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EXAMINING THE SYNERGIES IMPLICATION OF MERGER AND ACQUISITION IN BANKING SECTOR: EVIDENCE FROM EMERGING ECONOMY

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Abstract

Mergers and acquisitions (M&A) have lately increased in the Indian banking sector with the desire to improve efficiency. It is important to investigate whether the banks are able to gain expected synergies. This study examines the effects of M&A in the banking sector by analyzing M&A transactions between 2014 and 2022. The current paper is built on secondary financial data, whereas outcomes were assessed on three major parameters, i.e. market performance, financial performance, and overall efficiency improvement. The study used different methodologies such as event study, ratio analysis, tabulation, and Wilcoxon rank text to check over different parameters. The findings reveal a significant improvement in market performance and financial performance. No statistically significant improvements were found in profitability, liquidity, and operational efficiency. We conclude that synergy gain cannot be achieved by M&A only. Overall the study gives insight into the value creation through M&A in emerging economies' banking industry and emphasizes the importance of effective integration strategies. The study has implications for the central bank, banks, and policymakers in emerging economies to decide on M&A activities and the development of a robust banking sector.

Keywords: Economic Value Added, Event Study, Market Performance, Mergers and Acquisitions, Operating Efficiency.

JEL Classification: G21, G34, L22, O16

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1 Introduction

In recent years, the Banking sector has observed substantial growth in Mergers and Acquisitions (M&A) activities worldwide. While an increasing number of mergers are occurring around us, the efficacy of M&A has always been debated (Cooke, 1991). The prospective synergies resulting from mergers and acquisitions can affect the company in several ways, such as improved operational efficiency, enhanced risk management capabilities, expanded market presence, and increased shareholder value (Hit et al., 2006; Kalra et al., 2016). Conversely, negative impacts on financial and operating performance were noted post-acquisition (Andre et al., 2004; Dickerson et al., 1997; Ghosh, 2001). Therefore, studying the synergies and effects of mergers and acquisitions has become crucial. Recent studies on M&A in emerging economies remove financial firms from their sample as they possess unique characteristics and statutory regulatory requirements (Aggarwal & Garg, 2022; Gulati & Garg, 2022; Kumar & Bansal, 2008). Several studies attempted to examine the synergies and implications of M&A in the banking industry, but the majority of the literature is focused on developed economies. In comparison, the studies focused on emerging economies received limited attention. The unique characteristics of emerging economies, such as distinct regulatory frameworks, rapid market changes, and diverse economic environments, may significantly influence the synergy gain of M&A in banks. Therefore this study attempted to fulfil this gap.

This study uses data from the Indian banking sector due to multiple reasons. First, India is one of the fastest emergent economies. Second, there have been transformational changes in the Indian banking sector; some inorganic growth strategies, like mergers and acquisitions, played a significant role in shaping the landscape of the Indian banking industry. The liberalization of the Indian economy and the globalization of financial markets has led to a massive increase in M&A activities. Factors like the need for scale, synergy benefits, & strategic alignment primarily drive this M&A in the financial industry. The M&A further gained momentum with the Merger of India's largest bank, i.e., State Bank of India (SBI) and its associate banks in 2017, along with the subsequent Merger of Bank of Baroda (BOB) Vijaya Bank & Dena Bank in 2019. The banking sector in India has witnessed the entry of new players, the expansion of existing banks & consolidation of smaller banks through mergers and acquisitions.

The success of any M&A transaction can be measured through the stock market performance, financial performance and overall efficiency of banks (Aggarwal & Garg, 2022;

Kumar & Bansal, 2008). Therefore, this study analyzed the three-fold implications of M&A using the abovementioned parameters. This study assesses both long- and short-term impacts. We employed diverse approaches such as event study, ratio analysis, Wilcoxon sign rank test, and paired sample t-test to examine the impact of M&A agreements in banking sectors.

Firstly, we applied the event study approach to determine the stock market performance. Event study method is the most prominent empirical approach to analyze the stock market implications of M&A announcements, providing detailed insights into the market's perception of such activities. This method involves analyzing the target and acquiring firm's stock price behaviour during the announcement date to estimate the market's reaction to the transaction. This approach is based on the efficient market hypothesis, which holds that stock prices reflect all available information and that any new information will be quickly incorporated into market pricing (Fama, 1970). The event study results provide valuable insights into the market's perception of the event & the impact it is expected to have on the company's future performance.

