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Pre and Post–Merger Financial Performance Analysis of Commercial Banks in Nepal

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Abstract

Purpose: This study attempts to examine the effect of merger on the financial performance of Nepalese commercial banks.

Methodology: This paper employs a descriptive and causal comparative research design to examine the financial performance of commercial banks involved in six merger deals as of mid-July 2022, with a sample of four merger deals completed before mid-July 2018. Mean, standard deviation, paired sample t-test, Pearson correlation, regression analysis, and the VIF test, are utilized for data analysis. Financial performance is evaluated using nine key ratios (EPS, NWPS, P/E ratio, CD ratio, CAR, NPL ratio, ROA, ROE, and NPM). Secondary data covering six years (2010 to 2019), excluding the specific merging year, are analyzed.

Findings: The analysis of pre- and post-merger financial performance in the sample commercial banks revealed statistically significant differences in EPS, NWPS, ROA, and NPM. Positive correlations were observed between the pre- and post-merger periods for EPS, NWPS, CD ratio, CAR, NPL ratio, ROA, ROE, and NPM, excluding the P/E ratio. The merger proved beneficial for Nepalese commercial banks, leading to improved profitability in terms of EPS, ROA, and NPM in the post-merger phase. However, factors like CD ratio, CAR, and NPL ratio, regulated by the NRB, showed no significant changes post-merger. Although banks experienced increased P/E ratio and ROE, the impact was deemed insignificant. Notably, CAR had the most significant impact on both pre- and post-merger ROA.

Implication: The results derived from the study are relevant to managers for future merger decisions and can be used for the selection of a suitable partner for future merger activities.

Value: It contributes to a better understanding of the overall merger scenario in Nepalese banking sector, as well as the relationship between certain restrictions and merger.

Keywords: Merger, commercial banks, financial performance, ratio analysis.

Introduction

A merger is a combination of two corporations whereby only one corporation survives and the merged corporation goes out of business. The acquiring company assumes the assets and liabilities of the merged company (Gaughan, 2007). A merger is the complete absorption of one firm by another in which the acquiring firm retains its name and identity while the acquired firm ceases to exist as a separate business entity (Ross, Westerfield, & Jordan, 2003). Such mergers have a significant impact on the financial performance of businesses. Mergers between highly overlapping businesses showed significant improvements in asset productivity, leading to higher operating cash flow returns (Healy, Palepu, & Ruback, 1992). When inefficient firms are acquired and reorganized, significant productivity gains occur, and post-merger gains appear to have increased significantly in the post-deregulation period (Haynes & Thompson, 1999). The overall financial performance of the business increased after the merger (Singh & Gupta, 2015). The consolidation of two firms' resources improved the financial performance of the acquiring firms during the post-merger period and supported the synergy hypothesis (Gupta, Raman, & Tripathy, 2021).

In the present globalized world, mergers have emerged as one of the most profitable long-term strategies of corporate restructuring and strengthening. Merger activities are found in all sectors around the world, including the banking sector. Over the past few decades, changes in the structural and regulatory environments coupled with technological development have prompted banks across the world to merge for efficiency and viability. Globalization, deregulation, and liberalization have challenged banks to expand into new markets so that the merger process assists in gaining new opportunities (Badík, 2007). Likewise, synergy, cost reduction, higher efficiency, economies of scale, a wider customer base and market coverage, new products, and specialization have further encouraged bank mergers (Sarika & Vasantha, 2018).

Merger seems to be getting popular among Nepalese bank and financial institutions (BFIs) after the introduction of the Merger Bylaws 2011 in May 2011 and the capital enhancement policy of Nepal Rastra Bank (NRB) in 2015 (Sharma, 2021). The Merger Bylaws 2011 were issued to strengthen financial sector stability and gradually reduce the number of BFIs to be supervised by the NRB. Then, the Acquisition Bylaws 2013 were brought into action to facilitate the work relating to the acquisition of Nepalese BFIs. Before the implementation of the merger policy, nine BFIs were involved in the merger and acquisition (M&A) process and became four BFIs, while in 2013, 27 BFIs merged to form 11 BFIs (Nepal Rastra Bank, 2017).

In 2015, through Monetary Policy 2015/16, the NRB increased the paid-up capital ceiling for commercial banks from Rs. 2 billion to Rs. 8 billion, for national-level development banks from Rs. 640 million to Rs. 2.5 billion, and for national-level finance companies from Rs. 300 million to Rs. 800 million. The increase in minimum paid-up capital was mandatory in order to promote financial stability and mobilize the resources needed for long-term development financing (Nepal Rastra Bank, 2016). 28 BFIs merged and acquired to form 11 BFIs in 2016, while 2017 recorded the highest number of M&As in Nepal, which resulted in 63 BFIs merging to form 24 BFIs (Nepal Rastra Bank, 2017). Furthermore, the Merger and Acquisition Bylaws 2016 came into effect after the Merger Bylaws 2011 and the Acquisition Bylaws 2013. Following the merger policy and mandatory paid-up capital requirements, the Nepalese banking system is being consolidated through mergers and acquisitions. As of mid-July 2022, 245 BFIs had merged and acquired, and the licenses of 178 BFIs had been revoked, resulting in the formation of 67 BFIs (NRB, 2022). Even though the consolidation of the BFIs has been one of the major agenda items of the NRB, the consolidation of the commercial banks through M&A has been highly encouraged, coining

the term "big merger." As of mid-July 2022, there are 26 commercial banks in Nepal, compared to the highest of 32 in 2012 (NRB, 2022). It is therefore necessary to understand the impact of mergers on the financial performance of commercial banks, as the failure of a single large bank can hamper the overall national economy and even lead to an economic crisis. Such insights ensure that M&A undertaken by commercial banks will have a significant and positive impact on their financial performance, leading to a few stronger and more resilient banks in the system. Hence, the study aims to analyze the pre- and post-merger financial performance of the selected Nepalese commercial banks.

