

An Analytical Study on Impact of Merger and Acquisitions on Physical Performance of Banks

Santosh Kumar^{1*}, Dr. Sumita Sinku², Bipin Chauhan³, Manish Kumar⁴, Rajat Kumar Singh⁵

^{1*}Research Scholar, Department of Commerce, Mahatma Gandhi Central University, Motihari, (Bihar).
Email Id: santoshbhu7237984673@gmail.com.

²Assistant Professor, Department of Commerce, Delhi School of Economics, University of Delhi, Delhi.
Email Id: sumita5thfeb@commerce.du.ac.in

³Research Scholar, Department of Commerce, Mahatma Gandhi Central University, Motihari, (Bihar).
Email Id: bipinc520@gmail.com

⁴Research Scholar, Department of Commerce, Mahatma Gandhi Central University, Motihari, (Bihar).
Email Id: mkcro282@gmail.com

⁵Research Scholar, Department of Commerce, Mahatma Gandhi Central University, Motihari, (Bihar).
Email Id: singhrajat121195@gmail.com

Abstract

An effective economic system is indicative of economic well-being, which is closely linked to ethical banking practices and procedures. A robust banking system is capable of fulfilling its commitments to depositors promptly and enhances the effective utilisation of resources. The current banking industry has significantly facilitated the socio-economic progress of the nation. The banking system's business environment has rapidly transformed due to economic globalisation, intensified competition from both domestic and foreign institutions, and advancements in technology. Mergers and acquisitions have emerged as a vital method for geographical expansion. An acquisition normally refers to a situation when a corporation obtains administrative control of an existing company by purchasing a majority stake in that company. Merger refers to the integration of two or more existing firms into a single entity.

The purpose of the study is to examine the physical performance of banks by using four parameters of employee productivity such as Deposits per employee, Advances per employee, Business per employee and Profit per employee and four parameters of branch productivity such as Deposits per branches, Advances per branches, Business per branches and Profit per branches by considering the five cases of mergers and acquisitions.

In order to analyse the effect of a merger and acquisition on physical performance, the T-Test has been applied. The charts had been prepared using the pre-merger average and post-merger average components of physical performance. It indicates that the physical performance of the selected anchor banks has shown significant improvement. In line with the worldwide trend of mergers and acquisitions (M&A), it is imperative to promptly reconstruct the Indian banking system by mergers and amalgamations. This would enhance its capitalization, automation, technological advancement, and competitiveness.

Keywords: Bank, physical-performance, merger & acquisition, branch, productivity, employee

I. INTRODUCTION

The banking sector is essential in the present scenario since finance plays a crucial role in supporting and enabling economic activity. The banking industry is widely acknowledged for its substantial contribution to economic growth. The importance of banking institutions in supporting a country's modern economy is universally acknowledged. These institutions serve as lenders during periods of financial hardship, meeting the needs of both individuals and organisations. Furthermore, they provide a substantial contribution to the general growth of the economy. The proliferation of the banking industry helps to the overall economic expansion.

The business environment of the banking sector has rapidly changed due to the impact of economic globalisation, increased competition from both domestic and international entities, and the emergence of advanced technologies. Several financial institutions have adopted restructuring strategies such as mergers, acquisitions, and takeovers to leverage economies of scale, lower expenses, broaden their geographical presence, and strengthen their client base. These strategies have been successfully utilised to address the previously identified difficulties.

Mergers and acquisitions have emerged as a key approach for achieving worldwide geographic expansion. An acquisition typically involves a corporation gaining control over another established company by purchasing a majority stake in that company. However, a merger usually entails combining two or more established companies into one entity, which might be either an existing or newly created organisation. Mergers and acquisitions (M&A) are a strategic technique used by corporations to expand their presence globally and gain a competitive edge.

In 2007, Bharat overseas bank merged with the Indian overseas bank. The merger between Centurion Bank of Punjab Ltd (CBoP) and HDFC Bank Limited went into effect on May 23, 2008, per the RBI order dated May 20, 2008. On 13.08.2010, The Reserve Bank of India approved the merger of the Bank of Rajasthan with the ICICI Bank. On 20 November 2014, ING Vyasa Bank decided to merge with Kotak Mahindra Bank in a stock-for-stock transaction, creating the fourth largest private sector bank in India. On 15.02.2017, the Indian Union Cabinet approved the merger of the remaining Five Associates Bank and Bharatiya Mahila Bank into The State Bank of India. The merger went into effect on April 1, 2017, and the merger procedure was completed in September 2017. The primary justifications for bank mergers include the ability of merged banks, with an expanded capital base, to provide larger loans. Additionally, operational efficiency can be enhanced, resulting in cost reductions. Furthermore, reduced reliance on government capital infusion and increased opportunities for leveraging technology are also significant advantages.

Name of the Target Bank	Name of the Anchor banks	Date of Amalgamation	Year of Merger	Pre-Merger Period	Post-Merger Period
Bharat Overseas Bank	Indian Overseas Bank	31.03.2007	2007	2001-02 To 2005-06	2007-08 To 2011-12
Centurion Bank of Punjab	HDFC Bank	23.05.2008	2008	2003-04 To 2007-08	2008-09 To 2012-13
Bank of Rajasthan	ICICI Bank	13.08.2010	2010	2005-06 To 2009-10	2010-11 To 2014-15
ING Vyasa Bank	Kotak Mahindra Bank	20.11.2014	2014	2009-10 To 2013-14	2015-16 To 2019-20
State Bank of Travancore (SBT) State Bank of Bikaner and Jaipur (SBBJ) State Bank of Hyderabad (SBH) State Bank of Mysore (SBM) State Bank of Patiala (SBP) Bharatiya Mahila Bank (BMB)	State Bank of India	01.04.2017	2017	2011-12 To 2015-16	2017-18 To 2021-22

Generally, Physical performance analysis means analysing the physical performance of banks on the basis of productivity of employee & branch. For this study, Data for five consecutive years before effective date of merger has been considered as pre-merger period and Data for five consecutive years after effective date of merger has been considered as post-merger period. For assessing the physical performance of banks, Employee productivity ratios and branch productivity ratios have been utilised since these ratios provide valuable insights into the abilities and weaknesses of a financial institution.

In this paper, it has been tried to analyse the impact of Merger and Acquisition on the short- term physical performance of the following anchor banks by applying 8 parameters such as Deposits per employee, Advances per employee, Business per employee and Profit per employee with regards to Employee Productivity Analysis and Deposits per branches, Advances per branches, Business per branches and Profit per branches with regards to Branch Productivity Analysis.

The rest of the paper has been organized as follows: Review of Literature in section 2, Research Gap in section 3, objectives in section 4 and research methodology in section 5. The hypothesis testing is discussed in section 6 and results and analysis is presented in section 7. The paper ends with conclusion & recommendation in section 8 and followed by references in section 9.