Second, to assess the improvement in the financial health and stability of banks, we evaluate changes in Economic Value Added (EVA), Weighted Average Cost of Capital (WACC), and Capital Adequacy Ratio (CAR) for one year and three years pre and post-M&A. EVA is a comprehensive measure of the economic performance of a bank. It measures the value created by a company in excess of its cost of capital. It considers the opportunity cost of capital and the returns generated by the company's assets. Since EVA captures the impact of the acquisition on both company's operating performance & cost of capital, it is reliable for evaluating the long-term financial impact of acquisition compared to traditional financial measures. EVA also gives insights into the acquisition strategy's effectiveness in creating shareholder value. Previous literature founds a significant improvement in post-merger CAR of acquired banks. For instance, Ghosh and Dutta (2011) found a significant post-merger improvement in CAR, return on capital employed, and earnings per share in the banking sector. Singh and Das (2018) found a significant improvement in CAR. The results of this study are contradictory to previous findings. As per the authors understanding, the M&A implication on EVA and WACC of acquirer banks has not been studied previously in the banking sector. Empirical analysis of these indicators gives relevant conclusion in M&A implications.

Lastly, the shift in the overall efficiency of banks is assessed through ratio analysis on three different parameters using seven variables. Seven variables—Operating Profit to Total

Assets Ratio (OPTA), Return on Assets (ROA), Cash Deposit Ratio (CDR), Return on Equity (ROE), Return on Advances (RO Adv), and the ratio of net NPA to Net advances—were used to report changes in the profitability, liquidity, and operational efficiency of banks (NPA to advance). As per the authors understanding, no studies have been conducted to study the M&A implications on operational and liquidity efficiency. This study reported a significant improvement in the operational efficiency of banks after M&A. Abbas et al. (2015) founds no significant improvement in profitability, efficiency, liquidity, and leverage ratio in the banking sector of Pakistan. However, only percentage improvements were considered. We extend this analysis using multiple methods and different time horizons.

In conclusion, M&A had a statistically significant effect on both financial and stock market performance. M&A fails to improve the profitability and liquidity positions in both the short and long term. The findings of this study will be useful to investors, analysts and policymakers interested in the Indian banking sector. The research outcomes can provide policymakers, regulators, and industry practitioners with practical insights for developing effective strategies, policies, and guidelines to facilitate successful M&A transactions in the banking sector of emerging economies.

1.1 Objectives of the Study

The core research problem is to identify whether the M&A activities in the Indian banking sector have improved the banks' performance. The objective of our study is as follows-

To investigate how M&A announcements affect the stock returns of acquiring banks.

To examine how M&A activity affects banks' stability and financial health.

To assess and contrast the effect of M&A activity on banks' general operational effectiveness.

2 Literature Review and Hypothesis Development

The Indian Banking industry has significantly increased M&A activities since the 1990s. A plethora of topics, including the impact of M&A on financial performance, shareholder value, and customer happiness, have been covered in the extensive literature on M&A in the Indian banking sector. Several studies have attempted to examine the effects of M&A activities in the Indian Banking Sector. For instance, a study by Kumar and Agrawal (2019) studies the market's reaction to 18 M&A announcements in the banking sector between 2011

to 2018. They concluded that the market reacted positively to announcements of M&A activities. However, it also found that the market reaction varied depending on the specific characteristics of the transaction.

The financial performance of the Indian state bank and its five associate banks was evaluated by Gupta (2016). The results suggested that the merger positively impacted SBI's financial performance. Another study by Singh (2015) examined the financial performance of ICICI Bank following its merger with the Bank of Rajasthan. The study concluded that the market perceived the merger as beneficial to the bank's financial performance. Another study by Chatterjee (2016) analyzed the effects of the SBI merger with its associate banks on the companies' stock prices. The study found that merger announcements positively affected the stock prices of both SBI & its associate banks. The results also suggested that the merger led to several benefits, including cost savings, improved operational efficiency & better access to capital. Varghese and Thaha (2017) examined the Merger effects between Kotak Mahindra Bank and ING Vysya Bank on companies' stock prices. The study indicated that the merger announcement positively affected both companies' stock prices. The results suggested that the merger would lead to improving operational efficiency & better access to capital. Rao and Kumar (2016) examined the performance of Kotak Mahindra Bank following the acquisition of ING Vysya Bank. The study used economic value added and concluded that the acquisition positively impacted Kotak Mahindra Bank's financial performance.

