A Comparative Analysis of Asset Quality Assessment through Net NPA Ratios: Pre and Post-Merger Scenarios of Selected Indian Banks

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Abstract: Mergers in the Indian banking sector, especially among public sector banks, represent a strategic initiative to form larger, stronger institutions that can better withstand economic fluctuations. These mergers aim to tackle persistent challenges, such as elevated levels of NPAs, which can significantly affect profitability and liquidity. Therefore, it is crucial to thoroughly assess how these mergers impact asset quality to evaluate their effectiveness and long-term viability. This study used a descriptive research design to analyze the Net NPA ratios of five selected banks—PNB, CB, UBI, IB, and BOB—before and after their mergers, aiming to highlight changes in asset quality. A quantitative approach was adopted, utilizing secondary data from financial reports on the banks' official websites, and the analysis involved trend analysis using MS Excel and paired t-tests along with descriptive statistics via SPSS version 25. The analysis reveals varying impacts of mergers on the Net NPA ratios of selected banks. While PNB and BOB showed no significant improvements post-merger, CB and UBI experienced substantial reductions, and IB faced an increase, highlighting the diverse outcomes of merger strategies across these institutions. This study implies that merger effectiveness in enhancing asset quality can vary significantly, necessitating tailored strategies.

Keywords: Asset Quality, Non-performing assists, Mergers, Banks, Performance

1. Introduction

The Indian banking sector has undergone significant transformations over the past few decades, characterized by rapid growth, technological advancements,

and increasing competition (Sahu & Kumar, 2020). Since the liberalization of the economy in the early 1990s, Indian banks have witnessed a substantial influx of private players, leading to enhanced service delivery and innovation. In recent years, the landscape has further evolved with the implementation of various reforms aimed at strengthening the sector's resilience. However, challenges such as rising non-performing assets (NPAs) have persisted, threatening the stability and profitability of financial institutions (Rao & Sharma, 2022). As a response to these challenges, M&As have emerged as strategic maneuvers for banks seeking to consolidate their resources, streamline operations, and improve financial health.

Mergers within the Indian banking sector, particularly among public sector banks, reflect a concerted effort to create larger, more robust entities capable of weathering economic fluctuations (Gupta and Chatterjee, 2023). This trend has been motivated by the recognition that larger banks can benefit from economies of scale, diversify their asset bases, and enhance their competitive positioning. The government's push for consolidation aims not only to strengthen individual banks but also to bolster the overall stability of the financial system. These mergers are expected to address longstanding issues, including high levels of NPAs, which can severely impact profitability and liquidity. Consequently, a thorough understanding of how these mergers influence asset quality is essential for evaluating their effectiveness and long-term sustainability.

Asset quality, as measured by Net NPA ratios, serves as a crucial indicator of a bank's financial health. Net NPAs represent the portion of loans that are not being repaid, net of provisions made for potential losses (Rao & Sharma, 2022). High levels of NPAs can create a ripple effect, leading to reduced lending capacity, lower profitability, and increased regulatory scrutiny. For banks, maintaining a healthy asset quality is vital for ensuring stable earnings and sustaining investor confidence (Sahu & Kumar, 2020). Thus, understanding the relation between mergers and asset quality is particularly relevant in the current scenario, where banks are striving to improve their balance sheets and navigate an increasingly complex regulatory environment.

This study focuses on a comparative analysis of Net NPA ratios for selected Indian banks—PNB, CB, UBI. IB & BOB—to assess their performance in pre and post-merger scenarios. By examining these banks, this research aims to shed light on the impact of mergers on asset quality and provide insights that can help banking institutions and policymakers make informed decisions. The findings not

only contribute to the understanding of the dynamics within the Indian banking landscape but also assist in developing strategies to manage non-performing assets effectively, thereby fostering a more resilient banking sector.

1.1 Objectives of the Study

- To conduct a comprehensive trend analysis of Net NPA ratios for PNB, CB, UBI, IB, and BOB, comparing their performance before and after mergers.
- To analyze the difference in Net NPA ratios between the pre-merger and post-merger periods for PNB, CB, UBI, IB, and BOB.

