrating technology platforms and resolving non-performing assets (NPAs) from the merged banks, Bank of Baroda has emerged as a more resilient and efficient entity, poised to leverage its enhanced scale and capabilities.

Review of Literature

The reviewed literature highlights diverse aspects of mergers and acquisitions (M&A) in the banking sector. Ullah and Rashid (2024) identify a research gap, noting that only 18% of M&A studies focus on Islamic banks, urging greater academic attention to enhance their competitiveness. Sanyaolu et al. (2023) emphasize the critical role of effective data migration in M&As, advocating phased strategies and IT-business collaboration to ensure smooth integration. Sasikala (2022) finds that SBI's financial performance improved post-merger, with notable growth in deposits, advances, and investments. Sengar et al. (2021) use SWOT analysis to show that M&As contribute positively to business expansion

and stakeholder value. Similarly, Babu (2019) evaluates 17 Indian banks using CAMELS and DEA models, concluding that post-merger performance generally improved, underscoring the strategic value of M&As in the sector.

Objective of the Study

The results of several studies on various aspects of banking businesses, such as mergers and acquisitions, are not entirely consistent. However, the profitability and asset quality of the BOB merger have not been examined by any researchers. Therefore, our study aimed to close this gap. The profitability and asset quality of the BOB prior to and during the merger are therefore assessed and contrasted in the research.

Hypotheses of the Study

Ho1: There is no significant difference in asset quality of the BOB before and after the merger period.

Ho2: There is no significant difference in the profitability of the BOB before and after the merger period.

Research Methodology

This study aims to analyse and compare the profitability and asset quality of Bank of Baroda (BoB) during pre- and post-merger periods employing descriptive and statistical tools. The evaluation considers seven key variables, using statistical methods like mean, standard deviation, and compounded annual growth rate (CAGR). To validate the hypothesis, a paired t-test is employed. The analysis spans a ten-year period, divided into five years before the merger (2014-15 to 2018-19) and five years after the merger (2019-20 to 2023-24).

Summary and Interpretation

Table 2: Asset Quality-Descriptive Statistics and Paired t-test results

Year	GNPA Crore		GNPA %		NNPA CROE		NNPA %	
	PRE	POST	PRE	POST	PRE	POST	PRE	POST
2015/2020	16,261.45	69,381.43	3.72	9.4	8,069.49	21,576.59	1.89	3.13
2016/2021	40,521.04	66,670.99	9.92	8.87	19,406.46	21,799.88	5.06	3.09
2017/2022	42,718.70	54,054.39	10.46	0.07	18,080.18	13,364.65	4.72	0.02
2018/2023	56,480.39	36,763.68	12.26	3.79	23,482.65	8,384.32	5.49	0.89
2019/2024	48,232.77	31,833.63	9.61	2.92	15,609.50	7,213.34	3.33	0.68
CAGR %	24.29%	-14.43%	20.90 %	- 20.85%	14.11%	-19.68%	11.99%	-26.31%
MEAN	40,842.87	51,740.82	9.194	5.01	16929.66	14467.75 6	4.098	1.562
SD	15,058.31	17,029.86	3.227	4.013	5715.009	6984.753	1.476	1.449
Sig-Value	0.468		0.225		0.641		0.08	
Hypothesi s	Accept Null hypothesis		Accept Null hypothesis		Accept Null hypothesis		Accept Null hypothesis	

Source: computed through SPSS at a 5% level of Significance.

The table.2 compares **Gross Non-Performing Assets (GNPA)** and **Net Non-Performing Assets (NNPA)**, both in terms of absolute values (in crores) and percentages, across two periods: **PRE** (before an intervention or policy) and **POST** (after the intervention). Key metrics analysed include the **Compound Annual Growth Rate (CAGR)**, average values **(MEAN),** variability **(SD or standard deviation),** and **significance testing (Sig-Value).** Here's a detailed interpretation of the trends and insights:

1. **GNPA Crores (Absolute Values):** PRE-Trends GNPA values increased consistently over the years, peaking at ₹56,480.39 crores in 2018/2023, reflecting a worsening asset quality trend. POST intervention, GNPA values decreased significantly, dropping from

   ₹69,381.43 crores in 2015/2020 to ₹31,833.63 crores by 2019/2024. This suggests improved management or recoveries post-policy change. **CAGR Comparison:** PRE: **24.29% growth**, indicating worsening GNPA levels. POST: **-14.43% decline**, showing a reversal and improvement in GNPA management.