II. REVIEW OF LITERATURE

Bhardwaj (2014) aimed to determine the success of the merger and acquisition deal between Centurion Bank and Bank of Punjab. She has endeavoured to illustrate the impact of the merger and acquisition on the company's owners, customers, and employees. Ultimately, it was concluded that the merger had enhanced the overall efficiency and production of both banks during the year. The analysis of ratios and the subsequent evaluation of the post-merger impact indicate that the merger has resulted in improvements for both institutions. Productivity and overall effectiveness increase. The value and services of the united bank have rapidly improved.

Kumar M. (2015) examined the impact of mergers on the performance of banks. He assessed the financial performance of Indian banks from 2000 to 2010 to evaluate the performance of banks involved in mergers before and after the mergers. Financial ratios have been employed to evaluate performance by utilising accounting criteria such as profitability. An assessment is conducted on the performance of the banks both before and after the merger, spanning a period of three years. Additionally, the overall impact of the merger and acquisition (M&A) on the resulting banks is examined. The data demonstrates that the utilisation of borrowed capital reduces a business's profitability, although the size and expansion of a firm are strongly and positively correlated with its profitability.

Subhashree and Kannappan (2018) analysed the objectives and procedures of mergers and acquisitions, specifically focusing on the merger between HDFC Bank and Centurion Bank of Punjab. The profitability or failure of a firm's merger or acquisition depends on its planning and strategies. India has a substantial number of cases that illustrate its competitiveness in the field of merger and acquisition, indicating that it is not lagging behind the rest of the world.

Sinha & Jaiswal (2020) conducted a thorough analysis of firms' pre-and post-evaluation and found that it had a major effect. Specifically, they saw a decline in both profitability and liquidity for the majority of firms. After a series of mergers and acquisitions, corporations were able to take advantage of the synergies that arose from these transactions, even if they were unable to manage their liquidity. Observe illustrated the assessment of the companies' pre- and post-analysis. Various economic indicators, including EBIT, return on shareholder equity, profit margin, interest coverage, current ratio, and cost efficiency, among others, also demonstrated favourable results.

Jha et.al, (2021) evaluated the performance of the three main government owned banks in India: SBI, PNB, and BOB. The CAMEL model was used to analyse the performance of the data acquired from secondary sources for the five-year period 2015–16 to 2019–20. The hypothesis was tested using the statistical method of ANOVA. The analysis showed that the SBI was in first place, followed by the BOB in second place and the PNB in third place.

Das (2022) employed both a univariate model and a bivariate model to assess the effect of the merger announcement on the financial value of State Bank of India (SBI) and some affiliated institutions. The study utilises the event study approach. The study's dataset comprises daily stock prices used to compute the returns of the listed banks. The BSE-200 index is used as the market return, while the Bank NIFTY index is used as the bank return. The findings suggest that the shareholders of the anchor bank have not experienced substantial gains, while the owners of target banks have achieved overall gains. The merger announcement has resulted in increased wealth for shareholders of both anchor and target banks, as seen by the collective calculation of their Weighted Average Cumulative Abnormal Returns (WACAR). This study contributes to the existing knowledge in the field of finance, particularly in relation to mergers and acquisitions within the Indian banking sector.

III. RESEARCH GAP

After conducting a thorough and comprehensive examination of the existing literature, it has been discovered that certain research focus on analysing the impact of mergers and acquisitions (M&A) on the financial performance of acquiring banks. Some studies includes comparison for the financial performance before and after the mergers. Nevertheless, certain research papers incorporate an evaluation of mergers and acquisitions on shareholders' earnings in the form of dividends and earnings per share, as well as shareholders' wealth. Several studies focus on comparing the financial performance of public sector banks versus private sector banks. But there is a gap regarding research related to impact of merger and acquisition on physical performance of banks. So, this study is based on analysing and evaluating the impact of merger and acquisition on the physical performance of selected banks (as Indian Overseas Bank, HDFC Bank, ICICI Bank, Kotak Mahindra Bank and State Bank of India).

IV. OBJECTIVE OF THE STUDY

- To analyse the impact of merger and acquisition on the physical performance of the Indian Overseas bank.
- To assess the impact of merger and acquisition on the physical performance of the HDFC bank.
- To evaluate the impact of merger and acquisition on the physical performance of the ICICI Bank.
- To examine the impact of merger and acquisition on the physical performance of the Kotak Mahindra bank.
- To analyse the impact of merger and acquisition on the physical performance of the State bank of India.

V. RESEARCH METHODOLOGY

I. Research Design: - The present study is a descriptive and analytical research study.

II. Sources of Data: - Secondary data has been used for this study which has been collected from the annual reports of selected banks.

III. Sampling Size

- ❖ Case I. Merger of Bharat Overseas Bank with Indian Overseas Bank.
- ❖ Case II. Merger of Centurion Bank of Punjab with HDFC Bank
- ❖ Case III. Merger of Bank of Rajasthan with ICICI Bank.
- ❖ Case IV. Merger of ING Vyasa Bank with Kotak Mahindra Bank.
- ❖ Case V. Merger of Five Associates Bank & Bharatiya Mahila Bank with SBI.

IV. Research Technique: - Eight Parameters of Physical performance based on Employee Productivity and Branch Productivity has been used for this study.

S. No	BASE OF ANALYSIS	COMPONENTS OF PHYSICAL PERFORMANCE
1.	Employee Productivity Analysis	 Deposits Per Employee (DPE)  Advances Per Employee (APE)  Business Per Employee (BPE)  Profit Per Employee (PPE)
2.	Branch Productivity Analysis	 Deposits Per Branches (DPB)  Advances Per Branches (APB)  Business Per Branches (BPB)  Profit Per Branches (PPB)

V. Statistical tools: F-Test and T-test has been used for analysis.

VI. HYPOTHESIS OF THE STUDY

For testing the significance difference between pre-merger and post-merger employee productivity, following hypothesis has been tested separately in each case of the study.

H₀₁: There is no significant difference between the pre-merger Deposit per employee and post-merger Deposit per employee.

H₀₂: There is no significant difference between the pre-merger Advances per employee and post-merger Advances per employee.

H₀₃: There is no significant difference between the pre-merger Business per employee and post-merger Business per employee.

H₀₄: There is no significant difference between the pre-merger Profit per employee and post-merger Profit per employee.

For testing the significance difference between pre-merger and post-merger branches productivity, following hypothesis has been tested in each case of the study.

H₀₁: There is no significant difference between the pre-merger Deposit per branches and post-merger Deposit per branches.

H₀₂: There is no significant difference between the pre-merger Advances per branches and post-merger Advances per branches.

H₀₃: There is no significant difference between the pre-merger Business per branches and post-merger Business per branches.

H₀₄: There is no significant difference between the pre-merger Profit per branches and post-merger Profit per branches.

VII. RESULTS AND ANALYSIS

The results and analysis of this study has been categorized under five headings.

