



A comparative analysis of the financial performance of commercial banks after mergers and acquisitions using Nepalese data



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ABSTRACT

This article investigates consolidation and restructuring in the banking sector in Nepal that was induced by regulatory intervention in recent years. We compare the financial performance of the overall commercial banking sector and selected commercial banks on an individual basis before and after the mergers and acquisitions (M&A) policy intervention. The research employs an analysis of the financial ratios (profitability, liquidity, leverage, and wealth of shareholders ratios) before and after mergers that took place between 2013 and 2020 on a sample of seven Nepalese commercial banks. Hypotheses are tested using a paired sample *t*-test to measure any significant difference between the pre- and post-merger situations of the acquiring banks' financial metrics. The findings indicate that the overall commercial banking sector significantly improved their liquidity and leverage ratios in the post-merger period. Other measures, such as the profitability and shareholder wealth ratios showed either mixed or insignificant results after the M&A. The results for selected commercial banks on an individual basis were even less conclusive and mixed. While some banks showed improvement in financial ratios, other results were insignificant.

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1. Introduction

The consolidation of banks and financial institutions (BFIs) through mergers and acquisitions (M&A) has been a new trend in Nepal since early 2010s. After the political reform in 1990, the phenomenal growth of BFIs in a short period resulted in financial instability in the BFIs. The central bank of Nepal (Nepal Rastra Bank) described the BFIs' functions, tasks, and responsibilities poorly, causing confusion within the sector. All BFIs in Nepal fulfil similar functions, mainly collecting deposits and distributing out loans due to limited market opportunities and the economy's small size. Furthermore, an increasing number of unregulated savings and co-operatives institutions in the cities and regional areas create unhealthy financial competition directly or indirectly, which causes a financial vulnerability for the BFIs' stability. The lack of balance between the deposit and loan growth rates gradually started to cause liquidity shortages and interest rate fluctuations in the

banking sector, putting pressure on commercial banks' credit-to-deposit (CD) ratios. There had been a tremendous surge in non-performing loans and corporate governance failures in the banking sector before the M&A policy. As a result, the central bank Nepal Rastra Bank (NRB) enacted the 'Mergers Bylaws 2011' to ensure financial stability in BFIs and strengthen the financial sector's operational efficiency by cutting costs, diversifying risks, and strengthening their capital base. Table 1 provides an overview of the growth of different BFIs and their types.

In the monetary policy report 2015/2016 published in July 2015, the NRB directed BFIs to fulfill the minimum new capital requirement by mid-July 2017. After these directives, commercial banks required Nepalese rupees (Rs) 8 billion, up from Rs 2 billion; development banks needed Rs 2.5 billion, up from Rs 0.64 billion; and finance companies required Rs 0.8 billion, up from Rs 0.3 billion. BFIs that failed to meet the new capital requirement would face restrictions on opening new branches and declaring dividends or bonus shares. Following that guidance, the number of development banks and finance companies was successfully reduced through M&A deals among BFIs in accordance with the new capital requirements (see Table 1). However, these deals did not result in a substantial reduction in the number of commercial banks immediately. Nevertheless, according to the NRB Financial Stability

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Table 1
Overview of the growth of BFls.

Types of BFls and Categories	1995 (July)	2000 (July)	2005 (July)	2010 (July)	2012 (July)	2015 (July)	2018 (July)	2019 (July)	2020 (July)	2023 (July)
Commercial Banks (A)	10	13	17	27	32	30	28	28	27	20
Development Banks (B)	3	7	26	79	88	76	33	29	20	17
Finance Companies (C)	21	45	60	79	69	48	25	23	22	17
Microfinance Institutions (D)	4	7	11	18	24	38	65	90	85	64
Infrastructure Development Banks								1	1	1
Total	38	72	114	203	213	192	151	171	155	119

Source: NRB, Banks, and Financial Institutions Regulations Department

Report of 2020/2021, 229 BFls had gone through M&A to form 58 BFls by the middle of July 2021. On the whole, in the 12 years following the implementation of the M&A policy, 12 commercial banks, 71 development banks, and 62 finance companies have merged with other BFls. Table 2 shows that the asset share of commercial banks in BFls increased due to the M&A of development banks and finance companies, while the asset share of development banks and finance companies decreased.

Despite previous studies (Adhikari et al., 2023; Shrestha et al., 2017) pointing out the limitations of M&A on the financial performance of commercial banks, this research fills a gap in the literature. This study compares the financial performance of banks in terms of profitability, liquidity, leverage, and wealth of shareholders ratios, highlighting significant differences between the pre- and post-M&A period. It contributes to the existing literature on the effects of M&A on financial performance in the banking sector, particularly in developing countries. This study's findings provide information useful for investors and potential shareholders by demonstrating that long-term M&A will increase profitability and wealth for shareholders. The results here can help shareholders gain insight into ideal M&A partners well before any negotiations commence. Policymakers can develop and implement M&A plans to ensure that commercial banks participate actively in M&A activities with other commercial banks. We find that the effect of M&A is significant in the banking industry and is of particular relevance in developing country capital markets for the financial system's stability.

2. Literature review

The terms 'mergers' and 'acquisitions' are interrelated and interchangeable (Sherman and Hart, 2006). However, there are some differences between them. In general, the word 'M&A' refers to the consolidation between companies. Mergers make firms stronger and more competitive, bringing skills, talents, and knowledge and establishing their strong presence in the business or corporate world. There are different types of mergers in common practice: horizontal, vertical, and conglomerate (Cartwright and Schoenberg, 2006; Gauchan, 2011; Weston et al., 2010). In simple terms, horizontal mergers are defined as mergers between two similar firms operating in the same industry (Gaughan, 2010). It involves a merger between two banks with similar products or services, technology, and customer bases. Such mergers create synergies between the banks, eliminate competition, and increase

Table 2
Assets share of BFls.

BFls	% Share as of Mid-July							
	2013	2014	2015	2016	2017	2018	2019	2020
Commercial Banks	78.20	78.00	78.73	79.74	83.41	82.76	80.88	83.61
Development Banks	13.00	13.60	13.34	12.81	9.71	9.99	10.67	7.83
Finance Companies	6.60	5.80	4.79	3.78	2.63	2.56	2.47	2.40
Microfinance Institutions	2.20	2.60	3.14	3.68	4.26	4.69	5.99	6.16
Total	100	100	100	100	100	100	100	100

Source: NRB Bank Supervision Report 2019/2020

the bank's market share (Pesendorfer, 2003). Thus, horizontal mergers boost the bank's revenue, eliminate competition, and promote a strong presence in the market through the innovation of new products and services.

Different theories are investigated to explain the main motives of M&A in the banking sector. Such theories include synergy, market and corporate control, and free cash flow. These theories enhance financial performance after M&A (Mantravadi and Reddy, 2008). According to Neary (2007), there are two significant reasons for M&A in business organisations: efficiency gain and strategic rationale. The efficiency gain is achieved when two firms integrate and use their resources jointly. The strategic rationale is achieved through the M&A process, which leads to changes in the structure of the combined entity that positively impact the company's profitability. Seth (1990) suggests that M&As occur in the financial industry due to value-maximising and managerial theories. However, the author posits that no clear evidence exists. Most of the past research in the banking industry produces mixed evidence that M&A creates value for shareholders. Ayadi et al. (2013) suggest that M&A results create shareholder value through market power or efficiency gain. This view contradicts the findings of Kalra et al. (2013) and Liargovas and Repousis (2011), whose results suggest that M&A does not create shareholders' wealth. DeYoung et al. (2009) summarise 150 recent studies on M&A in financial institutions. The findings show that literature prior to the year 2000 suggests that efficiency improved in financial institutions in Europe, the USA, and North America more broadly. However, event study literature showed mixed results about the wealth effect on shareholders. Similarly, post-2000 literature suggests the impact of M&A on bank performance in the U.S. and Europe has produced mixed results on geographic and product diversification and resulted in adverse impacts on depositors, borrowers, and other external stakeholders (DeYoung et al., 2009).