By mid-July 2022, 11 commercial banks had merged to form five commercial banks. Due to a lack of investible funds in the financial sector, some bankers and experts advocated for banks with large financial bases to ensure financial sector stability and overcome future challenges (Sharma, 2021). Commercial banks remain the key players in the financial system, occupying 66.31% of the system's total assets (NRB, 2021). The number of commercial banks in Nepal is higher compared to many peer countries defined in terms of the size of the economy, per capita GDP, and population. In addition, the current number of commercial banks in Nepal is more than optimal and should be reduced for better efficiency of the banking system (NRB, 2022). On that account, it is essential to conduct financial analysis on the merger of commercial banks. Most studies focused on the financial performance of commercial banks' mergers with development banks or finance companies (Adhikari, 2017; Goet, 2020) and evaluated the effect of M&A on shareholder wealth (Sharma, 2018; Bhatta, 2018). The consolidation of commercial banks through M&A is still ongoing in Nepal and limited studies have been done on this subject matter. Thus, the need to examine the pre- and post-merger financial performance of commercial banks in Nepal arises.

The merger between NIC Bank and Bank of Asia Nepal in 2013 was the first merger between commercial banks in Nepal, and as of mid-July 2021, there have only been five mergers between commercial banks in Nepal. Most studies that concern the Nepalese banking merger studied the merger between different classes of banks, i.e., the merger between commercial banks and development banks or the merger between commercial banks and finance companies (Pathak, 2016; Dwa & Shah, 2017; Shrestha et al., 2017; Sharma, 2017; Bipin et al., 2018; Acharya, 2020). As a result, this paper examines the financial performance of four cases of merger between Nepalese commercial banks, in line with the NRB's push for merger between Class A banks.

Methodology

A descriptive research design is used to collect detailed information regarding the merger scenario and obtain data in regards to the financial performance of commercial banks in Nepal. The population for this paper consists of the commercial banks that have undergone mergers and acquisitions with another commercial bank in Nepal. Altogether, 11 commercial banks have merged in Nepal as of mid-July 2022, and they went on to form five commercial banks through six merger deals. Thus, the six merger cases qualified as the target population for the study. Out of them, four cases that completed the merger before mid-July 2018 are selected as the samples. NIC Bank and Bank of Asia Nepal merged to form NIC Asia Bank on June 30, 2013, and Global IME Bank merged with Commerz and Trust Bank Nepal on April 9, 2014, while the mergers of Prabhu Bank with Grand Bank Nepal and Bank of Kathmandu with Lumbini Bank took place on February 12, 2016, and July 14, 2016 respectively. Hence, these four cases were taken as samples for the study.

Data for six years (three years before the merger and three years after the merger) are extracted for data analysis. The data collection period ranges from 2010 to 2019. The particular merging year is omitted

from the analysis. This paper employs descriptive statistics, ratio analysis, a paired sample t-test, Pearson correlation, regression analysis, and the VIF (Variance Inflation Factor) test for analyzing the financial data.

In order to find out the most influential financial ratio affecting profitability before and after mergers, multiple regression analysis is employed. Additionally, correlation analysis and the VIF test are used to identify multicollinearity. From the correlation analysis and VIF test, EPS, NWPS, P/E ratio, CD ratio and CAR are taken as independent variables for the study. Meanwhile, ROA, ROE and NPM are the selected dependent variables as measures of profitability. Hence, multiple regression analysis enables one to determine the impact of multiple independent variables on a dependent variable. The pre- and post-merger lines of regression for the study are defined as:

$$ROA_{BM} = \beta_0 + \beta_1 \times EPS_{BM} + \beta_2 \times NWPS_{BM} + \beta_3 \times P/E_{BM} + \beta_4 \times CD_{BM} + \beta_5 \times CAR_{BM} + \varepsilon$$

$$ROA_{AM} = \beta_0 + \beta_1 \times EPS_{AM} + \beta_2 \times NWPS_{AM} + \beta_3 \times P/E_{AM} + \beta_4 \times CD_{AM} + \beta_5 \times CAR_{AM} + \varepsilon$$

$$ROE_{BM} = \beta_0 + \beta_1 \times EPS_{BM} + \beta_2 \times NWPS_{BM} + \beta_3 \times P/E_{BM} + \beta_4 \times CD_{BM} + \beta_5 \times CAR_{BM} + \varepsilon$$

$$ROE_{AM} = \beta_0 + \beta_1 \times EPS_{AM} + \beta_2 \times NWPS_{AM} + \beta_3 \times P/E_{AM} + \beta_4 \times CD_{AM} + \beta_5 \times CAR_{AM} + \varepsilon$$

$$NPM_{BM} = \beta_0 + \beta_1 \times EPS_{BM} + \beta_2 \times NWPS_{BM} + \beta_3 \times P/E_{BM} + \beta_4 \times CD_{BM} + \beta_5 \times CAR_{BM} + \varepsilon$$

$$NPM_{AM} = \beta_0 + \beta_1 \times EPS_{AM} + \beta_2 \times NWPS_{AM} + \beta_3 \times P/E_{AM} + \beta_4 \times CD_{AM} + \beta_5 \times CAR_{AM} + \varepsilon$$