While the extent literature on M&A in the Indian banking sector has provided insights into the impact of M&A activities on financial performance, shareholder value and customer satisfaction, there are still gaps in the literature. One significant gap is the lack of research on the impact of M&A activities on the long-term financial performance of banks. Another gap in the literature is the lack of studies giving a holistic perspective on the Indian Banking sector, as many authors have done their studies focusing only on specific bank mergers. Hence it lacks an overall perspective on Indian Banking Industry. Based on the literature gaps and the objectives of our study, we formulated the following hypothesis:

2.1 Market Performance

Event study methodology looked at how mergers and acquisitions affect the market and revealed an effect, with a rise in the BSE Sensex index on the day of the release or announcement of the merger (Yadav, 2017). Liargovas and Repousis (2011) and Dilshad (2013) analyze how M&A affects the banking sector in developed markets. In line with this,

we examined how the market reacted to the M&A announcements using the event study approach. In order to gauge the market's response to the deal, we analyze the stock price behaviour of the acquiring banks around the announcement date. This approach is founded on the efficient market hypothesis, which holds that stock prices reflect all the available information and any new information will be quickly incorporated into the market valuation. The event study's findings will give important information on how the event is seen by the business community and its potential effects on the company's future success. We framed the following hypothesis-

H1. Following the merger, there is an observable change in the performance of the acquiring banks in the market.

2.2 Financial Performance

A US-based corporation called Stern Stewart Company invented the EVA to gauge business efficiency. A further modified version of EVA is used in merger and acquisition studies to evaluate success and failure (Aggarwal & Garg, 2022; Sharma & Rai, 2012). EVA gives a comprehensive picture of a company's financial performance compared to traditional accounting-based metrics such as earnings per share (Koller et al., 2010; Stewart, 1991). Sharma and Kumar (2010) defined EVA as the earnings exceed over the cost of the capital employed in the business, which creates wealth for its shareholders. EVA as a success metric has generated a lot of attention in the Indian industry. In one such study, Muraleetharan (2017) assessed the impact of EVA on business financial performance. EVA significantly improves the financial performance of corporations. The authors discovered a positive correlation between stock returns and EVA, suggesting that businesses with higher EVA had more successful financial outcomes (Saji, 2014).

This study used EVA as a financial performance metric to assess change in financial performance and the value created for its shareholders by the banks after the merger. Economic EVA for 1 and 3 years was calculated and compared to study how M&A affected the short and long-term financial strength. Therefore we proposed our second hypothesis.

H2. Following the merger, there is an observable change in the financial performance of the acquiring banks in the market.

2.3 Overall Efficiency

Bansal (2014) used a combination of accounting ratios to assess the efficiency of banks. The authors discovered that the most accurate predictors of financial success in the Indian market were profitability ratios, proving that profitability was crucial for businesses to keep stable operations. Therefore we used different parameters using ratio analysis covering profitability, liquidity, and operational efficiency to examine the overall performance of acquiring banks before and after the merger. An essential indicator of a bank's financial health is its accounting data. It contains statistics like deposits, advances, NPA, and operating profit. This study uses these indicators to evaluate a company's financial success following an M&A deal. Among the financial metrics we used were the CDR, ROE, OPTA, RO Adv, ROA, and the ratio of NPA to advance.

H3. Following the merger, there is an observable change in the efficiency of the acquiring banks in the market.

3 Methodology

3.1 Data

The data used in this research was gathered from several sources. We examined consolidations in the Indian banking industry from 2014 to December 2022. The Centre for Monitoring the Indian Economy's Prowess IQ database was used to choose a sample of acquirer banks. There were 17 acquirer banks in all, two of which were eliminated because they were not listed on the stock exchange. After preliminary screening, 15 banking firms listed on the Bombay stock exchange were chosen for further analysis. As shown in Figure 1, the date of the stock exchange announcement was considered as the event day to check whether the stocks of acquirer banks were giving abnormal returns during the event window. Daily stock price data were collected from ProwessIQ. Further, the ratio analysis of acquiring firm was done to verify the increase in banks' performance. The ratio analysis was done in two stages, short-term (1 year) and long-term (3 years). The reserve bank of India (RBI) database was used to get the data for the ratio analysis. Mergers after 2019 were not considered for long-term analysis as sufficient data for post-merger was unavailable. The data relating to financial performance in terms of EVA and WACC was collected from Bloomberg.

3.2 Research Techniques

3.2.1 Market Performance

To measure the market performance of the acquirer, we adopt commonly used event studies in merger and acquisition studies (McWilliams & Siege, 2012). Signalling theory recommends that investors in the stock market will react to every piece of information coming to the market. The merger announcement injects new information into the market, resulting in abnormal stock price shifts (Anthony 2017; Mehrotra & Sahay 2018). As shown in Figure 1, t_0 is the event day, the date of the merger's announcement on the stock exchange. The event window is the period during which the impact of a particular event on the stock prices is evaluated and compared with the expected returns. For this study, we set an event window of 20 days around the event day. In the past, Kumar and Bansal (2008), Amewu (2014), and Aggarwal and Garg (2022) used 20-day intervals in M&A studies. The estimation period is the time during which the expected returns are calculated. Further, the estimation period for this study is fixed at 90 days preceding the event window, as it allows adequate time to report expected returns. Pandey and Kumar (2022) use this similar event window in M&A studies. We use different event windows between t-20 and t20 to report the leakage effect.