Globally, M&A in the banking industry was most common in Europe and the United States before 2000. M&A in the banking industry in developed economies resulted in synergy, cost savings, risk diversification, efficiency, and profitability in the long run. Synergy is an important factor that determines whether the M&A between the banks is successful in terms of economic benefit and utilisation of resources through innovation of new products and services and increasing the bank's image. All shareholders or investors are interested in the synergy or efficiency created when two banks merge, and their combined efforts perform better in the

market than a single bank (Gaughan, 2010). According to the efficiency theory, when an M&A occurred between two banks, shareholders of both banks achieved financial gains. Their value positively contributed to the wealth of the shareholders of the combined bank (Adegboyega, 2012). According to the synergy theory, three types of synergy effects increase the shareholders' wealth: financial, managerial, and operational synergies (Bradley et al., 1988; Seth et al., 2000). The main source of the operating synergy is to reduce the combined bank's operating costs. Operating synergies are generated through combined efforts from economies of scale, scope, and market power. The economies of scale for firms or merged banks are derived through cost-cutting in product and research development, sales and marketing, administrative costs, and operating expenses by improving operating performance (Mantravadi, 2020; Mantravadi and Reddy, 2008). In addition, merged banks reduce costs by closing redundant branches, and consolidating systems, administrative, processing, and payment systems (Pasiouras et al., 2005). The economic scope is achieved when two merged banks share their broad range of services and products to expand new products through reductions in staffing costs and adopting new technology to give them a competitive edge in the business. The market power generated through newly acquired firms results in a strong presence in the market which increases the revenue through its market share. Therefore, operating synergies are generated by reducing costs and revenue enhancement created from economies of scale, economic scope, and market power from the combined operations of two merged banks (Gaughan, 2010; Hankir et al., 2011; Seth, 1990).

M&A has limited or no effect on the financial performance of banks in emerging countries, according to accounting performance measures used in most studies (Abbas et al., 2014; Kalra et al., 2013; Kemal, 2011; Lai et al., 2015; Shah and Khan, 2017). These studies found that banks' profitability, efficiency, liquidity, and leverage before and after they merged did not change much. However, few ratios have significantly improved as a result of M&A. On the other hand, M&A has had mixed results on financial performance in the banking sector when compared to the pre-merger period, according to other studies (Mantravadi and Reddy, 2008; Muhammad et al., 2019a, 2019b; Rani et al., 2015; Sinha and Gupta, 2011). These authors found that the profitability ratios of merged banks or companies improved compared to the pre-merger period. Similarly, Kumar and Bansal (2008) studied 74 M&A companies in India from 2000 to 2006 using five parameters (liquidity, overall efficiency, operating efficiency, return to equity shareholders, and financing composition). The findings concluded that in half of the M&A cases, the financial performance of companies improved compared to the pre-merger period. As a result, companies were able to generate synergy due to business diversification and cost cutting after the M&A.

Research identifies gaps in the literature regarding M&A in the BFI in developing countries that differ from other developed countries. Several studies (Badreldin and Kalhoefer, 2009; Kalra et al., 2013; Kemal, 2011; Rathinam, 2016; Shah and Khan, 2017; Sufian and Habibullah, 2014; Vallascas and Hagendorff, 2011) have been undertaken in different countries relating to M&A in the banking sectors. However, the BFIs in Nepal operate under a different model from those reported in these studies. No comprehensive research has been undertaken in the context of Nepal. Limited research has focused on the impacts of M&A in the BFIs with the data analysis of a few commercial banks. There has been limited research on the case of a commercial bank's financial performance after the new mandatory capital requirement of BFIs, which forced them to be involved in the ongoing M&A deals with other commercial banks in Nepal.

A review of previous literature from developed and emerging economies on the financial performance of M&A in the banking industries leads to the development of the following hypotheses:

H01. There is no significant difference in the financial ratios of overall commercial banking sector between pre-post-M&A.

H02. There is no significant difference in the financial ratios of commercial banks on an individual basis between pre-post-M&A.

3. Research methodology

The data used in this research study is gathered from the annual reports of various individual banks. In addition, financial data is collected from the NRB BFIs' Supervision Report and Financial Stability Report, both of which are accessible through public domains. The study covers the period from 2013–2014 to 2019–2020. 19 commercial banks out of 27 had either merged or undergone acquisition between 2013 and 2020 (see Appendix A.9). To fulfill the research objectives, 4 of those banks are removed from the sample because they had not been involved in M&A activities during the study period. The remaining 15 commercial banks are further tested under the researcher's following criteria:

- ❖ Mergers between commercial banks¹
- ❖ Mergers between commercial banks and development banks²
- ❖ M&A between commercial banks, development banks, and finance companies³

When examining the 15 banks that satisfied the criteria, the main objective is to cover the larger M&A deals between commercial banks and eliminate minor M&A deals between commercial banks and small and weaker financial institutions. It is also evident that repeated mergers over time make it difficult to call some banks pre-merger or post-merger and that there are limitations in terms of the data available for 8 of those banks. Based on those criteria, out of 15 commercial banks that were through M&A deals (see Appendix A.9), the following 7 banks are selected for the final sample:

1. Bank of Kathmandu Limited (BOKL)
2. Global IME Bank Limited (GBIME)
3. Prabhu Bank Limited (PRVU)
4. Nepal Credit and Commerz Bank Limited (NCCB)
5. NMB Bank Limited (NMB)
6. Nepal Investment Mega Bank Limited (NIB)
7. Kumari Bank Limited (KBL)

After the selection of those banks, the samples are pooled across all seven banks to obtain a total of 42 observations for overall commercial banking sector (6 observations for each bank on an individual basis), 21 of those 42 being in the pre-M&A and 21 in the post-M&A period. The fiscal years 2013–2016 are considered the pre-merger period, and the fiscal years 2017–2020 are the post-merger period. To eliminate M&A costs, the year of M&A deals in the sample banks' financial performances is excluded from the data analysis. To determine the best tools and techniques to include in the methodology mix, we have examined various previous studies examining how M&A affects financial performance. Previous studies (Abbas et al., 2014; Al-Hroot, 2015; Kalra et al., 2013; Kemal, 2011; Kumar, 2009; Lai et al., 2015; Shah and Khan, 2017) used a ratio analysis tool and a paired sample *t*-test to measure the significant differences in financial performance before and after the M&A.

¹ 3 banks met this selection criteria (BOKL, GBIME, and PRVU).

² 1 bank met this selection criteria (NCCB).

³ 11 banks met this selection criteria. Among them 3 banks (NMB, NIB, and KBL) were selected based on the purposive sampling technique. The remaining 8 banks were excluded from the final sample due to the limitations of the data.

This study uses a comparative research design. Comparative analysis is a tool to summarise changes in the selected bank's financial performance in the pre-post-merger period. This research aims to assess the changes in the financial performance of the banks chosen before and after an M&A period through ratio analysis (profitability, liquidity, leverage, and wealth of shareholders parameters; see Table 3). The ratio changes are calculated using the average of 3 years before and after the M&A. The results are shown so that the pre-merger period is deducted from the post-merger period. If the difference shows a positive sign, financial performance improved in the post-merger period. On the other hand, if the difference shows a negative sign, the financial performance deteriorated in the post-merger period.