2. **GNPA Percentages (%):** PRE-Trends GNPA percentages rose steadily from **3.72% in 2015/2020** to a peak of **12.26% in 2018/2023**, mirroring the rise in absolute values. POST intervention, percentages dropped sharply, reaching **2.92% in 2019/2024**. The sharp drop post-2017/2022 reflects improved control mechanisms. **CAGR Comparison:** PRE: **20.90% growth**, showing worsening percentages. POST: **-20.85% decline**, reflecting improved asset quality. **0.225**, indicating no statistically significant difference between PRE and POST GNPA percentages.

3. **NNPA Crores (Absolute Values):** PRE-Trends: NNPA values increased until 2018/2023, peaking at ₹23,482.65 crores. This reflects rising net losses after adjusting for provisions. POST intervention, NNPA values declined significantly, falling from

   ₹21,576.59 crores in 2015/2020 to ₹7,213.34 crores in 2019/2024, indicating better recoveries or reduced provisioning gaps. CAGR Comparison: PRE: 14.11% growth, signalling a gradual worsening. POST: -19.68% decline, demonstrating substantial improvement post-policy.

4. **NNPA Percentages (%):** PRE-Trends: NNPA percentages rose from 1.89% in 2015/2020 to a high of 5.49% in 2018/2023, paralleling the rise in absolute NNPA values.POST intervention, percentages dropped significantly, with a sharp decline to 0.68% by 2019/2024. This suggests robust improvements in net asset quality. CAGR Comparison: PRE: 11.99% growth, indicating worsening NNPA ratios. POST: -26.31% decline, demonstrating strong post-intervention improvements.

5. Sig-Value: **0.641 for crores** and **0.08 for percentages**, indicating no statistically significant difference between PRE and POST values. GNPA Crores: Higher POST (₹51,740.82 crores) compared to PRE (₹40,842.87 crores), reflecting initial higher GNPA post-intervention. GNPA %: Lower POST (5.01%) than PRE (9.19%), showing improved percentages overall. NNPA Crores and %: Both are significantly lower POST, indicating effective resolution or recovery measures.

6. Higher POST SD for GNPA and NNPA (both crores and %) reflects greater variability POST intervention, potentially due to transitional effects or uneven implementation across years. Across all metrics, the **null hypothesis is accepted**, indicating that no statistically significant differences exist between PRE and POST periods based on the provided Sig-Values (>0.05). However, the observable trends (CAGR, MEAN, and sharp percentage declines) suggest noticeable real-world improvements, even if statistical testing does not confirm it. The intervention appears to have positively impacted asset quality, as evidenced by declining GNPA and NNPA values and percentages POST. Despite no statistically significant differences, the sharp improvements in CAGR and absolute reductions highlight tangible benefits, reinforcing the efficacy of post-intervention measures in stabilizing the financial system.

Table 3: Profitability- Descriptive Statistics and Paired t-test results

Year	NPM %		ROE %		ROA %	
	PRE	**POST**	**PRE**	**POST**	**PRE**	**POST**
2015/2020	7.91	0.71	8.53	0.76	0.47	0.04
2016/2021	-12.24	1.17	-13.42	1.07	-0.8	0.07
2017/2022	3.27	10.4	3.43	8.46	0.19	0.56
2018/2023	-5.57	15.74	-5.6	14.36	-0.33	0.96
2019/2024	0.87	15.79	0.94	15.85	0.05	1.12
CAGR %	-35.69%	85.96%	-35.67%	83.59%	-36.12%	94.73%
MEAN	-1.152	8.762	-1.224	8.1	-0.084	0.55
SD	7.877	7.47	8.505	7.118	0.493	0.495
SIG.VAL	0.11		0.13		0.107	
HO	Accepet Null hypothesis		Accepet Null hypothesis		Accepet Null hypothesis	

Source: Computed through SPSS denotes 5% level of Significance.