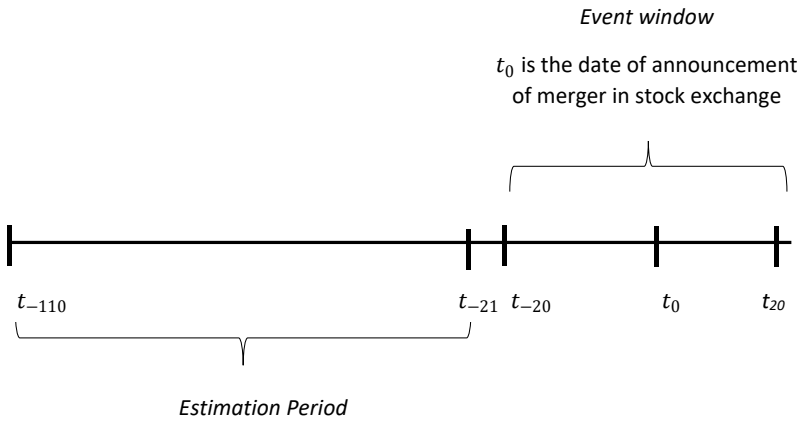

Figure 1: Timeline for event study

During the event time, abnormal returns were calculated for each bank. Equation (1) demonstrates that the abnormal return is the difference between the specific bank's actual and expected returns. The expected return is calculated using the market model, establishing an association between security and market return. The expected return is estimated using the

systematic risk of a company, whereas the benchmark index is used to estimate the expected return using the industry's average return.

$$AR_{it} = R_{it} - (\alpha_i + \beta_i R_{mt}) \quad (1)$$

Where AR_{it} is the abnormal return of the bank i on day t, R_{it} is the return of firm i on day t, α_i and β_i is the constant and the beta of the bank i or the estimates of the OLS regression. R_{mt} is the market return, calculated on BSE Sensex on day t. Further, we calculate average abnormal returns (AAR) for all the event day t_0 in the estimation period using equation (2). After calculating AAR, we checked for the statistical significance of the abnormal returns using test statistics as shown in equation (3)

$$AAR_T = \frac{1}{N}\sum_{i=1}^{n} AR_{it} \quad (2)$$

$$AAR_t = \frac{AAR_T}{STDV} \quad (3)$$

Where N is the number of M&A during the estimation period. AAR_t is the test statistic for average abnormal return (AAR_T), STDV is aggregate estimation window standard deviation calculated using equation (4)

$$STDV = \sqrt{\frac{\sum_{i=1}^{N} SD_{it}^2}{N^2}} \quad (4)$$

SD_{it}^2 is the standard deviation of sample firms' abnormal returns. Additionally, the average abnormal returns for each day during the event window are added to determine the cumulative average abnormal returns (CAAR), which is used to analyze the cumulative impact of the events. Equation (5) is used to compute the CAAR.

$$CAAR = \sum AAR_f \quad (5)$$

Where, f = -20 to t

3.2.2 Financial performance

EVA is a thorough evaluation of a bank's economic success. It gauges how much wealth an organization creates above and beyond its cost of capital. It considers both the returns produced by a company's assets and the opportunity cost of money. The WACC and CAR is also used to assess and contrast the bank's financial health and stability following the merger. Implication on WACC and EVA has not been tested in previous studies. As shown in equation (6), EVA is determined by deducting the cost of capital from NOPAT. Nevertheless, debt and equity charges are considered while calculating the cost of capital. This study extends the analysis of Aggarwal and Garg (2022) in banking industries,

$$EVA = NOPAT - (TCE \times WACC) \quad (6)$$

Where, TCE is the total capital employed by the sample firm, WACC is the weighted average cost of capital. It measures the average charge a firm needs to pay to raise funds from different sources, which includes equity, debt, and other short and long-term financial instruments. Additionally, to assess the improvement in banks' financial strength and stability, we used the CAR. CAR gives insights into the banks' ability to absorb losses and meet regulatory obligations. The CAR is the ratio of the bank's capital to its risk-weighted assets. CAR measures the risk exposure of bank capital. CAR data of the sample banks were collected from RBI. We used both parametric (paired sample "t" test) and non-parametric (Wilcoxon Sign Rank) tests to evaluate the pre and post-merger improvement in EVA, WACC, and CAR. In order to determine whether the results are affected by outliers and to increase the robustness of the results, we use the Wilcoxon sign rank test. Wilcoxon sign rank test and paired sample t-test were previously used in M&A literature to measure the statistical change in pre and post-merger performance (Aggarwal & Garg, 2022; Gulati & Garg, 2022; Kumar & Bansal, 2008). The Wilcoxon signed-rank test is ideally adapted for analyzing paired data because it determines whether there is a statistically significant difference between the two related observations within each pair. As shown in equation (7), our analysis begins with calculating the absolute difference between pre and post-merger change in respective ratios.