After the ratio analysis, banks' financial differences are tested using a paired sample *t*-test at a 5% significance level to determine the significant differences between the pre-merger and post-merger periods using the Statistical Package for Social Sciences (SPSS). The paired sample *t*-test is a statistical procedure used to determine whether the mean difference between two observations is zero. Two means represent the financial performances of banks' pre-merger and post-merger periods. The *t*-test compares the actual difference between the two means with the variations in the data. The financial performance of commercial banks is measured twice at two-time points through pre-post observations of the same variables or matched financial ratios. The pairs of variables from each group are purposefully matched, and the groups are not independent. Several researchers have employed short-term pre-post-M&A data (Abbas et al., 2014; Adhikari et al., 2023; Aggarwal & Garg, 2022; Al-Hroot et al., 2015; 2020; Boloupremo and Ogege, 2019; Marques-Ibanez and Altunbas, 2004; Gupta, 2015; Irfan Shakoor et al., 2014; Jallow et al., 2017; Kalra et al., 2013; Kumar, 2009; Lai et al., 2015; Mantravadi and Reddy, 2008; Muhammad et al., 2019a, 2019b; Patel, 2018; Pathak, 2016; Shah and Khan, 2017) and applied a paired *t*-test to measure the significant differences in the pre-post-M&A period. Additionally, Abbas et al. (2014) reported that 25 recent authors' studies of pre-post-M&A data covered a short period of 2006–2012. Marques-Ibanez and Altunbas (2004) suggest that a short period is sufficient, arguing that external economic factors may produce a negative effect in the longer term.

4. Data analysis and discussions

4.1. Comparative ratio-wise comparison of pre-post-M&A performance

Table 4 shows that most banks' ROE ratios deteriorated after the M&A. We found that the ROE of the five banks decreased, while it

improved for the other two banks after the M&A. Among the deteriorated performances of the five banks, only NIB's performance is statistically significant. However, the improved performances of the other two banks are not statistically significant. The poor banks' performances after the M&A are associated with rising operational costs and limited use of shareholders' funds. However, the ROE of overall commercial banks decreased by 14.10% in the post-M&A period, which is not statistically significant. This is also similar to previous findings by Abbas et al. (2014) and Shah and Khan (2017), who found that most banks' ROE decreased in the post-merger period. Similarly, Table 4 shows the mixed results of the ROA ratio after M&A. It is noted that the ROA of the three banks increased, and the ROA of the remaining three banks decreased in the post-merger period. Among the improved performances of the three banks, only the performance of BOKL is statistically significant. However, the negative performances of NCCB, NIB, and KBL after the M&A are not statistically significant. The decreased performances after the M&A indicate that management did not utilise its assets and equity capital to generate more profit. However, the ROA of overall commercial banks increased by 3.48% in the post-merger period, which is not statistically significant. The results are similar to those of Abbas et al. (2014), Mantravadi and Reddy (2008), Patel (2018), Pathak (2016), and Shah and Khan (2017), whose findings conclude that ROA improved after the M&A. Similarly, Table 4 shows mixed results for the NIM ratio after the M&A. In the post-M&A period, we noted that the performance of the three banks improved while the performance of the remaining three deteriorated. Among the increased performances of the three banks, only the performance of BOKL is statistically significant. On the other hand, the decreased performances of NCCB, NIB, and KBL are not statistically significant. The decreased performances of the three banks in the post-merger period suggest that they have not effectively utilised their assets and that their operating costs have increased after the involvement of the M&A process with weaker development banks and finance companies. However, the NIM of overall commercial banks increased by 7.29% in the post-M&A period, which is not statistically significant. This result contradicts the findings of Shah and Khan (2017).

Further, Table 4 shows that the banks' spread ratio deteriorated in the post-merger period. Among them, the declining performances of BOKL, GBIME, and KBL are statistically significant. However, the SR ratio of overall commercial banks decreased by 10.57%, which is statistically significant. This result is similar to the findings of previous studies (Abbas et al., 2014), which reported that the sample banks' SR decreased after the M&A. The decrease in the SR ratio of the sample banks indicates that their interest expenses increased after M&A, which is bad for their profitability and

Table 3
Financial performance variables used in this study.

Parameters:	Variables Names	Description/Measurement
Profitability:	Return on Equity (ROE)	Net profit after tax/Total Equity
	Return on Assets (ROA)	Net profit after tax/Total Assets
	Net Interest Margin (NIM)	Interest earned-interest expense/Total Assets
	Spread Ratio (SR)	Net interest income/Total interest earned
	Interest Expenses to Income Ratio (IEII)	Interest Expense/Interest Income
Liquidity:	Cash & Cash Equivalent to Total Assets (CETA)	Cash & Cash Equivalent/Total Assets
	Investment to Total Assets Ratio (ITA)	Investment/Total Assets
	Total Liabilities to Total Assets Ratio (TLTA)	Total Liabilities/Total Assets
Leverage:	Debt to Equity Ratio (DE)	Total Debt/Total Equity
	Total Deposit to Total Equity Ratio (TDTE)	Total Deposit/Total Equity
	Capital Adequacy Ratio (CAR)	Total Equity/Total Assets
Wealth of Shareholders:	Total Loans to Total Deposit Ratio (TLOTD)	Total Loans/Total Deposit
	Earnings Per Share (EPS)	Net profit after tax/No. of ordinary shares
	Market Price Per Share (MPS)	Closing share price of share traded in the stock market
	Dividends Per Share (DPS)	Total Dividends/No of outstanding Shares

Source: Abbas et al. (2014), Kalra et al. (2013), and Shah and Khan (2017).

Table 4
Comparison of M&A impact on profitability ratios.

Banks	Return on Equity (ROE)				Return on Assets (ROA)				Net Interest Margin (NIM)				Spread Ratio (SR)				Interest Expenses to Interest Income (IEII)			
	Pre	Post	Diff	Sig	Pre	Post	Diff	Sig	Pre	Post	Diff	Sig	Pre	Post	Diff	Sig	Pre	Post	Diff	Sig
BOKL	8.09	11.47	+	0.063	0.74	1.59	+	0.029*	0.81	1.80	+	0.045*	48.42	36.98	-	0.012*	51.58	63.02	+	0.014*
GBIME	14.82	14.16	-	0.825	1.52	1.52	No	0.983	1.70	1.70	No	0.231	51.07	37.55	-	0.026*	48.93	62.45	+	0.026*
PRVU	5.08	9.30	+	0.809	0.78	0.94	+	0.893	0.89	1.05	+	0.900	49.59	37.79	-	0.078	50.41	62.21	+	0.078
NCCB	15.33	12.40	-	0.300	1.59	1.37	-	0.610	1.77	1.57	-	0.660	43.52	33.14	-	0.084	56.48	66.82	+	0.083
NMB	15.34	10.80	-	0.127	1.35	1.42	+	0.842	2.55	2.92	+	0.256	43.61	36.54	-	0.098	56.40	58.59	+	0.501
NIB	20.04	12.21	-	0.015*	2.03	1.70	-	0.280	2.27	1.98	-	0.423	53.62	40.78	-	0.069	46.38	59.22	+	0.069
KBL	13.69	9.04	-	0.282	1.27	1.06	-	0.605	1.41	1.20	-	0.651	38.79	31.74	-	0.042*	61.21	68.26	+	0.042*
Mean Overall	13.20	11.34	-	0.395	1.33	1.37	+	0.791	1.63	1.75	+	0.427	46.95	36.36	-	0.000*	53.06	62.94	+	0.000*

Notes: '+' denotes increase in ratio; '-' denotes decrease in ratio; * significant at 0.05 level (2-tailed).

efficiency. The Nepalese banking sector's SR has decreased because the regulatory body (NRB) has repeatedly told commercial banks how to reconfigure the interest rate spread. Similarly, Table 4 shows that all banks' IEII ratios increased after the M&A. This result indicates that banks' cost efficiency deteriorated in the post-merger period. Among the seven banks, the increased performances of the IEII ratios of BOKL, GBIME, and KBL are statistically significant. However, the IEII ratio of overall commercial banks deteriorated by 8.3% after the M&A, which is statistically significant. These results indicated that banks could not minimise their interest and non-interest expenses in the post-merger period. These findings are similar to the previous findings of Abbas et al. (2014), who found that sample banks of IEII increased after the M&A.