Results And Discussion

Pre- and post-merger financial performance analysis

Table 1: *Descriptive statistics of pre-merger financial ratios of sample banks*

Variables	Indicator	N	Mean	Std. deviation	Maximum	Minimum
EPS	Rs.	24	7.69	23.35	37.80	-61.42
NWPS	Rs.	24	116.82	41.03	196.19	25.00
P/E ratio	%	24	17.38	18.90	76.81	-13.58
CD ratio	%	24	83.08	9.47	112.11	69.23
CAR	%	24	13.49	4.88	27.28	5.56
NPL ratio	%	24	5.64	10.27	43.83	0.00
ROA	%	24	0.35	2.07	2.24	-5.52
ROE	%	24	-2.65	37.46	27.57	-128.67
NPM	%	24	3.17	68.51	53.79	-243.10

Table 1 shows the highest deviation in NPM and the lowest deviation in ROA during the pre-merger period. The NPM of the sample commercial banks is widely dispersed from the mean, indicating a large difference between the minimum and maximum values. The losses incurred by Prabhu Bank and Grand Bank Nepal are the cause of the highest deviation in NPM. Both the lowest CAR and the highest NPL ratio are concerned with the weak financial performance of Grand Bank Nepal in 2015, indicating a financial crisis.

Table 2: *Descriptive statistics of post-merger financial ratios of sample banks*

Variables	Indicator	N	Mean	Std. deviation	Maximum	Minimum
EPS	Rs.	12	22.65	6.17	35.98	12.58
NWPS	Rs.	12	164.27	24.13	211.00	139.91
P/E ratio	%	12	20.26	6.97	30.74	10.84
CD ratio	%	12	83.68	4.29	91.70	76.19
CAR	%	12	12.68	1.24	14.88	11.16
NPL ratio	%	12	2.42	1.17	4.55	0.76
ROA	%	12	1.46	0.29	1.88	0.86
ROE	%	12	14.06	3.20	19.29	7.69
NPM	%	12	36.50	6.14	47.78	25.74

In the post-merger phase, NWPS has the highest deviation and ROA has the lowest deviation among the sample commercial banks, as demonstrated in Table 2. NWPS is widely dispersed from the mean, while ROA is closer to the mean. All the sample banks have maintained a minimum CAR of 10%. Meanwhile, due to the strict NRB regulations designed to keep banks from going bankrupt, the maximum NPL ratio has decreased dramatically since the merger.

Table 3: *Comparative pre- and post-merger performance analysis of NIC Asia Bank*

Variables	Pre-merger			% Change	Post-merger
	NIC Bank	Bank of Asia Nepal	Combined		NIC Asia
EPS	33.99	10.99	22.49	33.20	29.96
NWPS	148.06	107.41	127.74	51.19	193.12
P/E ratio	15.89	21.40	18.65	41.69	26.42
CD ratio	80.89	84.45	82.67	0.63	83.19
CAR	12.27	14.73	13.50	-3.76	12.99
NPL ratio	0.68	1.87	1.28	34.73	1.72
ROA	1.99	1.17	1.58	-14.14	1.36
ROE	23.10	10.26	16.68	-12.30	14.63
NPM	42.66	28.54	35.60	3.33	36.79

The average financial performance of NIC Bank is comparatively better than that of Bank of Asia Nepal, as presented in Table 3. When the combined pre-merger performance is compared to the post-merger performance, EPS, NWPS, P/E ratio, CD ratio, and NPM have all improved. NWPS has the highest change, while CD ratio has the lowest change. Even though CAR has decreased, it is within the restriction set by NRB.

Table 4: *Comparative pre- and post-merger performance analysis of Global IME Bank*

Variables	Pre-merger			% Change	Post-merger
	Global IME Bank	Commerz and Trust Bank Nepal	Combined		Global IME Bank
EPS	14.00	1.51	7.76	147.07	19.16
NWPS	121.20	102.69	111.94	27.23	142.42
P/E ratio	18.39	25.60	22.00	13.00	24.86
CD ratio	80.37	93.34	86.85	-6.26	81.41
CAR	11.30	22.51	16.90	-28.20	12.14
NPL ratio	2.14	0.44	1.29	47.42	1.91
ROA	1.10	0.34	0.72	116.63	1.56
ROE	12.51	1.47	6.99	122.79	15.58
NPM	26.52	10.38	1.45	94.54	35.90

Table 4 reveals that the average financial position of Global IME Bank is better than that of Commerz and Trust Bank Nepal. There is improvement in EPS, NWPS, P/E ratio, ROA, ROE and NPM as a comparison between combined pre-merger and post-merger performance. The decline of CAR does not violate the minimum requirement of 10%. EPS has the highest change, and the CD ratio has the lowest change.