$$Abs\ (CAR_{T-3} - CAR_{T+3}) \quad (7)$$

Where, CAR_{T-3} is the average three-year capital adequacy ratio prior to the Merger and CAR_{T+3} is the post-merger average three-year capital adequacy ratio. Similarly, the absolute difference of all the banks' respective ratios in the sample is computed for one year and three years. We assigned relative ranks and sign for all the cases, and in case of similar ranking, average ranks were considered. In last, Z-statistics for all the ratios were calculated using equation (8) and compared with the critical value of z to assess the statistical significance of the difference observed in the Wilcoxon sign rank test.

$$Z\ statistics = \frac{MAX(W+,W-) - \frac{n(n+1)}{4}}{\sqrt{\left(\frac{n(n+1)(2n+1)}{24}\right)}} \quad (8)$$

Where W+ and W- are the sum of positive and negative ranks, respectively, and n is the number of banks.

3.2.3 Overall Efficiency

The data for efficiency analysis for all the sample banks were collected for three years pre and post-merger from the RBI database. Overall efficiency is evaluated on three parameters to check over the synergy gains of acquiring banks. The first parameter is to assess improvement in profitability position. The second parameter is to assess the change in liquidity position. Lastly, we assess the operational efficiency of the acquirer bank. All three parameters were checked using seven variables as follows,

1. ROA and ROE were calculated for profitability position.
2. For the Liquidity position, the CDR and the NPA to advance were calculated.
3. RO Adv. and the OPTA were computed to determine operating efficiency.

The overall efficiency analysis of sample banks was done using Table 3, following the aforementioned parameters and methodology used in M&A literature. Wilcoxon Sign Rank and paired sample T-test were done to assess the significance of enhancement of the acquiring banks in 1 and 3 years.

4 Research Findings and Discussion

4.1 Market Performance

Table 1 reported the average abnormal returns, cumulative average abnormal returns, and test statistics during the event window. Results show negative abnormal returns from t_6 to the t_{+2} post-merger. Whereas a leakage effect of information was noted, which resulted in significant positive abnormal returns in the market on t_{-7} and t_{-8} days before the announcement of the merger. As shown in Table 1, the market responds positively from day t_3 till day t_{11} after the merger announcement. Statistically significant abnormal returns were noted on days t_5, t_9, and t_{10}. However, the mixed returns were noted after day t_{+12}, and statistically significant negative abnormal returns were reported on day t_{+12}. Further, as shown in Figure 2, a continuous improvement in abnormal returns after day t_{+1} till day t_{+5} can be seen, and the highest abnormal returns were reported on day t_{+5}. Post announcement of the merger, cumulative average abnormal returns during the event window continuously rise from t_{+1} till t_{+11}. Therefore we reject our null hypothesis as significant improvements in stock market performance were noted.

Table 1: Average abnormal returns during the event window

Day	AAR	CAAR	t-stat	Day	AAR	CAAR	t-stat
-20	0.008	0.008	1.257	0	-0.004	-0.023	-0.643
-19	-0.004	0.005	-0.543	1	-0.010	-0.034	-1.572
-18	0.001	0.006	0.123	2	0.007	-0.027	1.055
-17	0.002	0.007	0.252	3	0.003	-0.024	0.430
-16	-0.002	0.006	-0.256	4	0.006	-0.017	0.954
-15	-0.002	0.004	-0.291	5	0.019	0.001	2.798***
-14	-0.001	0.003	-0.151	6	0.005	0.007	0.809
-13	-0.014**	-0.011	-2.114	7	0.004	0.011	0.600
-12	-0.002	-0.013	-0.240	8	0.008	0.018	1.164
-11	0.006	-0.007	0.938	9	0.013	0.032	2.019**
-10	-0.008	-0.015	-1.213	10	0.012	0.044	1.791*
-9	-0.007	-0.022	-1.063	11	0.008	0.052	1.258
-8	0.017**	-0.005	2.499	12	-0.003	0.049	-0.492
-7	0.014**	0.009	2.165	13	-0.011	0.038	-1.657*
-6	-0.002	0.007	-0.365	14	0.004	0.042	0.615
-5	-0.008	-0.001	-1.173	15	-0.002	0.040	-0.239
-4	-0.001	-0.002	-0.083	16	0.001	0.041	0.150
-3	-0.011	-0.012	-1.579	17	-0.007	0.035	-1.032
-2	-0.003	-0.015	-0.484	18	0.005	0.040	0.804
-1	-0.003	-0.019	-0.502	19	0.004	0.044	0.639
0	-0.004	-0.023	-0.643	20	0.004	0.048	0.615