Table 5 shows that all banks' CETA ratios improved after the M&A period. We found that among the increased performance of seven banks, only GBIME is statistically significant. Meanwhile, the CETA ratio of overall commercial banks increased by 81.87% in the post-merger period, which is statistically significant. This result contradicts the previous findings of Abbas et al. (2014) and Shah and Khan (2017), who found that the sample banks' CETA decreased in the post-merger period. However, the results are similar to the findings of Shrestha et al. (2017). Table 5 shows that the ITA ratio of the sample banks deteriorated in the post-M&A period, except for BOKL. Among the six banks that experienced decreased performances in the ITA ratio, the performances of NMB and NIB are statistically significant. The decreased performances of the other four banks are not statistically significant. On the other hand, the increased performance of BOKL is statistically significant. The decrease in the ITA ratio of banks indicates that bank productivity declined in the post-merger period. These results suggest that bank productivity and investment returns were managed effectively in the pre-merger period. Meanwhile, the ITA ratio of overall commercial banks decreased by 28.78%, which is statistically significant. This result contradicts the findings of Abbas et al. (2014) and Shah and Khan (2017), who reported that ITA improved after M&A. Similarly, Table 5 illustrates that all banks' TLTA ratio decreased in the post-M&A period, which indicates that the sample

banks' liquidity position improved. We found that only the performances of NMB and KBL are statistically significant, and the remaining five banks' performance improvements are not statistically significant. Meanwhile, the TLTA of overall commercial banks decreased by 2.75% in the post-merger period, which is statistically significant. These results contradict a previous study (Abbas et al., 2014), which reported that sample bank ratios increased after the M&A.

Table 6 shows that all banks' debt-to-equity ratios improved in the post-merger period. We found that all seven banks' DE ratios declined after the M&A. The performances of BOKL, NMB, and KBL are statistically significant, and the other banks' performances are not statistically significant. However, the DE ratio of overall commercial banks declined by 24.32% in the post-merger period, which is statistically significant. The fact that the sample banks' debt decreased after the merger is a good sign for the bank's ability to pay its long-term obligations. These results contradict the previous studies of Mantravadi and Reddy (2008), who found that the sample banks' DE increased in the post-merger period. Likewise, Table 6 shows that all the banks' TDTE ratios decreased after the M&A. Thus, the decreased trend results indicate that the performance of sample banks improved after M&A. Among the decreased performances of sample banks, the performances of BOKL, GBIME, NMB, and KBL are statistically significant. However, the TDTE ratio of overall commercial banks' performance improved by 2.54% after the M&A, which is statistically significant. This result contradicts the findings of Shah and Khan (2017). Furthermore, Table 6 illustrates that all banks' CAR ratios improved, except for GBIME. Among the seven banks, only the improved performance of NMB bank is statistically significant, and the other six banks are not statistically significant. However, the CAR ratio of overall commercial banks improved by 10.17% after the M&A, which is statistically significant. These results indicate that financial leverage has improved in the post-merger period. The CAR of all the sample banks exceeds the mandatory 11% NRB requirement for commercial banks and protects them from unforeseen losses. These findings contradict Shah and Khan (2017), who found that the CAR of sample

Table 5
Comparison of M&A impact on liquidity ratios.

Banks	Cash Equivalent to Total Assets (CETA)				Investment to Total Assets (ITA)				Total Liabilities to Total Assets (TLTA)			
	Pre	Post	Diff	Sig	Pre	Post	Diff	Sig	Pre	Post	Diff	Sig
BOKL	2.15	3.06	+	0.077	12.47	13.86	+	0.038*	90.86	88.95	-	0.594
GBIME	2.24	7.10	+	0.007*	16.75	10.60	-	0.146	89.70	89.30	-	0.076
PRVU	5.63	8.79	+	0.495	14.72	10.01	-	0.614	91.90	89.86	-	0.438
NCCB	2.54	6.21	+	0.140	11.27	9.89	-	0.282	90.19	87.20	-	0.092
NMB	4.23	5.59	+	0.590	13.25	8.33	-	0.048*	91.17	86.94	-	0.042*
NIB	2.28	5.59	+	0.054	20.31	10.02	-	0.003*	89.62	86.13	-	0.123
KBL	4.39	6.31	+	0.521	12.49	10.41	-	0.255	90.27	88.29	-	0.025*
Mean Overall	3.35	6.09	+	0.001*	14.47	10.30	-	0.004*	90.59	88.10	-	0.000*

Notes: '+' denotes increase in ratio; '-' denotes decrease in ratio; * significant at 0.05 level (2-tailed).

Table 6
Comparison of M&A impact on leverage ratios.

Banks	Debt to Equity (DE)				Total Deposit to Total Equity (TDTE)				Capital Adequacy Ratio (CAR)				Total Loans to Total Deposit (TLOTD)			
	Pre	Post	Diff	Sig	Pre	Post	Diff	Sig	Pre	Post	Diff	Sig	Pre	Post	Diff	Sig
BOKL	9.97	6.40	–	0.022*	9.52	6.22	–	0.032*	12.53	14.45	+	0.110	83.21	87.18	+	0.249
GBIME	8.72	8.35	–	0.078	8.37	7.77	–	0.010*	12.47	12.09	–	0.330	80.17	88.29	+	0.009*
PRVU	12.45	8.92	–	0.392	12.28	8.18	–	0.317	10.53	11.40	+	0.557	64.55	77.69	+	0.160
NCCB	8.74	7.93	–	0.549	8.58	7.61	–	0.475	13.78	12.99	–	0.651	79.23	86.45	+	0.077
NMB	10.38	6.72	–	0.037*	10.07	5.74	–	0.027*	10.95	15.43	+	0.004*	77.24	90.48	+	0.057
NIB	8.83	6.22	–	0.135	8.41	5.91	–	0.137	12.70	13.15	+	0.668	74.06	84.54	+	0.100
KBL	9.77	7.57	–	0.011*	9.56	7.04	–	0.003*	11.45	13.49	+	0.133	78.09	90.10	+	0.011*
Mean Overall	9.84	7.44	-	0.000*	9.54	6.93	-	0.019*	12.06	13.28	+	0.017*	76.65	86.39	+	0.000*

Notes: '+' denotes increase in ratio; '-' denotes decrease in ratio; * significant at 0.05 level (2-tailed).

banks decreased after the M&A. Table 6 shows that all seven banks' TLOTD ratios increased after M&A. Among the improvement performances of seven banks, only the performances of GBIME and KBL are statistically significant. However, the TLOTD ratio of overall commercial banks improved by 12.71% after the M&A, which is statistically significant. These results indicate that after the M&A, all the sampled banks started loan promotion and deposit collection to increase their interest income and net profit. Thus, the TLOTD ratio increment suggests that the sample banks' financial conditions are stronger in the post-merger period, allowing them to supply more loans to the public and increase their profitability. These findings are similar to Muhammad et al. (2019b). However, it contradicts Sufian's (2004) study in Malaysia, which reported that most of the sampled banks' TLOTD ratios decreased after the M&A.