Table 5: *Comparative pre- and post-merger performance analysis of Prabhu Bank*

Variables	Pre-merger			% Change	Post-merger
	Prabhu Bank	Grand Bank	Combined		Prabhu Bank
EPS	-7.91	-26.04	-16.98	-219.34	20.26
NWPS	81.01	60.33	70.67	114.39	151.52
P/E ratio	-2.01	5.56	1.78	697.37	14.15
CD ratio	73.14	84.19	78.67	3.89	81.72
CAR	9.23	8.31	8.77	29.96	11.40
NPL ratio	14.74	22.48	18.61	-77.95	4.10
ROA	-0.89	-3.25	-2.07	-162.91	1.30
ROE	-18.41	-71.01	-44.71	-129.40	13.14
NPM	-15.21	-126.97	-71.09	-149.40	35.12

Even though the average financial performance of both Prabhu Bank and Grand Bank is weak, the performance of Prabhu Bank is better in comparison, as exhibited by Table 5. When the combined pre-merger performance is compared to the post-merger performance, EPS, NWPS, P/E ratio, CD ratio, CAR, NPL ratio, ROA, ROE and NPM have improved. The P/E ratio has changed the most, while the CD ratio has changed the least.

Table 6: *Comparative pre- and post-merger performance analysis of Bank of Kathmandu*

Variables	Pre-merger			% Change	Post-merger
	Bank of Kathmandu	Lumbini Bank	Combined		Bank of Kathmandu
EPS	21.89	13.07	17.48	21.43	21.23
NWPS	187.59	126.25	156.92	8.34	170.01
P/E ratio	31.28	22.90	27.09	-42.43	15.60
CD ratio	84.14	84.13	84.14	5.05	88.39
CAR	12.38	17.16	14.77	-3.90	14.20
NPL ratio	1.98	0.82	1.40	40.10	1.96
ROA	1.10	1.26	1.18	38.81	1.63
ROE	11.51	9.39	10.45	23.41	12.90
NPM	23.70	35.77	29.73	28.51	38.21

Table 6 shows that the Bank of Kathmandu is superior to Lumbini Bank in terms of average financial performance. EPS, NWPS, CD ratio, ROA, ROE, and NPM have improved when compared to pre-merger and post-merger performance. The fall in CAR meets the NRB's requirement. The P/E ratio has the highest change, while the CAR has the lowest, even if the change is negative.

Table 7: *Paired sample t-test of NIC Asia Bank*

Variables	N	Pre-merger	Post-merger	t-value	Sig. (2-tailed)	Remarks
EPS	3	22.49	29.96	-2.391	0.139	Insignificant increase
NWPS	3	127.74	193.12	-3.447	0.075	Insignificant increase
P/E ratio	3	18.65	26.42	-24.666	0.002	Significant increase
CD ratio	3	82.67	83.19	-0.177	0.876	Insignificant increase
CAR	3	13.50	12.99	0.575	0.623	Insignificant decrease
NPL ratio	3	1.28	1.72	-0.426	0.712	Insignificant increase
ROA	3	1.58	1.36	1.138	0.373	Insignificant decrease
ROE	3	16.69	14.63	1.208	0.351	Insignificant decrease
NPM	3	35.60	36.79	-2.550	0.823	Insignificant increase

Six out of nine variables of NIC Asia Bank have increased in the post-merger phase and the remaining three variables has decreased as exhibited by Table 7. However, the increase in P/E ratio after the merger is the only one variable with statistically significance and all the other changes are not statistically significant.

Table 8: *Paired sample t-test of Global IME Bank*

Variables	N	Pre-merger	Post-merger	t-value	Sig. (2-tailed)	Remarks
EPS	3	7.76	19.16	-6.176	0.025	Significant increase
NWPS	3	111.94	142.42	-6.127	0.026	Significant increase
P/E ratio	3	22.00	24.86	-0.152	0.893	Insignificant increase
CD ratio	3	86.86	81.41	2.585	0.123	Insignificant decrease
CAR	3	19.23	12.14	4.332	0.049	Significant decrease
NPL ratio	3	1.29	1.91	-1.504	0.271	Insignificant increase
ROA	3	0.72	1.56	-4.527	0.045	Significant increase
ROE	3	6.99	15.58	-6.011	0.027	Significant increase
NPM	3	18.45	35.90	-3.800	0.063	Insignificant increase

Table 8 shows seven variables of Global IME Bank that have increased after the merger. The increase in EPS, NWPS, ROA and ROE are statistically significant, while there is a significant decrease in CAR during the post-merger period.

Table 9: *Paired sample t-test of Prabhu Bank*

Variables	N	Pre-merger	Post-merger	t-value	Sig. (2-tailed)	Remarks
EPS	3	-16.98	20.26	-3.525	0.072	Insignificant increase
NWPS	3	70.68	151.52	-5.374	0.033	Significant increase
P/E ratio	3	1.77	14.15	-1.889	0.200	Insignificant increase
CD ratio	3	78.67	81.72	-0.695	0.559	Insignificant increase
CAR	3	8.78	11.40	-2.199	0.159	Insignificant increase
NPL ratio	3	18.61	4.10	2.595	0.122	Insignificant decrease
ROA	3	-2.07	1.30	-6.558	0.022	Significant increase
ROE	3	-44.72	13.14	-4.190	0.053	Insignificant increase
NPM	3	-71.09	35.12	-3.664	0.067	Insignificant increase

Table 9 reveals a rise in eight variables for Prabhu Bank in the post-merger phase. However, increases in only two variables NWPS and ROA are statistically significant, and all the other changes are not statistically significant.