*Note: AAR represents the average abnormal returns, and CAAR represents the cumulative average abnormal returns. ***,**, and * represents the significant level at 1, 5, and 10%, respectively*

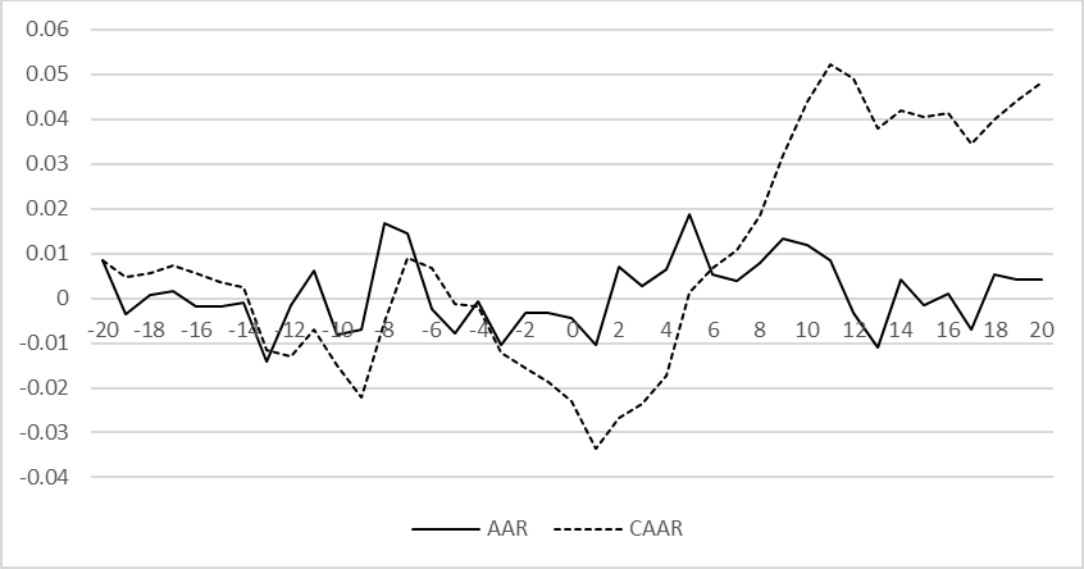

Figure 2: During the event window, AAR and CAAR

4.2 Financial Performance

To check the success of M&A in terms of improvement in financial strength and stability, we compute and compare the financial performance on three factors. This study compares EVA, WACC, and CAR for one and three-year average improvement subsequent to the M&A. The Wilcoxon signed rank test results are presented in Part A of Table 2, and they reveal that acquiring banks' WACC and EVA improved statistically significantly over three years. This means M&A positively impact the WACC and EVA of acquiring banks, and results are not random. At the same time, no statistically significant improvements were noted in 1-year comparison of parameters. Paired sample t-tests were done to check the robustness of our analysis. Similar results were reported in the case of 3 years comparison, whereas statistically significant improvement was noted in EVA in the 1-year comparison. No significant improvements in CAR were noted in the analysis. Based on our results, we partially accept our second hypothesis, as improvements were noted in two parameters.

Table 2: Paired sample t-test and the Wilcoxon signed rank test results for 1 and 3 years.

PART A	z-statistic for 1Y	z-statistic for 3Y	p-value for 1Y	p-value for 3Y
WACC	0.417	2.293	0.677	0.022**
EVA	0.767	2.803	0.443	0.005***
CAR	-0.284	0.089	0.776	0.929
PART B	**t-statistic for 1Y**	**t-statistic for 3Y**	**p-value for 1Y**	**p-value for 3Y**
WACC	1.556	3.337	0.142	0.009***
EVA	1.968	3.575	0.0691**	0.006***
CAR	0.749	0.775	0.236	0.225

*Note(s): ***, **, and * represents significant at 99%, 95%, and 90% respectively.*

4.3 Overall Efficiency

In this section, we reported the improvement in the efficiency of acquiring banks in terms of their profitability, liquidity, and operating efficiency positions. Table 3 provides an evaluation of the change in variables for one year before and after an M&A as well as the average change for three years before and after the M&A. The analysis is done for each acquiring bank during the sample period. However, as mentioned in the methodology section, banks which are merged after 2019 were not considered for three years average comparison as sufficient data is not available.