Table 7 shows mixed results in EPS for all banks after the M&A. We found that four banks' EPS increased and the other three banks' EPS declined after M&A. The EPS of these three banks declined, indicating that operating costs increased after M&A for the weaker BFIs. However, none of the decreased performances of NCCB, NIB, and KBL are statistically significant. On the other hand, out of the four increased performances, only the performance of BOKL is statistically significant. However, the EPS ratio of overall commercial banks increased marginally by 0.01%, which is not statistically significant. This poor improvement in the EPS is due to increased capital during the short period, which significantly reduces the EPS in the post-merger period as the banking business is limited and competitive in the small market. Therefore, the results are similar to previous studies in India (Kalra et al., 2013; Patel, 2018) and UK companies (Jallow et al., 2017). On the other hand, Table 7 shows all the banks' market prices per share deteriorated after the M&A. The decreases in MPS indicate that shareholders' wealth was severely affected by its stock price on the Nepal Stock Exchange (NEPSE). Among the seven banks, the declining performances of BOKL, GBIME, and KBL are statistically significant, and the other four banks are not statistically significant. However, the MPS of overall

commercial banks declined by 46.01%, which is statistically significant. The significant reasons for the decline of MPS are the increases in the capital increment plans of BFIs by the regulatory bodies. In the initial period, the MPS of all BFIs increased as shareholders' expected bonuses and additional shares, which were reflected in the total dividends declared by the sample banks in the fiscal years 2014–2016. These capital increments at BFIs in a short period led to an oversupply of BFIs shares in the secondary market, impacting the MPS after the M&A. Furthermore, Table 7 shows mixed results in the DPS ratio for the post-merger period. We found that the three banks' performances increased and the remaining four banks' performances decreased after the M&A. Among the increased performances of the three banks, only the performance of PRVU is statistically significant. Simultaneously, the decreased performances of BOKL, NCCB, NIB, and KBL are not statistically significant. However, the DPS ratio of overall commercial banks decreased by 5.07%, which is not statistically significant. These findings suggest that DPS started to decline after the M&A due to increased capital by commercial banks after the fiscal year 2015–2016.

4.2. Summary of findings and hypotheses results

The summary of sample banks on individual basis findings differs from the overall commercial banking sector findings in the pre-post-M&A period. According to the findings of the overall commercial banking sector, out of 15 ratios (see Table 8), six are significantly improved and three are improved but not significantly in the post-merger period. On the other hand, the remaining four ratios have significantly deteriorated, and two ratios have deteriorated but not significantly in the post-merger period. Appendix A.8 shows that 10 ratios out of 15 are significant in the pre-post-merger period. Therefore, H_{01} is rejected for these 10 ratios at a 5% significance level, which concludes that M&A has a significant impact on these ratios.

Table 7
Comparison of M&A impact on the wealth of shareholders ratios.

Banks	Earnings Per Share (EPS)				Market Price Per Share (MPS)				Dividend Per Share (DPS)			
	Pre	Post	Diff	Sig	Pre	Post	Diff	Sig	Pre	Post	Diff	Sig
BOKL	12.05	19.77	+	0.045*	533.00	246.33	–	0.006*	20.44	19.33	–	0.089
GBIME	18.16	21.92	+	0.482	544.67	274.00	–	0.029*	20.33	21.00	+	0.890
PRVU	11.83	14.17	+	0.863	323.33	224.67	–	0.192	0.00	11.93	+	0.042*
NCCB	21.40	18.36	–	0.742	488.00	227.33	–	0.059	18.67	14.44	–	0.782
NMB	18.54	20.04	+	0.782	610.67	379.00	–	0.126	16.49	27.07	+	0.353
NIB	33.63	25.74	–	0.071	901.33	523.67	–	0.093	38.58	25.67	–	0.197
KBL	16.87	12.65	–	0.425	445.33	201.67	–	0.042*	22.90	11.01	–	0.251
Mean Overall	18.93	18.95	+	0.992	549.48	296.67	-	0.000*	19.63	18.63	-	0.761

Notes: '+' denotes increase in ratio; '-' denotes decrease in ratio; * significant at 0.05 level (2-tailed).

Table 8
Total ratios comparison of overall commercial banking sector.

	Number of Ratios	Significant (Improved)	Significant (Deteriorated)	Not Significant (Improved)	Not Significant (Deteriorated)
Profitability	5	–	2	2	1
Liquidity	3	2	1	–	–
Leverage	4	4	–	–	–
Wealth of Shareholder	3	–	1	1	1
Total	15	6	4	3	2
Percentage	100%	40.00%	26.66%	20.00%	13.34%

Similarly, in the findings from sample banks on an individual basis, BOKL indicates that 9 out of 15 ratios (see [Appendix A.1](#)) significantly differ in the pre-post-merger period. The results are consistent with the findings of [Al-Hroot \(2015\)](#). As a result, H_{02} is rejected on these nine ratios at a 5% significance level, which concludes that M&A has a significant impact on these ratios. Likewise, the findings of GBIME indicate that 6 out of 15 ratios (see [Appendix A.2](#)) are significant in the pre-post-merger period. Therefore, H_{02} is rejected on these six ratios at a 5% significance level, which concludes that M&A significantly impacts these ratios. Similarly, in the case of PRVU, 1 out of 15 ratios (see [Appendix A.3](#)) is significant. Therefore, H_{02} is accepted on these 14 ratios at a 5% significance level, which concludes that M&A has had no significant impact on these ratios. Furthermore, in the case of NCCB, none of the ratios (see [Appendix A.4](#)) are significant at a 5% significance level. Therefore, H_{02} is accepted, concluding that M&A has not significantly impacted these ratios. The results of NMB indicate that only 5 out of 15 ratios (see [Appendix A.5](#)) have a significant difference. As a result, H_{02} is rejected on these five ratios at a 5% significance level, which concludes that M&A has a significant impact on these ratios. In the case of NIB, 2 out of 15 ratios (see [Appendix A.6](#)) show significant differences at a 5% significance level. As a result, H_{02} is accepted on these 13 ratios, concluding that M&A has had no significant impact. The results of the KBL show that 7 out of 15 ratios (see [Appendix A.7](#)) show significant differences at a 5% significance level. As a result, H_{02} is rejected on these seven ratios, which concludes that M&A significantly impacted these ratios.

Overall, the results of each bank show mixed results in the financial ratios of BOKL, GBIME, NMB, and KBL and insignificant differences in the financial ratios of PRVU, NCCB, and NIB.

5. Conclusion, recommendation, and limitation

This research found the effects of M&A on selected commercial banks on an individual basis are different according to the bank's condition at the time of M&A. The results indicate a significant impact of M&A on the financial ratios of BOKL and minimal impacts on GBIME, NMB, and KBL.⁴ However, there was no significant impact on the financial ratios of PRVU, NCCB, and NIB.

The first finding from overall commercial banking sector shows that M&A had a mixed impact on profitability ratios, such as ROA and NIM, which improved insignificantly. In contrast, SR and IELI ratios deteriorated significantly. Similarly, the second finding of the overall commercial banking sector analysis concludes that liquidity ratios improved significantly, except for the ITA ratio. Similarly, all leverage ratios for overall commercial banking sector improved significantly after the M&A. However, M&A had a mixed impact on the wealth of shareholders ratios of commercial banking sector, with the EPS improvement not being significant and the MPS

deteriorating significantly. Overall, the financial performances of commercial banking sector improved 9 out of 15 ratios after the M&A. In summary, according to these findings, M&A produced improved or mixed results, and is consistent with previous findings ([Kumar and Bansal, 2008](#); [Mantravadi and Reddy, 2008](#); [Muhammad et al., 2019a, 2019b](#); [Oloye and Osuma, 2015](#); [Patel, 2018](#); [Rani et al., 2015](#)), while contradicting some other findings ([Abbas et al., 2014](#); [AL-HROOT et al., 2020](#); [Badreldin and Kalhoefer, 2009](#); [Kalra et al., 2013](#); [Kumar, 2009](#); [Lai et al., 2015](#); [Shah and Khan, 2017](#)).