A. MERGER OF BHARAT OVEREAS BANK WITH INDIAN OVERSEAS BANK

The Indian government officially sanctioned the transfer of Bharat Overseas Bank Ltd to Indian Overseas Bank through a notice published in the Gazette of India on March 12, 2007. The government issued a notice on March 30, 2007, stating that the Transfer of Undertaking would become effective with effect from March 31, 2007.

(1) Analytical Table of Employee Productivity of Indian Overseas Bank

S.N.	Parameters	Mean		Change	Relative Change (%)	Variance		F	Equal/Unequal Variance	t	p	Results
		Pre	Post			Pre	Post					
1.	DPE	2.206	4.73	2.52	114.02	0.161	1.745	0.0034	Unequal	(-) 4.176	0.0139	Significant
2.	APE	1.221	3.648	2.42	198.36	0.143	1.685	0.0025	Unequal	(-) 4.094	0.0149	Significant
3.	BPE	3.423	8.30	4.88	142.69	0.594	6.128	0.0041	Unequal	(-) 4.302	0.0126	Significant
4.	PPE	1.202	0.041	(-) 1.25	(-) 103.3	2.204	9.571	9.211	Equal	1.717	0.1096	Non-Significant

From table 1, following results has been observed about 4 parameters of Employee productivity:

❖ **Deposit per employee:** Average values of pre-merger and post-merger are 2.206 and 4.73 respectively. An increase of 114.02 % has been recorded in the average value after the post-merger. Here, **t** is 4.176 with **p-value** of 0.0139 which is less than 0.05, i.e., null hypothesis is rejected. So, there is significant difference between pre-merger and post-merger Deposit per employee.

❖ **Advances per employee:** Average values of pre-merger and post-merger are 1.221 and 3.648 respectively. An increase of 198.36 % has been recorded in the average value after the post-merger. Here, **t** is 4.094 with **p-value** of 0.0149 which is less than 0.05, i.e., null hypothesis is rejected. So, there is significant difference between pre-merger and post-merger Advances per employee.

❖ **Business per employee:** Average values of pre-merger and post-merger are 3.423 and 8.30 respectively. An increase of 142.69 % has been recorded in the average value after the post-merger. Here, **t** is 4.302 with **p-value** of 0.0126 which is less than 0.05, i.e., null hypothesis is rejected. So, there is significant difference between pre-merger and post-merger Business per employee.

❖ **Profit per employee:** Average values of pre-merger and post-merger are 1.202 and 0.041 respectively. An increase of 103.3 % has been recorded in the average value after the post-merger. Here, **t** is 1.717 with **p-value** of 0.1096 which is greater than 0.05, i.e., null hypothesis is accepted. So, there is no significant difference between pre-merger and post-merger Profit per employee.

(2) Analytical Table of Branch Productivity of Indian Overseas Bank

S.N.	Parameters	Mean		Change	Relative Change (%)	Variance		F	Equal/ Unequal Variance	t	p	Results
		Pre	Post			Pre	Post					
1.	DPB	29.907	57.364	27.45	91.77	8.099	89.58	0.0031	Unequal	(-) 6.344	0.0031	Significant
2.	APB	16.312	43.074	26.76	164.07	11.901	77.46	0.019	Unequal	(-) 6.552	0.0012	Significant
3.	BPB	46.21	100.44	54.23	117.35	30.72	332.84	0.0034	Unequal	(-) 6.498	0.0028	Significant
4.	PPB	13.647	0.515	(-)13.13	(-) 96.26	283.41	0.0223	3.051	Equal	1.711	0.1106	Non-Significant

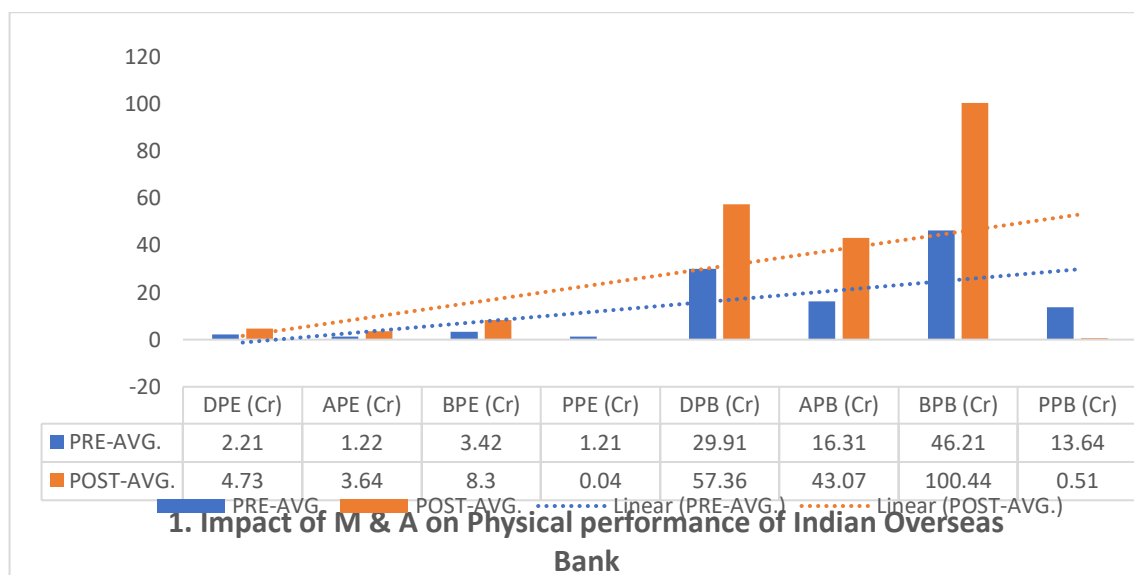
From table 2, following results has been observed about 4 parameters of Branch productivity:

❖ **Deposit per branches:** Average values of pre-merger and post-merger are 29.907 and 57.364 respectively. An increase of 91.77 % has been recorded in the average value after the post-merger. Here, **t** is 6.344 with **p-value** of 0.0031 which is less than 0.05, i.e., null hypothesis is rejected. So, there is significant difference between pre-merger and post-merger Deposit per employee.

❖ **Advances per branches:** Average values of pre-merger and post-merger are 16.312 and 43.074 respectively. An increase of 164.07 % has been recorded in the average value after the post-merger. Here, **t** is 6.552 with **p-value** of 0.0012 which is less than 0.05, i.e., null hypothesis is rejected. So, there is significant difference between pre-merger and post-merger Advances per employee.

❖ **Business per branches:** Average values of pre-merger and post-merger are 46.21 and 100.44 respectively. An increase of 117.35 % has been recorded in the average value after the post-merger. Here, **t** is 6.498 with **p-value** of 0.0028 which is less than 0.05, i.e., null hypothesis is rejected. So, there is significant difference between pre-merger and post-merger Business per branches.