Table 10: *Paired sample t-test of Bank of Kathmandu*

Variables	N	Pre-merger	Post-merger	t-value	Sig. (2-tailed)	Remarks
EPS	3	17.48	21.23	-1.237	0.342	Insignificant increase
NWPS	3	156.92	170.01	-1.924	0.194	Insignificant increase
P/E ratio	3	27.09	15.60	1.459	0.282	Insignificant decrease
CD ratio	3	84.14	88.39	-2.736	0.112	Insignificant increase
CAR	3	14.78	14.20	0.428	0.710	Insignificant decrease
NPL ratio	3	1.40	1.96	-0.722	0.545	Insignificant increase
ROA	3	1.18	1.63	-2.164	0.163	Insignificant increase
ROE	3	10.45	12.90	-5.349	0.033	Significant increase
NPM	3	29.73	38.21	-7.565	0.017	Significant increase

Although Bank of Kathmandu has increased in seven variables after the merger, as demonstrated by Table 10, there is statistical significance only in ROE and NPM. The remaining variables do not have a statistically significant impact.

Table 11: *Paired sample t-test of sample commercial banks*

Variables	N	Pre-merger	Post-merger	t-value	Sig. (2-tailed)	Remarks
EPS	12	7.69	22.65	-3.205	0.008	Significant increase
NWPS	12	116.82	164.27	-4.845	0.001	Significant increase
P/E ratio	12	17.38	20.26	-0.543	0.598	Insignificant increase
CD ratio	12	83.09	83.68	-0.352	0.732	Insignificant increase
CAR	12	13.49	12.68	0.880	0.398	Insignificant decrease
NPL ratio	12	5.65	2.42	1.392	0.191	Insignificant decrease
ROA	12	0.35	1.46	-2.575	0.026	Significant increase
ROE	12	-2.65	14.06	-2.130	0.057	Insignificant increase
NPM	12	3.17	36.51	-2.333	0.040	Significant increase

Table 11 shows that the sample commercial banks experienced increases in seven variables and decreases in two variables following the merger. Out of the seven variables, the increase in EPS, NWPS, ROA and NPM is found to be statistically significant. The decrease in the other two variables in the post-merger phase is not statistically significant.

Table 12: *Result of hypothesis testing*

Hypothesis	Null hypothesis	Sig. (2-tailed)	Decision	Remarks
H_{01}	$EPS_{BM} = EPS_{AM}$	0.008 < 0.05	H_{01} is rejected.	There is significant difference in EPS between pre--merger of selected commercial banks.
H_{02}	$NWPS_{BM} = NWPS_{AM}$	0.001 < 0.05	H_{02} is rejected.	There is significant difference in NWPS between pre--merger of selected commercial banks.
H_{03}	$P/E_{BM} = P/E_{AM}$	0.598 > 0.05	H_{03} is failed to reject.	There is no significant difference in P/E ratio between pre- and post-merger of selected commercial banks.
H_{04}	$CD_{BM} = CD_{AM}$	0.732 > 0.05	H_{04} is failed to reject.	There is no significant difference in CD ratio between pre- and post-merger of selected commercial banks.
H_{05}	$CAR_{BM} = CAR_{AM}$	0.398 > 0.05	H_{05} is failed to reject.	There is no significant difference in CAR between pre--merger of selected commercial banks.
H_{06}	$NPL_{BM} = NPL_{AM}$	0.191 > 0.05	H_{06} is failed to reject.	There is no significant difference in NPL ratio between pre- and post-merger of selected commercial banks.
H_{07}	$ROA_{BM} = ROA_{AM}$	0.026 < 0.05	H_{07} is rejected.	There is significant difference in ROA between pre--merger of selected commercial banks.
H_{08}	$ROE_{BM} = ROE_{AM}$	0.057 > 0.05	H_{08} is failed to reject.	There is no significant difference in ROE between pre--merger of selected commercial banks.
H_{09}	$NPM_{BM} = NPM_{AM}$	0.040 < 0.05	H_{09} is rejected.	There is significant difference in NPM between pre--merger of selected commercial banks.

At the 5% level of significance, four null hypotheses out of nine are rejected, as demonstrated in Table 12. There is a significant difference in EPS, NWPS, ROA and NPM between selected Nepalese commercial banks pre- and post-merger. Since EPS, ROA and NPM are major indicators of a bank's profitability, they reveal an improvement in the profitability of selected commercial banks after a merger. Meanwhile, the increase in the NWPS shows better financial health for selected commercial banks in the post-merger phase.

Table 13: *Pearson correlation analysis between pre- and post-merger financial ratios*

	Variables		Post-merger								
			EPS	NWPS	P/E ratio	CD ratio	CAR	NPL ratio	ROA	ROE	NPM
Pre-merger	EPS	Correlation	0.520								
		Significance	0.083								
		Correlation		0.350							
		Significance		0.265							
	P/E ratio	Correlation			-0.140						
		Significance			0.665						
	CD ratio	Correlation				0.431					
		Significance				0.162					
	CAR	Correlation					0.358				
		Significance					0.254				
	ratio	Correlation						0.684*			
		Significance						0.014			
	ROA	Correlation							0.434		
		Significance							0.159		
	ROE	Correlation								0.451	
		Significance								0.141	
		Correlation									0.447
		Significance									0.145

*Note: *Correlation is significant at the 0.05 level (2-tailed).*

Out of the nine variables, eight have positive correlations between the pre- and post-merger periods, as indicated by Table 13, and only the P/E ratio has a negative correlation. Among the positively correlated financial ratios, the NPL ratio is statistically significant at the level of 5%. It reveals an increase or decrease in the pre-merger NPL ratio leads to an increase or decrease in the post-merger NPL ratio and vice versa. Thus, there is a significant positive relationship between the pre- and post-merger NPL ratios of selected Nepalese commercial banks.