The government of Nepal reclassified its BFIs into different categories because they perform similar functions and create confusion among the public. We conclude from our results that the central bank should voluntarily promote M&A certainty among commercial banks by relaxing regulatory ratio requirements and resolving M&A complexities regarding share swap ratios, brand names, and management, and avoid causing cultural clashes through supervision and regulatory guidelines. Instead of ineffective M&A deals between weaker BFIs, the NRB should encourage commercial banks to identify strategic partners by diversifying risk, expanding markets, reducing costs, and gaining synergy over time. Furthermore, commercial banks should reduce their operating costs by adopting technology advancements, diversifying their products and loan quality, improving their employees' skills, and cutting unnecessary and unproductive staff.

This research's limitation is the timing of the year of M&A of commercial banks involved in the M&A process; it is complicated to separate purely the pre- and post-merger periods as the selected banks were involved in different M&A processes multiple times in different calendar years. Furthermore, there is no specific data regarding acquired banks. Consequently, the effect of M&A on target BFIs was excluded from the data analysis due to the unavailability of data from the electronic database. Sample banks' raw data were manually collected from the annual reports. This research only applies accounting performance measures to examine the overall impact of M&A on the financial performance of the acquirer banks, and it ignores the impact of target BFIs due to the unavailability of data. However, different approaches, such as the CAMEL framework, event study methodology, and data envelopment analysis methods, may produce broad conclusions with more extended periods and larger samples in the future.

Author contributions

These authors contributed equally.

Conflicts of interest

The authors declare no conflict of interest.

Appendix

⁴ See section 3 for the abbreviations.

Appendix A.1

Paired samples *t*-test of Bank of Kathmandu (BOKL)

	Paired Differences					t	Df	Sig. (2-tailed)	Hypothesis Relation	Results	
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference							
				Lower	Upper						
Profitability Ratios:											
Pair 1	ROE (Pre-Post)	-3.37667	1.54546	0.89227	-7.21579	0.46246	-3.784	2	0.063	NS	NS
Pair 2	ROA (Pre-Post)	-0.85667	0.25968	0.14993	-1.50175	-0.21159	-5.714	2	0.029	NS	S
Pair 3	NIM (Pre-Post)	-0.98333	0.37554	0.21682	-1.91624	-0.05043	-4.535	2	0.045	NS	S
Pair 4	SR (Pre-Post)	11.30667	2.12550	1.22716	6.02664	16.58669	9.214	2	0.012	NS	S
Pair 5	IEII (Pre-Post)	-11.44000	2.35635	1.36044	-17.29351	-5.58649	-8.409	2	0.014	NS	S
Liquidity Ratios:											
Pair 6	CETA (Pre-Post)	-0.91333	0.46608	0.26909	-2.07115	0.24448	-3.394	2	0.077	NS	NS
Pair 7	ITA (Pre-Post)	-1.39000	0.48031	0.27731	-2.58316	-0.19684	-5.012	2	0.038	NS	S
Pair 8	TLTA (Pre-Post)	1.90333	5.24504	3.02822	-11.12607	14.93273	0.629	2	0.594	NS	NS
Leverage Ratios:											
Pair 9	DE (Pre-Post)	3.56667	0.94108	0.54333	1.22889	5.90444	6.564	2	0.022	NS	S
Pair 10	TDTE (Pre-Post)	3.30000	1.04704	.60451	.69900	5.90100	5.459	2	0.032	NS	S
Pair 11	CAR (Pre-Post)	-1.92000	1.20611	0.69635	-4.91614	1.07614	-2.757	2	0.110	NS	NS
Pair 12	TLOTD (Pre-Post)	-3.97000	4.27509	2.46822	-14.58991	6.64991	-1.608	2	0.249	NS	NS
Wealth of Shareholders Ratios:											
Pair 13	EPS (Pre-Post)	-7.71333	2.92049	1.68614	-14.96822	-0.45845	-4.575	2	0.045	NS	S
Pair 14	MPS (Pre-Post)	286.66667	37.07200	21.40353	194.57471	378.75862	13.393	2	0.006	NS	S
Pair 15	DPS (Pre-Post)	1.11000	13.22804	7.63721	-31.75028	33.97028	0.145	2	0.898	NS	NS

Notes: Significant at 0.05 level (2- tailed) NS = Not significant S = Significant.

Appendix A.2

Paired samples *t*-test of Global IME Bank (GBIME)

	Paired Differences					t	df	Sig. (2-tailed)	Hypothesis Relation	Result	
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference							
				Lower	Upper						
Profitability Parameters:											
Pair 1	ROE (Pre-Post)	0.66333	4.57985	2.64418	-10.71365	12.04031	0.251	2	0.825	NS	NS
Pair 2	ROA (Pre-Post)	0.00667	0.46758	0.26996	-1.15487	1.16821	0.025	2	0.983	NS	NS
Pair 3	NIM (Pre-Post)	-0.22667	0.23072	0.13321	-0.79982	0.34648	-1.702	2	0.231	NS	NS
Pair 4	SR (Pre-Post)	13.52333	3.83503	2.21415	3.99660	23.05007	6.108	2	0.026	NS	S
Pair 5	IEII (Pre-Post)	-13.52333	3.83503	2.21415	-23.05007	-3.99660	-6.108	2	0.026	NS	S
Liquidity Parameters:											
Pair 6	CETA (Pre-Post)	-4.86000	0.70704	0.40821	-6.61637	-3.10363	-11.906	2	0.007	NS	S
Pair 7	ITA (Pre-Post)	6.14667	4.58744	2.64856	-5.24917	17.54251	2.321	2	0.146	NS	NS
Pair 8	TLTA (Pre-Post)	0.40000	0.20298	0.11719	-0.10422	0.90422	3.413	2	0.076	NS	NS
Leverage Parameters:											
Pair 9	DE (Pre-Post)	0.36667	0.18877	0.10899	-0.10226	0.83559	3.364	2	0.078	NS	NS
Pair 10	TDTE (Pre-Post)	0.59667	0.10504	0.06064	0.33573	0.85760	9.839	2	0.010	NS	S
Pair 11	CAR (Pre-Post)	0.38000	0.51507	0.29738	-0.89951	1.65951	1.278	2	0.330	NS	NS
Pair 12	TLOTD (Pre-Post)	-8.12333	1.32553	0.76530	-11.41614	-4.83053	-10.615	2	0.009	NS	S
Wealth of Shareholders Parameters:											
Pair 13	EPS(Pre-Post)	-3.76000	7.60974	4.39348	-22.66364	15.14364	-0.856	2	0.482	NS	NS
Pair 14	MPS (Pre-Post)	270.66667	82.12998	47.41777	66.64449	474.68884	5.708	2	0.029	NS	S
Pair 15	DPS (Pre-Post)	-0.66667	7.37111	4.25572	-18.97753	17.64420	-0.157	2	0.890	NS	NS

Notes: Significant at 0.05 level (two-tailed) NS = Not significant S = Significant.