1.2. Significance of the Study

This study is significant as it provides valuable insights into the impact of mergers on asset quality in selected Indian banks, specifically through the lens of Net NPA ratios. By conducting a comprehensive trend analysis, the research highlights how the merger process influences financial health and operational efficiency. Understanding the differences in Net NPA ratios between pre-merger and post-merger periods can guide banking institutions in formulating strategies to manage non-performing assets effectively. Furthermore, the findings will contribute to the broader discourse on merger effectiveness in the banking sector, aiding policymakers and stakeholders in making informed decisions that enhance financial stability and performance.

2. Literature Review

The health of the banking sector is often evaluated through asset quality metrics, particularly Net Non-Performing Assets (NPAs). In India, recent waves of bank mergers have drawn attention to how these consolidations affect asset quality. This literature review synthesizes key studies examining the implications of mergers on Net NPA ratios, both before and after mergers, across selected Indian banks.

Asset quality is a crucial indicator of a bank's financial soundness. NPAs reflect the portion of loans that are not yielding interest, with Net NPA ratios providing a measure of asset quality (Sahu & Kumar, 2020). The Net NPA ratio is defined as: "**Net NPA Ratio=Net NPAs/Total Advances**". This ratio helps to assess credit risk and operational efficiency within banks (Singh & Gupta, 2019).

Research suggests that mergers can lead to improved asset quality through economies of scale and better resource allocation (Rao & Sharma, 2022). However, the integration of institutions with varying asset quality can also result in

complications, potentially increasing NPAs if the acquiring bank inherits a poor loan portfolio (Verma & Jain, 2021).

Several studies indicate that mergers can enhance asset quality due to the sharing of best practices and improved risk management frameworks. For instance, Gupta and Chatterjee (2023) found that the State Bank of India's merger with its associates led to a gradual decline in Net NPAs post-merger. Conversely, Bansal and Kumar (2022) highlighted cases where the merger of PNB with Oriental Bank of Commerce initially worsened asset quality, emphasizing the risks of merging disparate asset quality profiles.

Kaur et al. (2021) conducted a comprehensive analysis of various mergers, noting that while some banks improved their asset quality, others faced challenges due to the integration of high-NPA assets. Numerous studies focus specifically on PSBs, which have undergone significant restructuring through mergers. Sethi and Sharma (2021) explored the mergers of PSBs and found that asset quality metrics often deteriorated before stabilizing post-merger. Research by Singh et al. (2023) focused on private sector banks, revealing that mergers tended to yield more favorable outcomes regarding Net NPA ratios compared to PSBs. Studies such as those by Rao (2022) and Kaur (2024) highlighted regional disparities in asset quality post-merger, suggesting that local economic conditions play a critical role. Singh, Kaur, and Verma (2023) utilized panel data analysis to compare merged banks against non-merged ones, finding significant improvements in asset quality for merged entities within three years.

Using quantitative methods, Gupta et al. (2020) assessed the impact of mergers on asset quality across multiple banks, revealing a mixed impact with a tendency towards improvement over time. Interviews with bank officials conducted by Sharma and Jain (2021) provided qualitative insights into the challenges faced during the integration process and their effects on asset quality.

The literature suggests a complex relationship between bank mergers and asset quality, especially as measured by Net NPA ratios. While some studies indicate improvements post-merger due to operational efficiencies, others highlight risks, particularly when merging institutions with disparate asset qualities.

3. Methodology

This study employed a descriptive research design and the constituted the five selected banks that have undergone mergers, specifically focusing on their Net NPA ratios in

both pre-merger and post-merger periods. The. The selected banks include: PNB, CB, UBI, IB & BOB. The aim is to provide a clear picture of the changes in asset quality resulting from the mergers. The research utilized a quantitative approach, focusing on numerical data derived from secondary sources. Secondary data was collected from the financial reports available from the official website of the selected banks. The analysis involved trend analysis with the help of MS Excel while paired t test along with descriptive statistics was used with help of SPSS version 25. Following below is the pre –merger, merger and post-merger year details of the sample. The years in purple color font are pre-merger years, the years in red color font are the years in which merger took place and the years in green are the post-merger years of the respective banks.