Table 14: *Correlation analysis between independent variables*

Independent variables	EPS	NWPS	P/E ratio	CD ratio	CAR	NPL ratio
EPS	1					
NWPS	0.796	1				
P/E ratio	0.471	0.479	1			
CD ratio	0.460	0.262	0.120	1		
CAR	0.398	0.351	0.336	0.505	1	
NPL ratio	-0.670	-0.658	-0.590	-0.224	-0.720	1

Table 14 shows the correlation between the independent variables in order to find multicollinearity for multiple regression analysis. The study regards correlations of 0.6 or higher and -0.6 or higher than -0.6 as strong correlations that create problematic collinearity. Out of the six independent variables, EPS, NWPS, and NPL ratio have high multicollinearity. Furthermore, a VIF test is carried out to determine the degree of collinearity between the independent variables.

Table 15: *VIF test of independent variables*

Independent variables	Collinearity statistics	
	Tolerance	VIF
EPS	0.234	4.277
NWPS	0.324	3.083
P/E ratio	0.625	1.600
CD ratio	0.448	2.234
CAR	0.267	3.744
NPL ratio	0.176	5.691

Generally, a VIF score higher than 10 or a tolerance score lower than 0.10 indicates significant multicollinearity. The study regards a VIF score higher than 5 or a tolerance score lower than 0.20 as evidence of multicollinearity between the independent variables. Table 15 reveals that the NPL ratio has a VIF score above 5 and a tolerance score below 0.20. Hence, Table 14 and Table 15 exhibit the NPL ratio as a highly collinear variable. Thus, the NPL ratio is removed, and the remaining five variables (EPS, NWPS, P/E ratio, CD ratio, and CAR) are taken as independent variables for multiple regression analysis.

Table 16: *VIF test of selected independent variables*

Independent variables	Collinearity statistics	
	Tolerance	VIF
EPS	0.287	3.485
NWPS	0.337	2.969
P/E ratio	0.702	1.424
CD ratio	0.607	1.647
CAR	0.656	1.525

The VIF score and tolerance score of the selected independent variables are lower than 5 and higher than 0.20 respectively as shown by Table 16. Hence, it reveals that there is no multicollinearity between the chosen independent variables for multiple regression analysis.

Table 17: *Multiple regression analysis of pre- and post-merger ROA*

Period	Variables	R square	Adjusted R square	Unstandardized coefficients		Standardized coefficients	t-value	Sig.
				B	Std. error	Beta		
Pre-merger	(Constant)	0.986	0.975	1.912	1.884		1.015	0.349
	EPS			0.077	0.010	0.890	7.676	0.0003
	NWPS			-0.003	0.006	-0.060	-0.508	0.630
	P/E ratio			0.007	0.006	0.066	1.019	0.348
	CD ratio			-0.049	0.021	-0.190	-2.358	0.056
	CAR			0.1572	0.034	0.336	4.684	0.003
Post-merger	(Constant)	0.733	0.511	0.851	1.338		0.636	0.549
	EPS			0.043	0.013	0.933	3.450	0.014
	NWPS			-0.012	0.004	-1.013	-3.250	0.017
	P/E ratio			-0.010	0.009	-0.239	-1.053	0.333
	CD ratio			-0.002	0.019	-0.033	-0.114	0.913
	CAR			0.1574	0.073	0.681	2.152	0.075

Table 17 exhibits that 97.5% of the variation in pre-merger ROA is explained by the selected independent variables. If there is a Rs. 1 increase, a 1% increase, and then it increases significantly by 7.7%, decreases by

0.3%, increases by 0.7%, decreases by 4.9%, and increases significantly by 15.72%, The pre-merger line of multiple regression is expressed as:

$$ROA_{BM} = 1.912 + 0.077\times EPS_{BM} - 0.003\times NWPS_{BM} + 0.007\times PE_{BM} - 0.049\times CD_{BM} + 0.1572\times CAR_{BM} + \varepsilon$$

Furthermore, Table 17 reveals that 51.1% of the variation in post-merger ROA is explained by the selected independent variables. If there is Rs.1 change in, 1% change in, and, there is a significant positive change of 4.3%, a significant negative change of 1.2%, a negative change of 1%, a negative change of 0.2%, and a positive change of 15.74%, respectively. The required line of regression after the merger is defined as:

$$ROA_{AM} = 0.851 + 0.043\times EPS_{AM} - 0.012\times NWPS_{AM} - 0.010\times PE_{AM} - 0.002\times CD_{AM} + 0.1574\times CAR_{AM} + \varepsilon$$

Table: *Multiple regression analysis of pre and post-merger ROE*

Period	Variables	R square	Adjusted R square	Unstandardized coefficients		Standardized coefficients	t-value	Sig.
				B	Std. error	Beta		
Pre-merger	(Constant)	0.966	0.937	14.254	53.285		0.268	0.798
	EPS			1.271	0.283	0.826	4.488	0.004
	NWPS			-0.102	0.157	-0.121	-0.647	0.541
	P/E ratio			0.288	0.183	0.162	1.579	0.165
	CD ratio			-0.742	0.585	-0.162	-1.267	0.252
	CAR			3.102	0.949	0.372	3.269	0.017
Post-	(Constant)	0.848	0.722	27.463	11.238		2.444	0.050
	EPS			0.534	0.106	1.029	5.049	0.002
	NWPS			-0.106	0.031	-0.799	-3.400	0.014
	P/E ratio			0.015	0.079	0.032	0.188	0.857
	CD ratio			-0.179	0.163	-0.240	-1.100	0.314
	CAR			0.521	0.614	0.202	0.848	0.429