Appendix A.3

Paired samples *t*-test of Prabhu Bank (PRVU)

		Paired Differences				t	df	Sig. (2-tailed)	Hypothesis Relation	Result	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference						
					Lower Upper						
Profitability Ratios:											
Pair 1	ROE (Pre-Post)	-4.22333	26.60975	15.36315	-70.32563	61.87896	-0.275	2	0.809	NS	NS
Pair 2	ROA (Pre-Post)	-0.16000	1.82732	1.05500	-4.69932	4.37932	-0.152	2	0.893	NS	NS
Pair 3	NIM (Pre-Post)	-0.16333	1.98072	1.14357	-5.08370	4.75704	-0.143	2	0.900	NS	NS
Pair 4	SR (Pre-Post)	11.80333	6.09182	3.51711	-3.32958	26.93625	3.356	2	0.078	NS	NS
Pair 5	IEII (Pre-Post)	-11.80333	6.09182	3.51711	-26.93625	3.32958	-3.356	2	0.078	NS	NS
Liquidity Ratios:											
Pair 6	CETA (Pre-Post)	-3.16667	6.62769	3.82650	-19.63075	13.29742	-0.828	2	0.495	NS	NS
Pair 7	ITA (Pre-Post)	4.70667	13.76201	7.94550	-29.48006	38.89340	0.592	2	0.614	NS	NS
Pair 8	TLTA (Pre-Post)	2.03667	3.66751	2.11744	-7.07393	11.14727	0.962	2	0.438	NS	NS
Leverage Ratios:											
Pair 9	DE (Pre-Post)	3.53667	5.65709	3.26612	-10.51632	17.58965	1.083	2	0.392	NS	NS
Pair 10	TDTE (Pre-Post)	4.09667	5.37161	3.10130	-9.24716	17.44049	1.321	2	0.317	NS	NS
Pair 11	CAR (Pre-Post)	-0.87333	2.16320	1.24892	-6.24702	4.50035	-0.699	2	0.557	NS	NS
Pair 12	TLOTD (Pre-Post)	-13.14000	10.38581	5.99625	-38.93979	12.65979	-2.191	2	0.160	NS	NS
Wealth of Shareholders Ratios:											
Pair 13	EPS (Pre-Post)	-2.34000	20.69481	11.94816	-53.74877	49.06877	-0.196	2	0.863	NS	NS
Pair 14	MPS (Pre-Post)	98.66667	88.18919	50.91605	-120.40743	317.74076	1.938	2	0.192	NS	NS
Pair 15	DPS (Pre-Post)	-11.93000	4.38111	2.52943	-22.81327	-1.04673	-4.716	2	0.042	NS	S

Notes: Significant at 0.05 level (2- tailed) NS = Not significant S = Significant.

Appendix A.4

Paired samples *t*-test of Nepal Credit and Commerz Bank (NCCB)

		Paired Differences				t	df	Sig. (2-tailed)	HypothesisRelation	Result	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference						
					Lower Upper						
Profitability Parameters:											
Pair 1	ROE (Pre-Post)	2.93000	3.65619	2.11090	-6.15247	12.01247	1.388	2	0.300	NS	NS
Pair 2	ROA (Pre-Post)	0.21667	0.62613	0.36149	-1.33872	1.77205	0.599	2	0.610	NS	NS
Pair 3	NIM (Pre-Post)	0.19667	0.66726	0.38524	-1.46089	1.85423	0.511	2	0.660	NS	NS
Pair 4	SR (Pre-Post)	10.38000	5.55222	3.20557	-3.41247	24.17247	3.238	2	0.084	NS	NS
Pair 5	IEII (Pre-Post)	-10.34333	5.52179	3.18801	-24.06021	3.37355	-3.244	2	0.083	NS	NS
Liquidity Parameters:											
Pair 6	CETA (Pre-Post)	-3.66667	2.66429	1.53823	-10.28513	2.95179	-2.384	2	0.140	NS	NS
Pair 7	ITA (Pre-Post)	1.38333	1.64016	0.94695	-2.69106	5.45772	1.461	2	0.282	NS	NS
Pair 8	TLTA (Pre-Post)	2.98333	1.68364	0.97205	-1.19905	7.16572	3.069	2	0.092	NS	NS
Leverage Parameters:											
Pair 9	DE (Pre-Post)	0.81333	1.97305	1.13914	-4.08800	5.71467	0.714	2	0.549	NS	NS
Pair 10	TDTE (Pre-Post)	0.97333	1.93014	1.11437	-3.82140	5.76806	0.873	2	0.475	NS	NS
Pair 11	CAR (Pre-Post)	0.79667	2.62134	1.51343	-5.71511	7.30844	0.526	2	0.651	NS	NS
Pair 12	TLOTD (Pre-Post)	-7.22000	3.68570	2.12794	-16.37579	1.93579	-3.393	2	0.077	NS	NS
Wealth of Shareholders Parameters:											
Pair 13	EPS(Pre-Post)	3.04667	13.99615	8.08068	-31.72170	37.81503	0.377	2	0.742	NS	NS
Pair 14	MPS (Pre-Post)	260.66667	115.15352	66.48392	-25.39054	546.72387	3.921	2	0.059	NS	NS
Pair 15	DPS (Pre-Post)	4.23000	23.21620	13.40388	-53.44225	61.90225	0.316	2	0.782	NS	NS

Notes: Significant at 0.05 level (2- tailed) NS = Not significant S = Significant.

Appendix A.5

Paired samples *t*-test of NMB Bank (NMB)

	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)	Hypothesis Relation	Result	
				Lower	Upper						
				Profitability Parameters:							
Pair 1	ROE (Pre-Post)	4.54333	3.10331	1.79170	-3.16572	12.25238	2.536	2	0.127	NS	NS
Pair 2	ROA (Pre-Post)	-0.07000	0.53507	0.30892	-1.39919	1.25919	-0.227	2	0.842	NS	NS
Pair 3	NIM (Pre-Post)	-0.37333	0.41016	0.23681	-1.39223	0.64557	-1.577	2	0.256	NS	NS
Pair 4	SR (Pre-Post)	7.06667	4.15206	2.39720	-3.24763	17.38096	2.948	2	0.098	NS	NS
Pair 5	IEII (Pre-Post)	-2.19667	4.66920	2.69576	-13.79560	9.40227	-0.815	2	0.501	NS	NS
Liquidity Parameters:											
Pair 6	CETA (Pre-Post)	-1.36000	3.70858	2.14115	-10.57263	7.85263	-0.635	2	0.590	NS	NS
Pair 7	ITA (Pre-Post)	4.91667	1.94526	1.12310	0.08437	9.74896	4.378	2	0.048	NS	S
Pair 8	TLTA (Pre-Post)	4.23667	1.54869	0.89414	0.38951	8.08382	4.738	2	0.042	NS	S
Leverage Parameters:											
Pair 9	DE (Pre-Post)	3.66000	1.25044	0.72194	0.55374	6.76626	5.070	2	0.037	NS	S
Pair 10	TDTE (Pre-Post)	4.33000	1.24976	0.72155	1.22542	7.43458	6.001	2	0.027	NS	S
Pair 11	CAR (Pre-Post)	-4.47333	0.46918	0.27088	-5.63885	-3.30782	-16.514	2	0.004	NS	S
Pair 12	TLOTD (Pre-Post)	-13.24333	5.73753	3.31256	-27.49614	1.00948	-3.998	2	0.057	NS	NS
Wealth of Shareholders Parameters:											
Pair 13	EPS(Pre-Post)	-1.50000	8.23838	4.75643	-21.96527	18.96527	-0.315	2	0.782	NS	NS
Pair 14	MPS (Pre-Post)	231.66667	157.85225	91.13604	-160.46006	623.79340	2.542	2	0.126	NS	NS
Pair 15	DPS (Pre-Post)	-10.57667	15.25518	8.80758	-48.47264	27.31931	-1.201	2	0.353	NS	NS

Notes: **Notes:** Significant at 0.05 level (2- tailed) NS = Not significant S = Significant.