PNB	CB	IB	UBI	BOB
2016–17	2016–17	2016–17	2016–17	2016–17
2017–18	2017–18	2017–18	2017–18	2017–18
2018–19	2018–19	2018–19	2018–19	2018–19
2019–20	2019–20	2019–20	2019–20	2019–20
2020–21	2020–21	2020–21	2020–21	2020–21
2021–22	2021–22	2021–22	2021–22	2021–22
2022–23	2022–23	2022–23	2022–23	2022–23
2023–24	2023–24	2023–24	2023–24	2023–24

4. Data Analysis & Interpretation

Following abbreviations have been used in the study

PNB	:	Punjab National Bank
CB	:	Canara Bank
UBI	:	Union Bank of India
IB	:	Indian Bank
BOB	:	Bank of Baroda
Sig	:	Significant
NPA	:	Non-performing assets
M&As	:	Mergers and Acquisitions
Fig	:	Figure

Trend Analysis of Net NPA % in Pre- Merger and Post- Merger for PNB, CB, UBI, IB & BOB

Fig 1 illustrates the trend in Net NPA ratios for PNB over the years, highlighting a significant reduction in NPA. The data shows an initial peak, indicating challenges

in asset management, but subsequent years reveal a consistent decline, reflecting the bank's effective strategies in improving its asset quality. By the latest year, the Net NPA ratio has dropped to a notably low level, underscoring a successful transition towards better financial health and operational efficiency. This trend suggests that the measures implemented post-merger have positively impacted the bank's stability and performance.
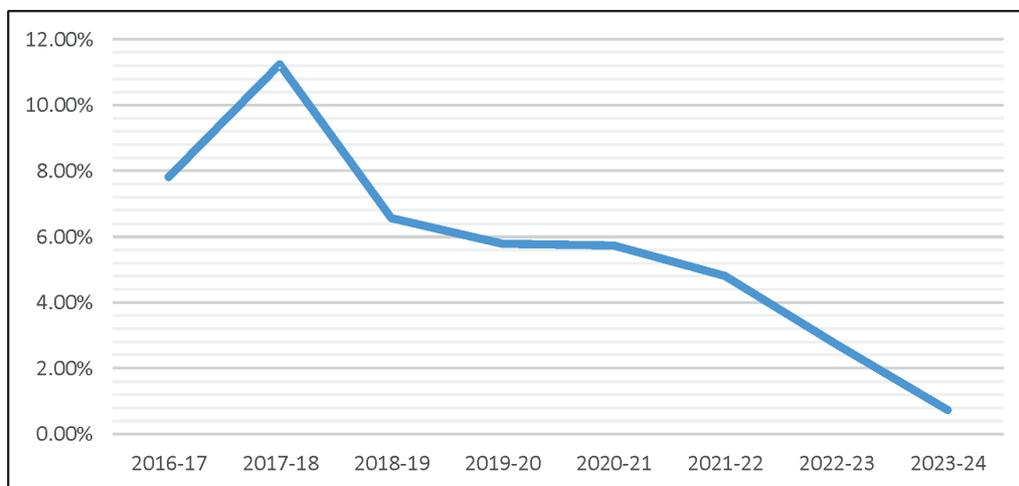

Figure 1: Net NPA Ratio (%) of PNB in Pre & Post Merger

Source: MS Excel (Author's own analysis)

Fig. 2 presents the trend in Net NPA ratios for CB from 2016-17 to 2023-24, illustrating a gradual improvement in asset quality over time. Initially, the Net NPA ratio showed fluctuations, peaking in 2017-18, which indicated some difficulties in managing NPA. However, subsequent years demonstrate a consistent decline, reflecting the bank's effective measures to enhance its financial health. By 2023-24, the Net NPA ratio has reached a significantly lower level, indicating strong progress in reducing non-performing assets and suggesting that CB has successfully navigated challenges in the post-merger landscape.