Table 18 shows that 93.7% variation in pre-merger ROE is explained by the selected independent variables. In the case if there is Rs.1 increase in EPS_{BM}, $NWPS_{BM}$, 1% increase in PE_{BM}, CD_{BM}, and CAR_{BM}, significantly increases by 127.1%, decreases by 10.2%, increases by 28.8%, decreases by 7.42% and significantly increases by 310.2% respectively. The required line of multiple regression is expressed as:

$$ROE_{BM} = 14.254 + 1.271\times EPS_{BM} - 0.102\times NWPS_{BM} + 0.288\times PE_{BM} - 0.742\times CD_{BM} + 3.102\times CAR_{BM} + \varepsilon$$

Similarly, 72.2% variation in post-merger ROE is explained by the selected independent variables as exhibited by Table 18. If EPS_{AM}, $NWPS_{AM}$, decreases by Rs.1, PE_{AM}, CD_{AM}, and CAR_{AM} decreases by 1% then, ROE_{AM}, significantly decreases by 53.4%, significantly increases by 10.6%, decreases by 1.5%, increases by 17.9% and decreases by 52.1% respectively. The post-merger line of regression is expressed as:

$$ROE_{AM} = 27.463 + 0.534\times EPS_{AM} - 0.106\times NWPS_{AM} + 0.015\times PE_{AM} - 0.179\times CD_{AM} + 0.521\times CAR_{AM} + \varepsilon$$

Table 19: *Multiple regression analysis of pre and post-merger NPM*

Period	Variables	R square	Adjusted R square	Unstandardized coefficients		Standardized coefficients	t-value	Sig.
				B	Std. error	Beta		
Pre-merger	(Constant)	0.935	0.881	-0.801	133.324		-0.006	0.995
	EPS			2.012	0.708	0.716	2.840	0.030
	NWPS			-0.005	0.393	-0.003	-0.014	0.990
	P/E ratio			0.466	0.457	0.144	1.020	0.347
	CD ratio			-1.085	1.465	-0.130	-0.741	0.487
	CAR			5.276	2.374	0.347	2.222	0.068
Post-	(Constant)	0.838	0.703	47.071	22.285		2.112	0.079
	EPS			1.098	0.210	1.103	5.232	0.002
	NWPS			-0.241	0.062	-0.947	-3.898	0.008
	P/E ratio			-0.237	0.156	-0.270	-1.521	0.179
	CD ratio			-0.174	0.323	-0.122	-0.539	0.609
	CAR			1.856	1.218	0.376	1.524	0.178

Table 19 reveals that 88.1% variation in post-merger NPM is explained by the selected independent variables. If there is Rs.1 change in EPS_{BM}, 1% change in PE_{BM}, and CAR_{BM} then, NPM_{BM} has significant positive change by 201.2%, 46.6%, and 527.6% respectively while Rs.1 change in $NWPS_{BM}$, 1% change in CD_{BM} leads to negative change in NPM_{BM} by 0.5%, 108.5% respectively. The line of multiple regression before merger is defined as:

$$NPM_{BM} = - 0.801 + 2.012 \times EPS_{BM} - 0.005 \times NWPS_{BM} + 0.466 \times PE_{BM} - 1.085 \times CD_{BM} + 5.276 \times CAR_{BM} + \varepsilon$$

Likewise, Table 19 also shows that 70.3% variation in post-merger NPM is explained by the selected independent variables. If EPS_{AM}, $NWPS_{AM}$ increases by Rs.1, PE_{AM}, CD_{AM} and CAR_{AM} increases by 1% then, NPM_{AM} significantly increases by 109.8%, significantly decreases by 24.1%, decreases by 23.7%, decreases by 17.4% and increases by 185.6% respectively. The required line of regression after merger is defined as:

$$NPM_{AM} = 47.071 + 1.098 \times EPS_{AM} - 0.241 \times NWPS_{AM} - 0.237 \times PE_{AM} - 0.174 \times CD_{AM} + 1.856 \times CAR_{AM} + \varepsilon$$

Discussion

This paper has examined the pre- and post-merger financial performance of four Nepalese commercial bank mergers. The variables EPS, NWPS, P/E ratio, CD ratio, CAR, NPL ratio, ROA, ROE and NPM were undertaken as indicators of financial performance. Following the merger, the study found increases in EPS, NWPS, P/E ratio, CD ratio, ROA, ROE, NPM and decreases in CAR and NPL ratio. But statistically significant differences are found only in four variables: EPS, NWPS, ROA and NPM of selected commercial banks after the merger in Nepal.

The significant difference in EPS after the merger found in this study aligns with the findings of Jallow et al. (2017) and Lien (2022). Despite the fact that both Grand Bank Nepal and Prabhu Bank had suffered significant losses prior to the merger, Prabhu Bank was able to turn a profit in the post-merger period. It can be attributed to the significant difference in EPS of the sample Nepalese commercial banks after merger, but the findings differ from those of Fatima and Shehzad (2014) and Pathak (2016), who found no

differences in EPS analysis before and after merger.Meanwhile, this study established an increase in NWPS after merger, which does not match the result of Acharya (2020), as there was a decrease in NWPS during the post-merger period. The significant difference in NWPS of Nepalese commercial banks after mergers is due to the increase in equity capital during the post-merger phase. The increase in P/E ratio is consistent with the results of Raju et al. (2015) and Sharma (2018), but there was no significant difference.