For profitability, ROA and ROE were calculated and compared as both ratios are closely related to the profitability position of the firm. High ROA and ROE represent a strong financial position. This shows that the firm is effectively utilizing its financial resources to turn a profit. The rationale behind considering profitability position is to assess whether acquiring firms are generating sufficient profits to ensure their operating cost, repayment of debts, and considerable return to the shareholders. As shown in Table 3, 40% of the cases show improvement in ROA and ROE within one year of M&A. The average comparison of ROA and ROE over three years shows positive growth in 33.3% and 41.6% of banks, respectively. Most cases do not significantly better after one and three years, respectively.

For the Liquidity position, traditional liquid and quick ratios cannot be used for the banks as they have separate regulatory and reporting compliances. CDR and NPA to advance were calculated and compared. High CDR indicates banks have more cash reserves than their deposit liabilities and vice versa. A lower CDR means the bank is at high risk of meeting its depositor's liabilities. NPA to advance ratio was used to check the quality of banks' loan

portfolios compared to net advances to the clients. A high NPA indicates banks are less likely to recover their advances, generating liquidity risk. In summary, CDR and NPA to advance are the metrics that help banks to manage their liquidity position. 33.33% of banks show improvement in CDR in one year case and only 16.66% show improvement in three years average CDR comparison. Comparatively, the net NPA to advance demonstrates improvement in 53.33% of cases after a year and in 41.66% of cases after three years.

For operating efficiency, OPTA and RO Adv. were compared. OPTA helps to identify how effectively the bank is functioning to generate revenue from core activities such as lending and investing. The higher the OPTA better it is, as it indicates the high operating efficiency of banks and vice versa. The RO Adv. formula is used to determine the percentage of a bank's profit from its primary operational activity, lending. Higher RO Adv. indicates strong operational performance and vice-versa. In conclusion, both OPTA and RO Adv. are key financial metrics to measure the operational efficiency of banks. Comparing both metrics in pre and post-merger scenarios, we identify both OPTA and RO Adv. Improves in 46.6% of cases in a one-year comparison. In contrast, OPTA improves by 50% and RO Adv. in 41.6% of cases in an average three-year pre and post-comparison. Results do not support our third hypothesis.

Tables 4 and 5 provide the findings of Wilcoxon signed rank and paired sample t-tests that were used to determine the statistical significance of the comparison, with the exception of the average three-year OPTA comparison and CDR in both cases. We did not find statistically significant improvement in other parameters; therefore, we reject our third hypothesis.

Table 3: change in banking ratios of acquirer banks in 1 and 3 year of post-acquisition

Acquirer Bank	**CDR 1Y**	**CDR 3Y**	**OPTA 1Y**	**OPTA 3Y**	**ROA 1Y**	**ROA 3Y**	**ROE 1Y**	**ROE 3Y**	**RO ADV. 1Y**	**RO ADV. 3Y**	**NPA TO ADVANCE 1Y**	**NPA TO ADVANCE 3Y**	Number of positive changes in 3Y	Number of positive changes in 1Y
ALLAHABAD BANK	-	-	-	-	-	-	-	-	-	-	+	+	2	2
BANDHAN BANK	+	+	+	+	+	-	+	-	-	-	-	+	3	4
BANK OF BARODA	+	-	+	-	-	+	-	+	+	+	-	-	3	4
CANARA BANK	-	-	-	+	+	+	+	+	+	+	-	-	5	4
EQUITAS SMALL FINANCE BANK	-	NA	-	NA	-	NA	-	NA	-	NA	+	NA		2
HDFC BANK	+	NA	-	NA	+		+	NA	-	NA	-	NA		4
IDFC FIRST BANK	-	-	-	-	-	-	-	-	+	+	+	-	1	2
INDIAN BANK	+	-	+	+	-	-	-	+	+	+	-	-	4	4
INDUSIND BANK	+	+	+	+	-	-	+	-	-	-	+	+	4	4
KOTAK MAHINDRA BANK	-	-	+	+	+	-	-	-	-	-	+	+	2	4
LAKSHMI VILAS BANK	-	NA	-	NA	-	NA	-	NA	+	NA	+	NA		2
PUNJAB NATIONAL BANK	-	-	+	-	+	+	+	+	+	+	-	-	4	5
STATE BANK OF INDIA	-	-	-	-	-	-	-	-	-	-	+	+	2	2
UJJIVAN SMALL FINANCE BANK	-		-		-		-		-		+	NA		1
UNION BANK OF INDIA	-	-	+	+	+	+	+	+	+	+	-	-	5	5
Number of positive changes in ratio	5	2	7	6	6	4	6	5	7	6	8	5		

Note(s): "+" used to indicate increase in ratio, "-"is used to indicate decrease in ratio, 1Y indicates change in ratio for 1 year (very short term) after acquisition in comparison to I year before acquisition, and 3Y indicates change in average ratio for 3 year (short term) after acquisition in comparison to average ratio 3 year before acquisition.