Fig 3 demonstrates the trend in Net NPA ratios for UBI from 2016-17 to 2023-24, showing a clear downward trajectory in asset quality issues. The initial years reflect some volatility, with a peak in 2017-18 indicating challenges in managing non-performing assets. However, as the years progressed, UBI successfully implemented strategies that led to a steady decline in the Net NPA ratio. By 2023-24, the ratio
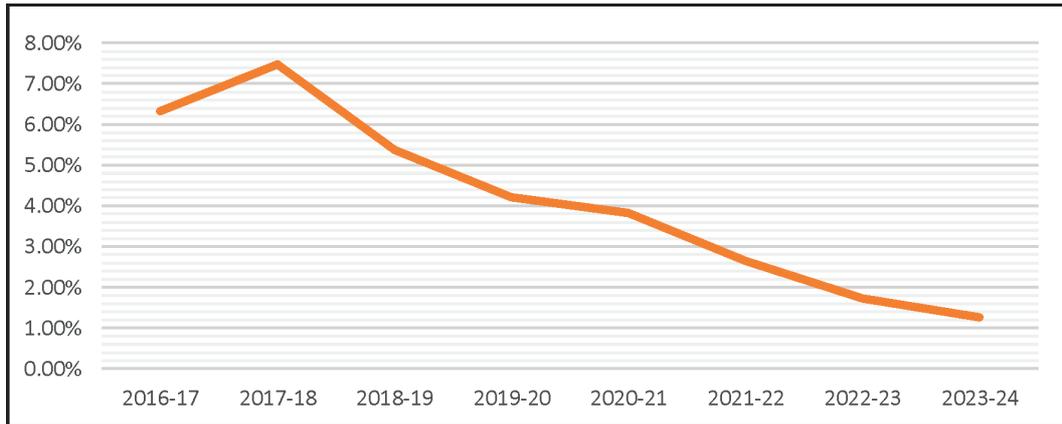
Fig. 2: Net NPA Ratio (%) of CB in Pre & Post Merger

Source: MS Excel (Author's own analysis)

has reached an impressively low level, signifying the bank's effective measures in improving its financial stability and operational efficiency in the aftermath of its merger. This positive trend underscores UBI's commitment to enhancing asset quality and overall performance.
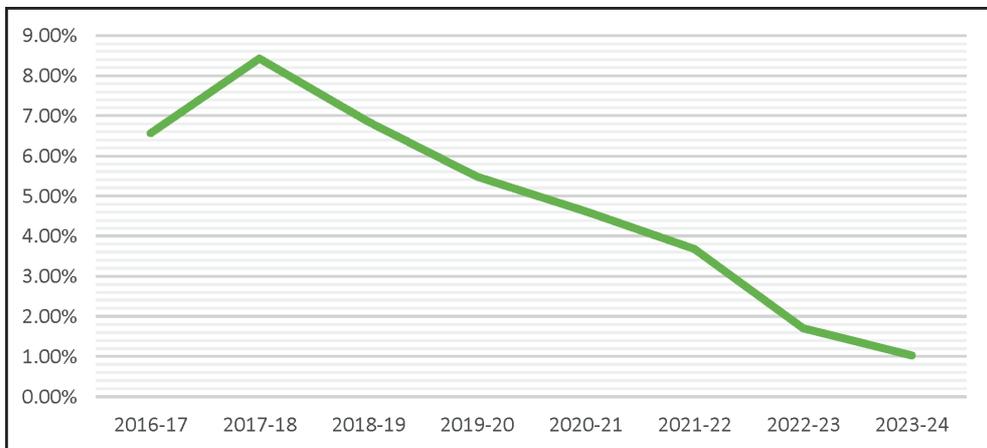

Fig 3: Net NPA Ratio (%) of UBI in Pre & Post Merger

Source: MS Excel (Author's own analysis)

Fig. 4 shows the trend in Net NPA ratios for IB from 2016-17 to 2023-24, highlighting a remarkable improvement in asset quality over the years. The Net NPA ratio started at a moderate level and showed a gradual decline, reflecting effective

management of NPA. Notably, the bank experienced a significant reduction in its Net NPA ratio in the most recent years, culminating in an exceptionally low figure by 2023-24. This consistent downward trend underscores IB's successful strategies in enhancing its financial health and operational performance, indicating strong resilience in the post-merger environment.
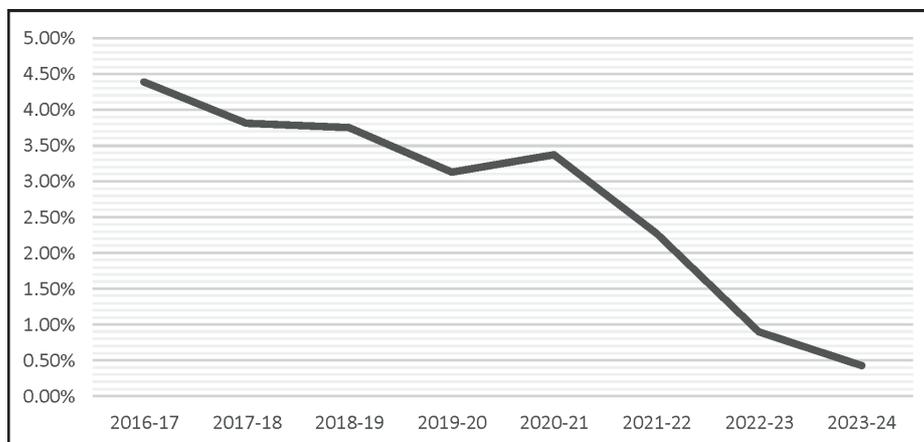