Table.3 compares three key financial performance metrics: **Net Profit Margin (NPM)**, **Return on Equity (ROE)**, and **Return on Assets (ROA)** across two periods: **PRE** (before intervention) and **POST** (after intervention). It evaluates trends, growth rates (CAGR), averages (MEAN), variability (SD), and statistical significance (Sig-Value) to assess the impact of the intervention.

1. **Net Profit Margin (NPM %):** **PRE-Trends:** NPM values were inconsistent, with negative values in 2016/2021 (-12.24%) and 2018/2023 (-5.57%), indicating operational inefficiency and losses. The highest PRE value was only **7.91% (2015/2020)**. **POST Trends:** NPM improved significantly, reaching **15.79% in 2019/2024**, with consistent growth after 2017/2022. **CAGR Comparison:** PRE: **- 35.69% decline**, reflecting a deteriorating trend. POST: **85.96% growth**, signalling a remarkable turnaround in profitability.

2. **Return on Equity (ROE %): PRE-Trends:** ROE values showed negative profitability in 2016/2021 (-13.42%) and 2018/2023 (-5.6%), with no consistent upward trend. The highest PRE value was **8.53% (2015/2020)**. **POST Trends:** ROE showed a significant turnaround, peaking at **15.85% in 2019/2024**, with consistent growth after 2017/2022. **CAGR Comparison:** PRÉ: **-35.67% decline**, indicating worsening equity returns. POST: **83.59% growth**, highlighting substantial improvements in equity utilization.

3. **Return on Assets (ROA %): PRE-Trends:** ROA remained weak, with negative values in 2016/2021 (-0.8%) and 2018/2023 (-0.33%). The highest PRE value was only **0.47% (2015/2020)**. **POST Trends:** ROA improved significantly, rising to **1.12% in 2019/2024**, with steady growth from 2017/2022 onwards. **CAGR Comparison:** PRE:
   -36.12% decline, reflecting declining asset efficiency. POST: **94.73% growth**, showcasing a strong recovery in asset utilization efficiency.

4. NPM, ROE, and ROA averages are all negative in the PRE period, reflecting losses or inefficiency. POST averages (NPM: **8.76%**, ROE: **8.1%**, ROA: **0.55%**) are consistently positive, indicating profitability and operational recovery. **SD (Standard Deviation):** PRE values show higher variability across all metrics, reflecting inconsistent performance. POST values exhibit slightly lower SD, suggesting more stability post-intervention. **Significance Testing (Sig-Value):** Sig-Values for all metrics (NPM: **0.11**, ROE: **0.13**, ROA: **0.107**) are above 0.05, indicating no statistically significant difference between PRE and POST periods.

Findings of the Study

1. **Significant Decline in GNPA and NNPA Percentages Post-Intervention:** GNPA percentages dropped sharply from a peak of **12.26% in 2018/2023 (PRE)** to **2.92% in 2019/2024 (POST)**, and NNPA percentages fell from **5.49% in 2018/2023 (PRE)** to **0.68% (POST)**. This indicates improved asset quality and stronger management of non-performing assets.

2. **CAGR Highlights Improved Trends Post-Intervention:** PRE-intervention, GNPA and NNPA percentages grew at **20.90%** and **11.99%,** respectively, signalling deterioration in asset quality. POST-intervention, these percentages reversed, with GNPA declining by **-20.85%** and NNPA by **-26.31%,** demonstrating significant improvement in managing NPAs.

3. **Absolute NNPA Values Reflect Better Recovery and Provisioning:** NNPA in crores reduced dramatically, falling from ₹23,482.65 crores in 2018/2023 (PRE) to ₹7,213.34 crores in 2019/2024 (POST), suggesting effective recovery mechanisms and higher provisioning for bad loans.

4. **Variability Indicates Transitional Challenges POST-Intervention:** Standard deviation (SD) for GNPA and NNPA values and percentages was higher in the POST period, reflecting increased variability. This could indicate uneven implementation or external factors affecting recovery rates and asset quality across years.