❖ **Profit per branches:** Average values of pre-merger and post-merger are 13.647 and 0.515 respectively. An increase of 96.26 % has been recorded in the average value after the post-merger. Here, **t** is 1.711 with **p-value** of 0.1106 which is greater than 0.05, i.e., null hypothesis is accepted. So, there is no significant difference between pre-merger and post-merger Profit per branches.



B. MERGER OF CENTURION BANK OF PUNJAB WITH HDFC BANK

HDFC Bank acquired Centurion Bank of Punjab (CBoP) in 2008. The Reserve Bank of India (RBI) has granted approval for the merger between Centurion Bank of Punjab Ltd. with HDFC Bank Ltd. The Scheme has been authorised in compliance with the terms of Section 44A(4) of the Banking Regulation Act of 1949, effective from 23.05.08.

(3) Analytical Table of Employee Productivity of HDFC Bank

S.N.	Parameters	Mean		Change	Relative Change (%)	Variance		F	Equal/Unequal Variance	t	p	Results
		Pre	Post			Pre	Post					
1.	DPE	1.938	4.002	2.08	107.77	0.283	0.703	0.237	Equal	(-) 5.863	0.00005	Significant
2.	APE	1.316	2.714	1.40	1.06	0.155	0.361	0.269	Equal	(-) 5.452	0.00011	Significant
3.	BPE	3.068	6.516	3.45	112.74	1.252	2.986	0.256	Equal	(-) 4.711	0.0004	Significant
4.	PPE	0.059	0.069	0.01	20	0.0065	0.0004	0.018	Unequal	(-) 0.334	0.7441	Non-Significant

From table 1, following results has been observed about 4 parameters of Employee productivity:

❖ **Deposit per employee:** Average values of pre-merger and post-merger are 1.938 and 4.002 respectively. An increase of 100.77 % has been recorded in the average value after the post-merger. Here, **t** is 5.863 with **p-value** of 0.00005 which is less than 0.05, i.e., null hypothesis is rejected. So, there is significant difference between pre-merger and post-merger Deposit per employee.

❖ **Advances per employee:** Average values of pre-merger and post-merger are 1.316 and 2.714 respectively. An increase of 1.06 % has been recorded in the average value after the post-merger. Here, **t** is 5.452 with **p-value** of 0.00011 which is less than 0.05, i.e., null hypothesis is rejected. So, there is significant difference between pre-merger and post-merger Advances per employee.

❖ **Business per employee:** Average values of pre-merger and post-merger are 3.068 and 6.516 respectively. An increase of 112.74 % has been recorded in the average value after the post-merger. Here, **t** is 4.711 with **p-value** of 0.0004 which is less than 0.05, i.e., null hypothesis is rejected. So, there is significant difference between pre-merger and post-merger Business per employee.

❖ **Profit per employee:** Average values of pre-merger and post-merger are 0.059 and 0.069 respectively. An increase of 20 % has been recorded in the average value after the post-merger. Here, **t** is 0.334 with **p-value** of 0.7441 which is greater

than 0.05, i.e., null hypothesis is accepted. So, there is no significant difference between pre-merger and post-merger Profit per employee.

(4) Analytical Table of Branch Productivity of HDFC Bank

S.N.	Parameters	Mean		Change	Relative Change (%)	Variance		F	Equal/ Unequal Variance	t	p	Results
		Pre	Post			Pre	Post					
1.	DPB	73.26	112.61	39.34	53.69	1413.26	405.65	0.241	Equal	(-) 2.162	0.0498	Significant
2.	APB	47.94	75.66	27.72	57.82	539.07	17.71	0.0049	Unequal	(-) 3.656	0.0044	Significant
3.	BPB	120.96	188.27	67.31	55.64	3691.76	469.13	0.0623	Equal	(-) 2.365	0.0341	Significant
4.	PPB	0.936	1.892	0.96	103.22	0.4609	0.0613	0.0676	Equal	(-) 3.002	0.0101	Significant

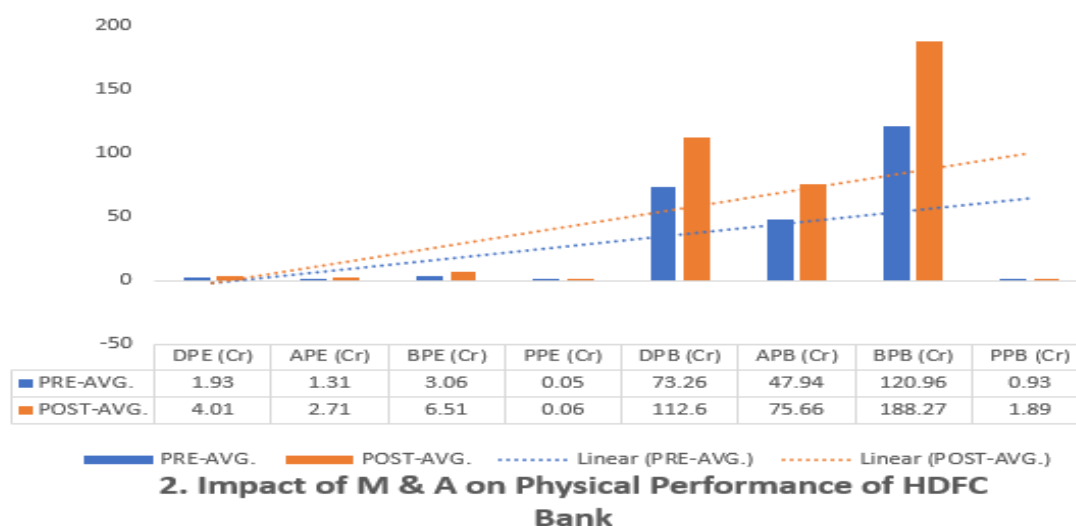
From table 2, following results has been observed about 4 parameters of Branch productivity:

❖ **Deposit per branches:** Average values of pre-merger and post-merger are 73.26 and 112.61 respectively. An increase of 53.69 % has been recorded in the average value after the post-merger. Here, **t** is 2.162 with **p-value** of 0.0498 which is less than 0.05, i.e., null hypothesis is rejected. So, there is significant difference between pre-merger and post-merger Deposit per employee.

❖ **Advances per branches:** Average values of pre-merger and post-merger are 47.94 and 75.66 respectively. An increase of 57.82 % has been recorded in the average value after the post-merger. Here, **t** is 3.656 with **p-value** of 0.0044 which is less than 0.05, i.e., null hypothesis is rejected. So, there is significant difference between pre-merger and post-merger Advances per employee.

❖ **Business per branches:** Average values of pre-merger and post-merger are 120.96 and 188.27 respectively. An increase of 55.64 % has been recorded in the average value after the post-merger. Here, **t** is 2.365 with **p-value** of 0.0341 which is less than 0.05, i.e., null hypothesis is rejected. So, there is significant difference between pre-merger and post-merger Business per branches.