Fig. 4: Net NPA Ratio (%) of IB in Pre & Post Merger

Source: MS Excel (Author's own analysis)

Fig. 5 illustrates the trend in Net NPA ratios for BOB from 2016-17 to 2023-24, showcasing a positive trajectory in asset quality. Initially, the Net NPA ratio
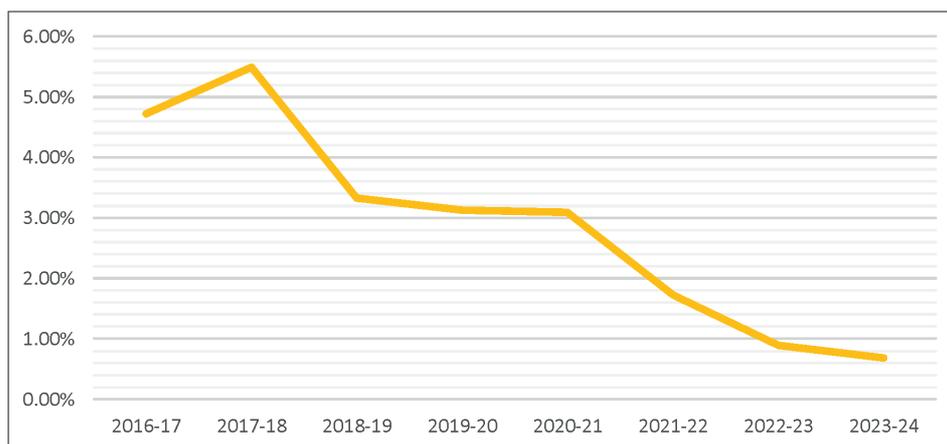

Fig. 5: Net NPA Ratio (%) of B0B in Pre & Post Merger

Source: MS Excel (Author's own analysis)

exhibited some fluctuations, peaking in 2017-18, which indicated initial challenges in managing NPA. However, over the following years, BOB implemented effective measures that led to a significant decline in the Net NPA ratio. By 2023-24, the ratio has reached a notably low level, reflecting the bank's successful efforts to strengthen its financial position and enhance operational efficiency in the wake of its merger. This consistent improvement highlights BOB's commitment to reducing asset quality issues and ensuring a healthier balance sheet.

4.2. Paired T-Test: Difference between the two groups (Pre-merger and Post-merger) for Net NPA Ratio (%) for PNB, CB, UBI, IB & BOB

- **(H$_0$) 1:** There is no significant difference between the two groups (Pre-merger and Post-merger) for Capital Adequacy Ratio (%) in case of PNB.
- **(H0) 2:** There is no significant difference between the two groups (Pre-merger and Post-merger) for Net NPA Ratio (%) in case of CB.
- **(H0) 3:** There is no significant difference between the two groups (Pre-merger and Post-merger) for Net NPA Ratio (%) in case of UBI.
- **(H0) 4:** There is no significant difference between the two groups (Pre-merger and Post-merger) for Net NPA Ratio (%) in case of IB.
- **(H0) 5:** There is no significant difference between the two groups (Pre-merger and Post-merger) for Net NPA Ratio (%) in case of BOB.

Table 1: Difference between the two groups (Pre-merger and Post-merger) for Net NPA Ratio (%) in case of PNB, CB, UBI, IB & BOB

Pair		Descriptive Statistics			Correlations		Paired t test statistics	
		Pre-Merger		Post-Merger				
	N	Mean ± SD	N	Mean ± SD	r	sig.	t	sig.
Net NPA Ratio (%) (Pre-merger & Post-merger)- PNB	3	8.53% ± 2.42%	3	2.75%± 2.03%	.24	.84	3.63	.06
Net NPA Ratio (%) (Pre-merger & Post-merger)- CB	3	6.39% ± 1.05%	3	1.88% ± 0.70	.27	.82	4.83	.04*
Net NPA Ratio (%) (Pre-merger & Post-merger)- UBI	3	7.28% ± 0.99%	3	2.13% ± 1.37%	-.40	.73	4.44	.04*