Table 4: Wilcoxon signed rank test results for 1 and 3 years change in acquirer bank ratios

Ratio	z-statistic for 1Y	z-statistics for 3Y	p-value for 1Y	p-value for 3Y
CDR	1.136	1.778	0.256	0.075**
OPTA	0.682	0.178	0.496	0.859
ROA	0.852	0.800	0.394	0.424
ROE	0.852	0.533	0.394	0.594
RO ADV.	0.852	-0.356	0.394	0.722
NPA TO ADVANCE	0.220	0.622	0.826	0.534

*Note(s): ***, **, and * represents significant at 99%, 95%, and 90% respectively.*

Table 5: Results of paired sample t-tests for the change in acquirer bank ratios over 1 and 3 years

Ratio	t-statistic for 1Y	t-statistic for 3Y	p-value for 1Y	p-value for 3Y
CDR	1.556	0.946	0.075**	0.180
OPTA	0.273	-4.346	0.395	0.000***
ROA	1.147	1.141	0.139	0.136
ROE	0.953	0.776	0.181	0.225
RO ADV.	-1.108	0.733	0.147	0.238
NPA TO ADVANCE	0.628	0.110	0.272	0.457

*Note(s): ***, **, and * represents significant at 99%, 95%, and 90% respectively.*

5 Implications of the Study

This study examines the effect of M&A on stock prices, financial ratios, and shareholder wealth in emerging economies, casting light on the potential synergies and their implications for stakeholders. Understanding the synergies created by mergers and acquisitions can assist shareholders in making investment decisions and maximize their returns. In addition, knowledge of the factors influencing post-M&A value formation can help shareholders assess the effectiveness of management decisions and strategic decisions. By analyzing the effects of M&A on market stability, regulatory mechanism, compliances, and risk management, policymakers can strengthen their control through more robust regulatory policies, monitoring mechanisms and compliances. This study can contribute to the development of compliance so that the stability of financial industry's and sustainable growth can move together. The study also has significant managerial implications. The results suggest that M&A activity can help raise Indian banks' performance. Because of M&A activity, banks have grown in size and scope, resulting in economies of scale, which can lower costs and boost revenue. Banks may be able to compete more successfully in the market and draw in more investment due to this increase in financial performance.

The study provides evidence that M&A activity positively impacts the banks' financial performance, which supports the company's resource-based theory. This theory contends that businesses can maintain a competitive edge by maximizing the value they produce for their clients. Expanding banks' size and scope due to a merger or acquisition can result in economies of scale and better financial success in the context of M&A. Apart from the market, accounting, and economic performance, we suggest that while planning M&A activity, managers should consider several variables. These variables include the target bank's size and scope, how well its business model aligns with the acquiring bank's, and the regulatory climate in which the banks operate. Managers must also consider the risks and difficulties arising from M&A activity, such as societal differences between the banks, difficulties with integration, and possible workforce effects. When planning an M&A activity, managers must consider several things to ensure the advantages exceed potential risks and difficulties. Theoretically, the research suggests that by utilizing resources and capabilities to generate value for stakeholders, M&A activity can be a valuable strategy for securing long-term competitive advantage.

6 Conclusion

In the banking industry, mergers and acquisitions are evaluated using three criteria. First, the event study technique was used to examine the stock market performance of acquiring institutions. We found a significant impact of merger and acquisition announcements on the daily return of acquiring bank stock prices. Second, we compare pre- and post-merger EVA, WACC, and CAR using parametric and non-parametric testing to examine the improvement in the financial stability and strength of acquiring institutions. Empirical evidences observed a significant long-term improvement in financial stability (3 years). Lastly, this study checked over the improvement in profitability, liquidity position and operational efficiency of acquiring banks using ratio analysis. No statistically significant improvements were reported in both the short term (1 year) and the long term (3 years). Despite significant contributions, the current study has some limitations. First, we cover only listed scheduled commercial banks during our sample period. Non-listed and other categories of banks, such as cooperative banks, regional rural banks etc., plays a vital role in emerging economies; therefore, those banks can also be considered for future studies. Secondly, this study analysed the most recent mergers in the banking industry. Therefore, a long-term analysis (five years)

cannot be conducted. Future researchers can extend the analysis for a longer time frame. Lastly, cross-border acquisitions are not considered in the current analysis, cross-border M&A in the banking sector can give additional insights. Overall, the study offers insightful information about how M&A impacts the banking sector in the developing world.

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