❖ **Profit per branches:** Average values of pre-merger and post-merger are 0.936 and 1.892 respectively. An increase of 103.22 % has been recorded in the average value after the post-merger. Here, **t** is 3.002 with **p-value** of 0.0101 which is less than 0.05, i.e., null hypothesis is rejected. So, there is significant difference between pre-merger and post-merger Profit per branches.



C. MERGER OF BANK OF RAJSTHAN WITH ICICI BANK

The merger between ICICI bank and the Bank of Rajasthan was officially approved on 18th May 2010. The Reserve Bank of India approved the merger on August 13, 2010, between Bank of Rajasthan and ICICI bank. Consequently, all Bank of Rajasthan branches would start operating as the new branch of on August 13. It was completed with value of \$30.41 billion.

(5) Analytical Table of Employee Productivity of ICICI Bank

S.N.	Parameters	Mean		Change	Relative Change (%)	Variance		F	Equal/ Unequal Variance	t	p	Results
		Pre	Post			Pre	Post					
1.	DPE	4.73	4.59	(-) 0.14	(-) 2.95	2.38	0.247	0.0431	Unequal	0.257	0.801	Non-Significant
2.	APE	3.67	4.64	0.97	26.43	3.98	0.488	0.0583	Equal	(-) 1.032	0.321	Non-Significant
3.	BPE	8.41	9.23	0.82	9.75	12.39	1.426	0.0522	Equal	(-) 0.502	0.623	Non-Significant
4.	PPE	0.055	0.126	0.07	140	0.0023	0.0007	0.2865	Equal	(-) 2.988	0.0104	Significant

From table 5, following results has been observed about 4 parameters of Employee productivity:

❖ **Deposit per employee:** Average values of pre-merger and post-merger are 4.73 and 4.59 respectively. A decrease of 2.95 % has been recorded in the average value after the post-merger. Here, **t** is 0.257 with **p-value** of 0.801 which is greater than 0.05, i.e., null hypothesis is accepted. So, there is no significant difference between pre-merger and post-merger Deposit per employee.

❖ **Advances per employee:** Average values of pre-merger and post-merger are 3.67 and 4.64 respectively. An increase of 26.43 % has been recorded in the average value after the post-merger. Here, **t** is 1.032 with **p-value** of 0.321 which is greater than 0.05, i.e., null hypothesis is accepted. So, there is no significant difference between pre-merger and post-merger Advances per employee.

❖ **Business per employee:** Average values of pre-merger and post-merger are 8.41 and 9.23 respectively. An increase of 9.75 % has been recorded in the average value after the post-merger. Here, **t** is 0.502 with **p-value** of 0.623 which is greater than 0.05, i.e., null hypothesis is accepted. So, there is no significant difference between pre-merger and post-merger Business per employee.

❖ **Profit per employee:** Average values of pre-merger and post-merger are 0.055 and 0.126 respectively. An increase of 140 % has been recorded in the average value after the post-merger. Here, **t** is 2.988 with **p-value** of 0.0104 which is less than 0.05, i.e., null hypothesis is rejected. So, there is significant difference between pre-merger and post-merger Profit per employee.

(6) Analytical Table of Branch Productivity of ICICI Bank

S.N.	Parameters	Mean		Change	Relative Change (%)	Variance		F	Equal/ Unequal Variance	t	p	Results
		Pre	Post			Pre	Post					
1.	DPB	119.36	90.82	(-)28.54	(-) 23.91	11439.6	6.891	1.771	Equal	0.585	0.568	Non-Significant
2.	APB	101.54	91.45	(-)10.09	(-) 9.93	9890.45	14.855	1.099	Equal	0.2225	0.827	Non-Significant
3.	BPB	220.91	182.28	(-)38.63	(-) 17.48	42509.2	29.32	2.323	Equal	0.4109	0.687	Non-Significant
4.	PPB	1.713	2.482	0.77	45.02	3.124	0.087	0.0036	Unequal	(-)1.337	0.2107	Non-Significant

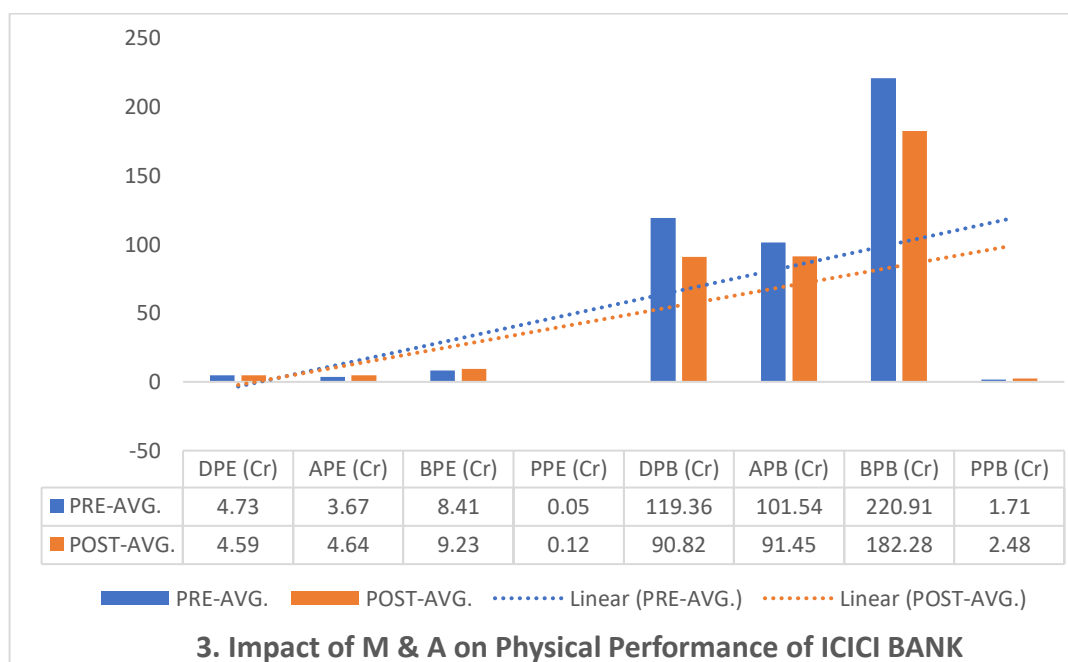
From table 6, It has been observed about 4 parameters of Branch productivity:

❖ **Deposit per branches:** Average values of pre-merger and post-merger are 119.36 and 90.82 respectively. A decrease of 23.91 % has been recorded in the average value after the post-merger. Here, **t** is 0.585 with **p-value** of 0.568 which is greater than 0.05, i.e., null hypothesis is accepted. So, there is no significant difference between pre-merger and post-merger Deposit per employee.

❖ **Advances per branches:** Average values of pre-merger and post-merger are 101.54 and 91.45 respectively. A decrease of 9.93 % has been recorded in the average value after the post-merger. Here, **t** is 0.2225 with **p-value** of 0.827 which is greater than 0.05, i.e., null hypothesis is accepted. So, there is no significant difference between pre-merger and post-merger Advances per employee.