		Descriptive Statistics			Correlations		Paired t test statistics	
		Pre-Merger		Post-Merger				
Pair	N	Mean ± SD	N	Mean ± SD	r	sig.	t	sig.
Net NPA Ratio (%) (Pre-merger & Post-merger)- IB	3	13.13% ± 0.54%	3	16.4% ± 0.04%	.98	.10	7.90	.01*
Net NPA Ratio (%) (Pre-merger & Post-merger)- BOB	3	4.51% ± 1.09%	3	1.90% ± 1.11%	.52	.65	4.18	.05
* sig at 0.05 level								

Source: SPSS (Author's own analysis)

Interpretation

- **PNB:** The results reveal a mean Net NPA ratio of 8.53% in the pre-merger period, significantly higher than the post-merger mean of 2.75%. While the difference is substantial, the p-value of 0.06 indicates that this result is not statistically significant at the 0.05 level, therefore H0 1 is accepted.
- **CB:** The analysis shows a clear and significant decrease in the Net NPA ratio, with a pre-merger mean of 6.39% and a post-merger mean of 1.88%. The t-test yields a p-value of 0.04, indicating that H0 2 is rejected.
- **UBI:** The results confirms a decline in the Net NPA ratio from a pre-merger mean of 7.28% to a post-merger mean of 2.13%. The t-test indicates a p-value of 0.04, which is statistically significant at the 0.05 level. Thus, we reject H0 3.
- **IB:** The results present an interesting scenario, with the pre-merger mean Net NPA ratio at 13.13%, slightly increasing to 16.4% post-merger. The p-value of 0.01 indicates a statistically significant difference, leading to the rejection of H0 4.
- **BOB:** The analysis reveals a reduction in the Net NPA ratio from a pre-merger mean of 4.51% to a post-merger mean of 1.90%. The p-value of 0.05 is not less than the threshold value, indicating that this difference is statistically insignificant at the 0.05 level. Thus, we accept H0 5.

5. Conclusion and Suggestions

The analysis of the Net NPA ratios across five major banks—PNB, CB, UBI, IB, and BOB—provides valuable insights into the impact of mergers on asset quality.

Overall, the findings suggest a mixed performance among the banks following their mergers. While CB and UBI demonstrated statistically significant reductions in their Net NPA ratios post-merger, indicating effective management strategies, PNB and BOB did not show significant improvements. IB, however, faced a concerning increase in its Net NPA ratio post-merger, signaling potential challenges in its integration efforts.

The successful reduction in Net NPA ratios for CB and UBI highlights the importance of strategic implementation and management in navigating the complexities that arise during the merger process. These banks effectively leveraged the merger to enhance their operational efficiency and asset quality, which is essential for maintaining financial stability in a competitive banking landscape. In contrast, PNB's and BOB's results suggest that while there were improvements, they may not be substantial enough to indicate a clear benefit from the merger, emphasizing the need for further strategic interventions.

IB's increase in the Net NPA ratio raises significant concerns regarding the post-merger integration process and asset management practices. This outcome serves as a cautionary tale for other institutions, stressing the importance of closely monitoring asset quality and implementing robust management frameworks to address potential challenges effectively. Overall, the varying results across these banks illustrate the diverse outcomes that mergers can yield in the banking sector, underscoring the need for tailored strategies to enhance performance.

5.1. Suggestions

- Banks should focus on strengthening their asset management practices post-merger to ensure effective monitoring and reduction of non-performing assets.

- Implement training programs for staff on best practices in credit risk assessment and management to minimize future NPAs.

- Establish ongoing monitoring mechanisms to assess the performance of loan portfolios and address emerging risks proactively.

- Develop strategies to improve customer engagement and feedback mechanisms, allowing banks to adapt more rapidly to changing market conditions.

- Engage with regulatory bodies to ensure compliance and seek guidance on best practices for managing NPAs effectively.

6. Future Scope of Study

Future research could expand on this analysis by incorporating a larger sample of banks that have undergone mergers. Additionally, longitudinal studies that track the long-term impacts of mergers on various financial metrics, beyond just Net NPA ratios, could provide deeper insights. Exploring qualitative factors such as employee satisfaction, customer loyalty, and operational synergies in the post-merger phase would enrich the understanding of merger effectiveness. Besides, comparative studies between public and private banks regarding their merger outcomes could yield valuable strategic insights for the banking industry.

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