5. **Statistical Analysis Shows No Significant Differences:** Despite visible improvements, hypothesis testing resulted in **high Sig-Values (>0.05)** for all metrics. This suggests that differences in PRE and POST values, while noticeable, were not statistically significant, possibly due to variability or sample size constraints.

6. **Significant Improvement in Profitability Post-Intervention:** All metrics—Net Profit Margin (NPM), Return on Equity (ROE), and Return on Assets (ROA)— improved dramatically during the POST period. NPM surged from a low of **- 12.24% (2016/2021)** in the PRE period to **15.79% (2019/2024)** POST, indicating robust recovery in operational profitability.

7. **Elimination of Negative Performance Metrics:** PRE period saw frequent negative values in all metrics, reflecting operational inefficiencies and financial losses (e.g., ROE was **-13.42% in 2016/2021** and ROA was **-0.8%** in the same year). POST intervention, all metrics turned consistently positive, with ROE peaking at **15.85%** and ROA at **1.12% (2019/2024)**.

8. **Strong Growth Rates in POST Period:** Compound Annual Growth Rates (CAGR) in the POST period were exceptionally high: NPM: **85.96%**, ROE: **83.59%**, and ROA: **94.73%**. These figures reflect rapid improvements in financial and operational efficiency after the intervention.

9. **Stabilized Financial Performance in POST Period:** Standard Deviation (SD) was lower during the POST period for all metrics (e.g., NPM SD dropped from **7.88 (PRE)** to **7.47 (POST)**), indicating more consistent financial performance and reduced variability.

10. **No Statistical Significance Despite Visible Improvements:** High Sig-Values for NPM (0.11), ROE (0.13), and ROA (0.107) suggest that improvements between the PRE and POST periods were not statistically significant, likely due to high variability in the PRE period or limited sample data. However, real-world trends highlight a significant turnaround in performance.

Conclusions

The analysis reveals a significant improvement in asset quality and financial performance metrics following the intervention. Gross and Net Non-Performing Asset (GNPA and NNPA) percentages showed marked declines, reflecting enhanced recovery mechanisms and financial discipline. Similarly, profitability metrics—Net Profit Margin (NPM), Return on Equity (ROE), and Return on Assets (ROA)—demonstrated a strong turnaround, with consistent positive growth and high CAGR values in the POST period. Reduced variability in POST metrics indicates greater stability and operational consistency. However, the lack of statistical significance in the observed improvements suggests the need for further research using a larger dataset. Overall, the findings highlight the intervention's effectiveness in stabilizing financial health and improving operational efficiency, offering valuable insights for similar financial reform efforts.

References

1. Ullah, N., & Rashid, M. M. (2024). Merger and Acquisition Strategy for Banks-An Extensive Contemporary Literature Review. *Educational Research (IJMCER)*, *6*(4), 41-55.

2. Sanyaolu, T. O., Adeleke, A. G., Efunniyi, C. P., Akwawa, L. A., & Azubuko, C. F. (2023). Data migration strategies in mergers and acquisitions: A case study of banking sector. *Computer Science & IT Research Journal P-ISSN*, 2709-0043.

3. S Sasikala (2022). Post-Merger Performance of the SBI: An Analysis. *Journal of Education: Rabindra Bharati University.* XXIV (1), 15-18.

4. Sengar, N., Badhotiya, G. K., Dobriyal, R., & Singh, D. B. (2021). Study of the post- merger effect on performance of banks in India. *Materials Today: Proceedings*, *46*, 10766-10770.

5. Alvarez-González, P., & Otero-Neira, C. (2020). The effect of mergers and acquisitions on customer–company relationships: Exploring employees' perceptions in the Spanish banking sector. *International Journal of bank marketing*, *38*(2), 406- 424.

6. Al-Hroot, Y. A., AL-QUDAH, L. A., & ALKHARABSHA, F. I. (2020). The impact of horizontal mergers on the performance of the Jordanian banking sector. *The Journal of Asian Finance, Economics and Business*, *7*(7), 49-58