❖ **Business per branches:** Average values of pre-merger and post-merger are 220.91 and 182.28 respectively. A decrease of 17.48 % has been recorded in the average value after the post-merger. Here, **t** is 0.4109 with **p-value** of 0.687 which is greater than 0.05, i.e., null hypothesis is accepted. So, there is no significant difference between pre-merger and post-merger Business per branches.

❖ **Profit per branches:** Average values of pre-merger and post-merger are 1.713 and 2.482 respectively. An increase of 45.02 % has been recorded in the average value after the post-merger. Here, **t** is 1.337 with **p-value** of 0.2107 which is greater than 0.05, i.e., null hypothesis is accepted. So, there is no significant difference between pre-merger and post-merger Profit per branches.



D. MERGER OF ING VYASA BANK WITH KOTAK MAHINDRA BANK

In November 2014, ING Vyasa Bank made the decision to merge with Kotak Mahindra Bank, resulting in the creation of the fourth largest private sector bank in India through a stock-for-stock transaction. On April 1, 2015, the merger was authorised by the Reserve Bank of India. The merger process was successfully completed on 15th May 2016.

(7) Analytical Table of Employee Productivity of Kotak Mahindra Bank

S.N.	Parameters	Mean		Change	Relative Change (%)	Variance		F	Equal/ Unequal Variance	t	p	Results
		Pre	Post			Pre	Post					
1.	DPE	3.632	5.042	1.41	38.84	0.364	0.192	0.563	Equal	(-) 4.608	0.0004	Significant
2.	APE	3.122	4.391	1.27	40.71	0.161	0.216	0.645	Equal	(-) 5.493	0.0001	Significant
3.	BPE	6.755	9.432	2.68	39.71	0.875	0.797	0.994	Equal	(-) 5.296	0.0001	Significant

4.	PPE	0.0679	0.104	0.05	83.33	0.00049	0.00049	0.9091	Equal	(-) 2.975	0.0107	Significant
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From table 7, following results has been observed about 4 parameters of Employee productivity:

❖ **Deposit per employee:** Average values of pre-merger and post-merger are 3.632 and 5.042 respectively. An increase of 38.84 % has been recorded in the average value after the post-merger. Here, **t** is 4.608 with **p-value** of 0.0004 which is less than 0.05, i.e., null hypothesis is rejected. So, there is significant difference between pre-merger and post-merger Deposit per employee.

❖ **Advances per employee:** Average values of pre-merger and post-merger are 3.122 and 4.391 respectively. An increase of 40.71 % has been recorded in the average value after the post-merger. Here, **t** is 5.493 with **p-value** of 0.0001 which is less than 0.05, i.e., null hypothesis is rejected. So, there is significant difference between pre-merger and post-merger Advances per employee.

❖ **Business per employee:** Average values of pre-merger and post-merger are 6.755 and 9.432 respectively. An increase of 39.71 % has been recorded in the average value after the post-merger. Here, **t** is 5.296 with **p-value** of 0.0001 which is less than 0.05, i.e., null hypothesis is rejected. So, there is significant difference between pre-merger and post-merger Business per employee.

❖ **Profit per employee:** Average values of pre-merger and post-merger are 0.0679 and 0.104 respectively. An increase of 83.33 % has been recorded in the average value after the post-merger. Here, **t** is 2.975 with **p-value** of 0.0107 which is less than 0.05, i.e., null hypothesis is rejected. So, there is significant difference between pre-merger and post-merger Profit per employee.

(8) Analytical Table of Branch Productivity of Kotak Mahindra Bank

S.N.	Parameters	Mean		Change	Relative Change (%)	Variance		F	Equal/Unequal Variance	t	p	Results
		Pre	Post			Pre	Post					
1.	DPB	83.804	134.52	50.71	60.51	447.12	618.22	0.628	Equal	(-) 4.142	0.0011	Significant
2.	APB	74.389	117.03	42.65	57.34	661.59	484.83	0.815	Equal	(-) 3.159	0.0075	Significant
3.	BPB	158.21	251.55	93.34	58.99	2179.08	2177.40	0.9122	Equal	(-) 3.651	0.0029	Significant
4.	PPB	1.768	2.788	1.02	57.95	1.025	0.668	0.721	Equal	(-) 1.945	0.0736	Non-Significant

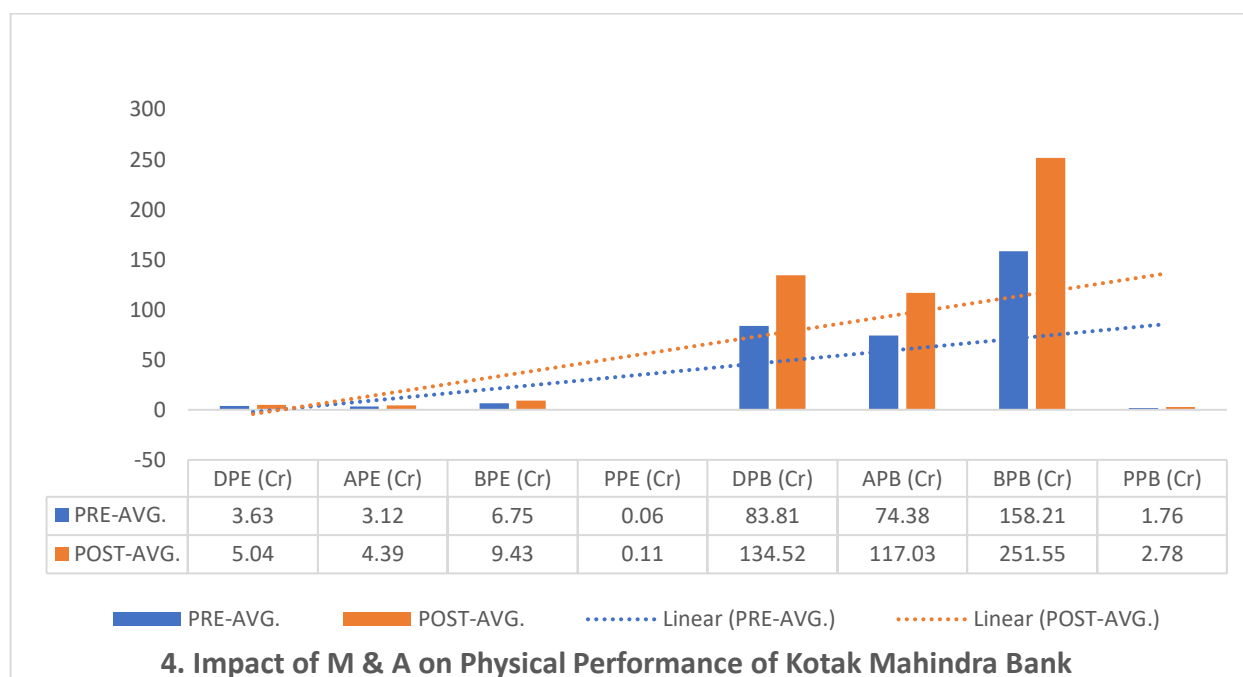
From table 8, following results has been observed about 4 parameters of Branch productivity:

❖ **Deposit per branches:** Average values of pre-merger and post-merger are 83.804 and 134.52 respectively. An increase of 60.51 % has been recorded in the average value after the post-merger. Here, **t** is 4.142 with **p-value** of 0.0011 which is less than 0.05, i.e., null hypothesis is rejected. So, there is significant difference between pre-merger and post-merger Deposit per employee.