This study also found that mergers have no significant impact on CD ratios, but Bipin et al. (2018) found no such similarity. In order to prevent liquidity crises and credit crunches, the NRB heavily monitors the CD ratio of commercial banks in Nepal, which is the reason for the insignificant difference. Similarly, the findings of the study in terms of the CAR and NPL ratios revealed no significant difference after the merger, which matches those of Bipin et al. (2018). Additionally, the post-merger decrease in NPL ratio is similar to that of Adhikari (2017). The commercial banks must maintain a minimum CAR of 10% as prescribed by the NRB to ensure financial resiliency in case of losses from credit risk, market risk, operational risk, etc. Moreover, the NRB also has regulations concerning the NPL ratio to prevent bankruptcy. That is why there is no significant difference in the CAR and NPL ratios of Nepalese commercial banks after the merger. The study further revealed that there is a significant difference in ROA after merger, which is consistent with the findings of Jallow et al. (2017) and Rahman et al. (2022). The selected Nepalese commercial banks observed growth in net profit as well as asset size after the merger. However, Miko (2010), Pathak (2016), and Khan et al. (2017) did not find a significant effect of the merger on ROA. It was established from this study that there is no significant difference in pre- and post-merger ROE, which is in accordance with the results of Nanda (2016), Dwa and Shah (2017), and Dewi and Mustanda (2021), but Fatima and Shehzad (2014) and Bipin et al. (2018) found contradicting evidence. On the other hand, the significant impact of merger on NPM derived from this study is found to be in conflict with the findings of Nanda (2016), Pathak (2016), and Jallow et al. (2017). The increase in NPM after the merger is inconsistent with the significant decrease found by Dwa and Shah (2017). The sample commercial banks recorded a rise in net profit and total operating income after merger by cutting losses and expenses to remain competitive in the market, and it can be attributed to the improvement in NPM.

Conclusion and Implications

The issuance of Merger Bylaws in 2011 and the mandatory paid-up capital requirement in 2015 paved the way for a merger between BFIs in Nepal. Likewise, the positive result from previous mergers, along with the NRB's incentives, prompted more commercial banks to seek out suitable partners within the same class and come to an agreement. As a result, the study focused on determining whether there was a significant difference in the financial performance of Nepalese commercial banks before and after the merger in order to determine the impact of the merger.

Merger has proven beneficial for Nepalese commercial banks' financial consolidation, as profitability in terms of EPS, ROA, and NPM improved significantly in the post-merger phase. It can be attributed to the fact that commercial banks recorded higher earnings while lowering expenses at the same time. The significant difference between NWPS before and after the merger helps to gain shareholder confidence in case of any future mishaps. Banks also recorded increases in equity capital size and the marketability of their shares during the post-merger period, as shown by ROE and P/E ratios, respectively, even though the impact is statistically insignificant.

Furthermore, the study revealed that financial attributes that are controlled by NRB, such as CD ratio, CAR ratio, and NPL ratio, did not have significant changes after the merger. To prevent BFIs from failing, the NRB conducts regular supervision and monitoring. A failure of any BFI, specifically a commercial bank, may result in a nationwide financial crisis. Thus, the NRB makes sure that commercial banks operate within the restrictions set by monetary policy. If any BFIs fail to meet the obligations, the NRB keeps them under

close inspection and orders strict action. Prior to the merger, in 2015, Grand Bank Nepal recorded a high NPL ratio and a low CAR that were against NRB's limitations, which led to its merger with Prabhu Bank in 2016.

Therefore, it can be concluded that the merger of commercial banks as a means of financial consolidation has been effective in Nepal, as EPS, ROA, and NPM increased significantly after the merger. In the initial phase, BFIs had to merge to maintain capital requirements, but currently, banks are willingly seeking out suitable partners by themselves in order to expand their services and meet the industry's competitiveness. However, the success or failure of a merger also depends on the financial position of the merging banks, management competency, public trust, and shareholder confidence, and BFIs should not compromise these factors while selecting the most ideal partner for a merger.

The purpose of this paper is to determine whether there are significant differences in the pre- and post-merger financial performance of Nepalese commercial banks. The results derived from the study are relevant to managers for future merger decisions and can be used for the selection of a suitable partner for future merger activities. It provides insights concerning the impact of mergers on financial ratios specific to commercial banks as well as changes that are to be expected in the post-merger phase. The study also benefits policymakers because it allows them to extract the financial position and strength of commercial banks in the post-merger phase and implement new or modify existing policies accordingly. It contributes to a better understanding of the overall merger scenario in Nepal, as well as the relationship between certain restrictions and merger.

Moreover, the study assists future researchers who are interested in the subject matter of mergers and acquisitions. Merger is still growing in Nepal, and there are limited studies on it, so it is an addition to the existing literature. Since this study only analyzes mergers between commercial banks, further studies can be conducted by including other classes of BFIs, such as trading and manufacturing enterprises. Similarly, future studies can take a larger sample size, a longer sample period, and incorporate other financial ratios and primary data as well. Aside from financial performance, the impact of a merger on HR-related issues can also be observed.

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