❖ **Advances per branches:** Average values of pre-merger and post-merger are 74.389 and 117.03 respectively. An increase of 57.34 % has been recorded in the average value after the post-merger. Here, **t** is 3.159 with **p-value** of 0.0075 which is less than 0.05, i.e., null hypothesis is rejected. So, there is significant difference between pre-merger and post-merger Advances per employee.

❖ **Business per branches:** Average values of pre-merger and post-merger are 158.21 and 251.55 respectively. An increase of 58.99 % has been recorded in the average value after the post-merger. Here, **t** is 3.651 with **p-value** of 0.0029 which is less than 0.05, i.e., null hypothesis is rejected. So, there is significant difference between pre-merger and post-merger Business per branches.

❖ **Profit per branches:** Average values of pre-merger and post-merger are 1.768 and 2.788 respectively. An increase of 57.95 % has been recorded in the average value after the post-merger. Here, **t** is 1.945 with **p-value** of 0.0736 which is less than 0.05, i.e., null hypothesis is rejected. So, there is significant difference between pre-merger and post-merger Profit per branches.



E. MERGER OF FIVE ASSOCIATES BANK AND BHARATIYA MAHILA BANK WITH STATE BANK OF INDIA

The Indian Union Cabinet granted approval on February 15, 2017, for the consolidation of the remaining Five Associates Bank and Bharatiya Mahila Bank into The State Bank of India. The merger was implemented on April 1, 2017, and the merger process was finalised in September 2017. Following the merger, the bank currently boasts a customer base of 37 billion, 59,000 ATMs, deposits of 26 billion rupees, advances amounting to 18.50 billion rupees, 23,899 branches, and a workforce of 2,71,765 employees.

(9) Analytical Table of Employee Productivity of State Bank of India

S.N.	Parameters	Mean		Change	Relative Change (%)	Variance		F	Equal/Unequal Variance	t	p	Results
		Pre	Post			Pre	Post					
1.	DPE	7.069	13.218	6.15	87.11	12.99	6.74	0.555	Equal	(-) 3.661	0.0007	Significant
2.	APE	5.704	9.258	3.54	61.99	9.264	2.147	0.162	Equal	(-) 2.546	0.0151	Significant
3.	BPE	12.776	22.474	9.7	75.95	44.028	16.389	0.346	Equal	(-) 3.163	0.0031	Significant
4.	PPE	0.0527	0.0498	0.0029	5.50	0.0019	0.0037	0.243	Equal	0.135	0.893	Non-Significant

From table 9, following results has been observed about 4 parameters of Employee productivity:

❖ **Deposit per employee:** Average values of pre-merger and post-merger are 7.069 and 13.218 respectively. An increase of 87.11 % has been recorded in the average value after the post-merger. Here, **t** is 3.661 with **p-value** of 0.0007 which is less than 0.05, i.e., null hypothesis is rejected. So, there is significant difference between pre-merger and post-merger Deposit per employee.

❖ **Advances per employee:** Average values of pre-merger and post-merger are 5.704 and 9.258 respectively. An increase of 61.99 % has been recorded in the average value after the post-merger. Here, **t** is 2.546 with **p-value** of 0.0151 which is

less than 0.05, i.e., null hypothesis is rejected. So, there is significant difference between pre-merger and post-merger Advances per employee.

❖ **Business per employee:** Average values of pre-merger and post-merger are 12.776 and 22.474 respectively. An increase of 75.95 % has been recorded in the average value after the post-merger. Here, **t** is 3.163 with **p-value** of 0.0031 which is less than 0.05, i.e., null hypothesis is rejected. So, there is significant difference between pre-merger and post-merger Business per employee.

❖ **Profit per employee:** Average values of pre-merger and post-merger are 0.0527 and 0.0498 respectively. An increase of 5.50 % has been recorded in the average value after the post-merger. Here, **t** is 0.135 with **p-value** of 0.895 which is greater than 0.05, i.e., null hypothesis is accepted. So, there is no significant difference between pre-merger and post-merger Profit per employee.

(10) Analytical Table of Branch Productivity of State Bank of India

S.N.	Parameters	Mean		Change	Relative Change (%)	Variance		F	Equal/ Unequal Variance	t	p	Results
		Pre	Post			Pre	Post					
1.	DPB	78.044	146.02	67.98	87.10	853.54	462.12	0.587	Equal	(-) 4.988	0.00013	Significant
2.	APB	62.015	103.69	41.68	67.21	682.71	176.50	0.195	Equal	(-) 3.474	0.0012	Significant
3.	BPB	140.01	251.63	111.62	79.72	3002.75	1406.16	0.482	Equal	(-) 4.384	0.00087	Significant
4.	PPB	0.686	0.541	(-) 0.14	(-) 20.58	0.319	0.456	0.491	Equal	0.525	0.602	Non-Significant

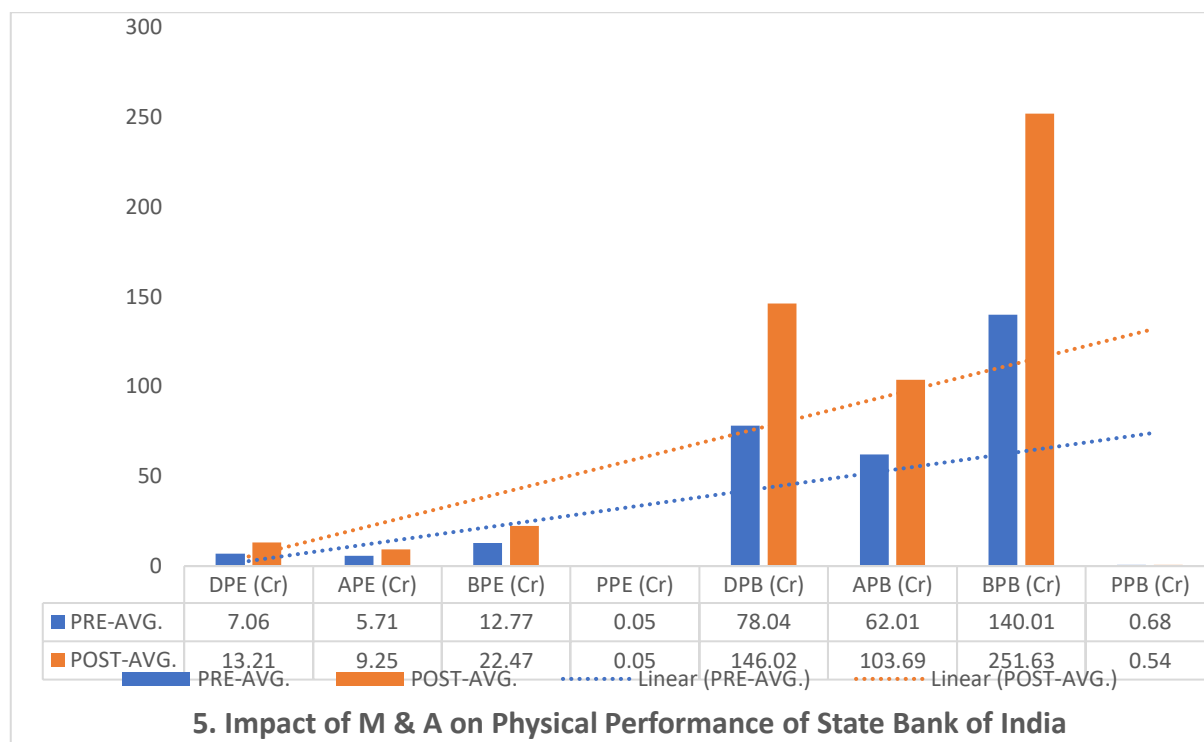
From table 10, It has been observed about 4 parameters of Branch productivity:

❖ **Deposit per branches:** Average values of pre-merger and post-merger are 78.044 and 146.02 respectively. An increase of 87.10 % has been recorded in the average value after the post-merger. Here, **t** is 4.988 with **p-value** of 0.00013 which is less than 0.05, i.e., null hypothesis is rejected. So, there is significant difference between pre-merger and post-merger Deposit per employee.

❖ **Advances per branches:** Average values of pre-merger and post-merger are 62.015 and 103.69 respectively. An increase of 67.21 % has been recorded in the average value after the post-merger. Here, **t** is 3.474 with **p-value** of 0.0012 which is less than 0.05, i.e., null hypothesis is rejected. So, there is significant difference between pre-merger and post-merger Advances per employee.

❖ **Business per branches:** Average values of pre-merger and post-merger are 140.01 and 251.63 respectively. An increase of 79.72 % has been recorded in the average value after the post-merger. Here, **t** is 4.384 with **p-value** of 0.00087 which is less than 0.05, i.e., null hypothesis is rejected. So, there is significant difference between pre-merger and post-merger Business per branches.

❖ **Profit per branches:** Average values of pre-merger and post-merger are 0.686 and 0.541 respectively. An increase of 20.58 % has been recorded in the average value after the post-merger. Here, **t** is 0.525 with **p-value** of 0.602 which is greater than 0.05, i.e., null hypothesis is accepted. So, there is no significant difference between pre-merger and post-merger Profit per branches.



VIII. CONCLUSIONS & RECOMMENDATIONS

The results of the analysis of the merger of the Bharat Overseas bank with the Indian Overseas Bank has not shown significant difference with regard to Profit per employee and Profit per branches but there is significant difference in case of Deposit per employee, Advances per employee and Business per employee (under employee productivity analysis) and Deposit per branches, Advances per branches and Business per branches (under Branch productivity analysis).

The results of the analysis of the merger of the Centurion Bank of Punjab with the HDFC Bank has not shown significant difference with regard to Profit per employee but there is significant difference in case of Deposits per Employee, Advances per employee and Business per employee (under employee productivity analysis) and Deposit per branches, Advances per branches, Business per branches and profit per branches (under Branch productivity analysis).

The results of the analysis of the merger of the Bank of Rajasthan with the ICICI Bank has shown significant difference with regard to Profit per employee under employee productivity analysis but there is not significant difference in case of Deposit per employee, Advances per employee and Business per employee (under employee productivity analysis) and Deposit per branches, Advances per branches, Business per branches and profit per branches (under Branch productivity analysis).

The results of the analysis of the merger of the ING Vyasa Bank with the Kotak Mahindra Bank have not shown significant difference with regard to Profit per branches but there is significant difference in case of Deposits per employee, Advances per employee, Business per employee and Profit per employee (under employee productivity analysis) and Deposit per branches, Advances per branches and Business per branches (under Branch productivity analysis).

The results of the analysis of the merger of the Five Associates Bank and Bharatiya Mahila Bank with the State Bank of India have not shown significant difference with regard to Profit per employee and Profit per branches but there is significant difference in case of Deposits per employee, Advances per employee and Business per employee (under employee productivity analysis) and Deposit per branches, Advances per branches and Business per branches (under Branch productivity analysis).

So, it can be said that some banks have shown significant difference with regards to 4 parameters of branch productivity analysis and in case of 3 parameters of employee productivity analysis. But some banks have not shown significant difference with regards to some physical parameters. Mergers and acquisitions allow large financial institutions to acquire the troubled assets of smaller banks, so enabling them to expand their global market presence and get improved synergistic results. To efficiently restore weak or nonviable banks, it is crucial to accelerate the merger process amongst these banks in India. This technique will enable the transfer of resources from financially weak banks, which will have a positive influence on the state's economic well-being by increasing the amount of funding coming in.

The primary analysis concerning the impact of mergers and acquisitions on physical performance has demonstrated positive and satisfactory results in the long term. The process of merging and acquiring enterprises has the potential to have a substantial impact on the economy by enabling the availability of financial services at more affordable prices and

in multiple locations around the country. This phenomenon will lead to the attainment of financial inclusion, hence enabling worldwide connectivity within the financial industry. The banking sector serves as a prominent gauge of the overall well-being of an economy.

Merger and acquisition are very advantageous strategies for fostering growth and promoting globalisation in the Indian banking industry. It plays a crucial function and is a widespread occurrence on a global scale. The takeover's advantages and market stability have been influential during the post-liberalization era. In the process of mergers and acquisitions in the banking sector, stronger bidder banks purchase weaker banks that have a clear understanding of their position in the market and their stability. This is done with the aim of growing the customer base, revenue, credit, deposits, and branch network of the acquiring banks. Following a merger and acquisition (M&A), acquiring banks might experience substantial expansion in their operations, significantly lower their expenses, and also face less competition due to the restrictions imposed on participants in the banking business.

Due to the continuous evolution of the Indian banking sector in terms of systems, procedures, and strategies, Merger and acquisitions (M&A) have traditionally served as a protective measure and risk mitigation strategy for financially weak institutions to avoid their potential failure. The current situation requires the continued acquisition of new skills and talents to promote a culture of constant learning, thus improving knowledge and expertise. Given the current worldwide trend of consolidation and convergence, it is crucial to swiftly reorganise the Indian banking sector by implementing mergers and amalgamations. This restructure is essential to improve its capitalization, automation, and technical advancement, as well as to promote a more friendly and competitive atmosphere.

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