Appendix A.6

Paired samples *t*-test of Nepal Investment Bank (NIB)

	Paired Differences				t	df	Sig. (2-tailed)	Hypothesis Relation	Result		
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference							
				Lower						Upper	
Profitability Parameters:											
Pair 1	ROE (Pre-Post)	7.83333	1.67360	0.96625	3.67588	11.99078	8.107	2	0.015	NS	S
Pair 2	ROA (Pre-Post)	0.33000	0.39000	0.22517	-0.63881	1.29881	1.466	2	0.280	NS	NS
Pair 3	NIM (Pre-Post)	0.29000	0.50239	0.29006	-0.95802	1.53802	1.000	2	0.423	NS	NS
Pair 4	SR (Pre-Post)	12.84000	6.14090	3.54545	-2.41485	28.09485	3.622	2	0.069	NS	NS
Pair 5	IEII (Pre-Post)	-12.84000	6.14090	3.54545	-28.09485	2.41485	-3.622	2	0.069	NS	NS
Liquidity Parameters:											
Pair 6	CETA (Pre-Post)	-3.31667	1.39059	0.80286	-6.77108	0.13774	-4.131	2	0.054	NS	NS
Pair 7	ITA (Pre-Post)	10.29333	0.91194	0.52651	8.02795	12.55872	19.550	2	0.003	NS	S
Pair 8	TLTA (Pre-Post)	3.48667	2.34530	1.35406	-2.33938	9.31272	2.575	2	0.123	NS	NS
Leverage Parameters:											
Pair 9	DE (Pre-Post)	2.61000	1.85097	1.06866	-1.98807	7.20807	2.442	2	0.135	NS	NS
Pair 10	TDTE (Pre-Post)	2.49667	1.78733	1.03191	-1.94330	6.93663	2.419	2	0.137	NS	NS
Pair 11	CAR (Pre-Post)	-0.45667	1.59067	0.91837	-4.40811	3.49478	-0.497	2	0.668	NS	NS
Pair 12	TLTD (Pre-Post)	-10.48000	6.22000	3.59112	-25.93134	4.97134	-2.918	2	0.100	NS	NS
Wealth of Shareholders Parameters:											
Pair 13	EPS(Pre-Post)	7.89333	3.85539	2.22591	-1.68399	17.47065	3.546	2	0.071	NS	NS
Pair 14	MPS (Pre-Post)	377.66667	214.62836	123.91574	-155.49974	910.83307	3.048	2	0.093	NS	NS
Pair 15	DPS (Pre-Post)	12.91333	11.75766	6.78829	-16.29431	42.12098	1.902	2	0.197	NS	NS

Notes: **Notes:** Significant at 0.05 level (2- tailed) NS = Not significant S = Significant.

Appendix A.7

Paired samples *t*-test of Kumari Bank (KBL)

	Paired Differences					t	df	Sig. (2-tailed)	Hypothesis Relation	Relation	
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference							
				Lower	Upper						
Profitability Parameters:											
Pair 1	ROE (Pre-Post)	4.65667	5.53090	3.19327	-9.08285	18.39618	1.458	2	0.282	NS	NS
Pair 2	ROA (Pre-Post)	0.21000	0.59808	0.34530	-1.27571	1.69571	0.608	2	0.605	NS	NS
Pair 3	NIM (Pre-Post)	0.20667	0.67929	0.39219	-1.48078	1.89411	0.527	2	0.651	NS	NS
Pair 4	SR (Pre-Post)	7.05000	2.57286	1.48544	0.65867	13.44133	4.746	2	0.042	NS	S
Pair 5	IEII (Pre-Post)	-7.05000	2.57286	1.48544	-13.44133	-0.65867	-4.746	2	0.042	NS	S
Liquidity Parameters:											
Pair 6	CETA (Pre-Post)	-1.92000	4.31170	2.48936	-12.63087	8.79087	-0.771	2	0.521	NS	NS
Pair 7	ITA (Pre-Post)	3.08667	3.38993	1.95718	-5.33439	11.50772	1.577	2	0.255	NS	NS
Pair 8	TLTA (Pre-Post)	2.41333	0.67855	0.39176	0.72772	4.09895	6.160	2	0.025	NS	S
Leverage Parameters:											
Pair 9	DE (Pre-Post)	2.19333	0.41016	0.23681	1.17443	3.21223	9.262	2	0.011	NS	S
Pair 10	TDTE (Pre-Post)	2.52333	0.25580	0.14769	1.88789	3.15877	17.086	2	0.003	NS	S
Pair 11	CAR (Pre-Post)	-2.04000	1.43899	0.83080	-5.61466	1.53466	-2.455	2	0.133	NS	NS
Pair 12	TLOTD (Pre-Post)	-12.00667	2.21523	1.27896	-17.50960	-6.50374	-9.388	2	0.011	NS	S
Wealth of Shareholders Parameters:											
Pair 13	EPS (Pre-Post)	4.21333	7.33908	4.23722	-14.01794	22.44461	0.994	2	0.425	NS	NS
Pair 14	MPS (Pre-Post)	243.66667	88.89507	51.32359	22.83907	464.49426	4.748	2	0.042	NS	S
Pair 15	DPS (Pre-Post)	11.89000	12.88022	7.43640	-20.10624	43.88624	1.599	2	0.251	NS	NS

Notes: **Notes:** Significant at 0.05 level (2- tailed) **NS** = Not significant **S** = Significant.

Appendix A.8

Paired samples *t*-test of overall Commercial Banking Sector

	Paired Differences					t	df	Sig. (2-tailed)	Hypothesis Relation	Results	
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference							
				Lower	Upper						
Profitability Parameters:											
Pair 1	ROE (Pre & Post)	1.86095	9.82037	2.14298	-2.60922	6.33113	0.868	20	0.395	NS	NS
Pair 2	ROA (Pre & Post)	-0.04619	0.78978	0.17234	-0.40569	0.31331	-0.268	20	0.791	NS	NS
Pair 3	NIM (Pre & Post)	-0.15048	0.85040	0.18557	-0.53757	0.23662	-0.811	20	0.427	NS	NS
Pair 4	SR (Pre & Post)	10.56714	4.57920	0.99926	8.48272	12.65157	10.575	20	0.000	NS	S
Pair 5	IEII (Pre & Post)	-9.88524	5.45096	1.18950	-12.36649	-7.40399	-8.310	20	0.000	NS	S
Liquidity Parameters:											
Pair 6	CETA (Pre & Post)	-2.74333	3.22012	0.70269	-4.20911	-1.27755	-3.904	20	0.001	NS	S
Pair 7	ITA (Pre & Post)	4.16333	5.93815	1.29581	1.46032	6.86635	3.213	20	0.004	NS	S
Pair 8	TLTA (Pre & Post)	2.49429	2.56930	0.56067	1.32476	3.66382	4.449	20	0.000	NS	S
Leverage Parameters:											
Pair 9	DE (Pre & Post)	2.39238	2.41751	0.52754	1.29195	3.49282	4.535	20	0.000	NS	S
Pair 10	TDTE (Pre & Post)	1.71619	3.09147	0.67461	0.30897	3.12341	2.544	20	0.019	NS	S
Pair 11	CAR (Pre & Post)	-1.22667	2.16116	0.47160	-2.21041	-0.24292	-2.601	20	0.017	NS	S
Pair 12	TLOTD (Pre & Post)	-9.74048	5.70667	1.24530	-12.33812	-7.14283	-7.822	20	0.000	NS	S
Wealth of Shareholders Parameters:											
Pair 13	EPS (Pre & Post)	-0.02286	10.40790	2.27119	-4.76047	4.71476	-0.010	20	0.992	NS	NS
Pair 14	MPS (Pre & Post)	252.80952	130.44256	28.46490	193.43278	312.18627	8.881	20	0.000	NS	S
Pair 15	DPS (Pre & Post)	0.99571	14.78778	3.22696	-5.73560	7.72703	0.309	20	0.761	NS	NS

Notes: Significant at 0.05 level (2-tailed) **NS** = Not Significant **S** = Significant.

Appendix A.9

M&A deals of commercial banks in Nepal

S. N	Commercial bank Names after M&A	Acquired/Merged BFls Names	Final Approval Date	Share SWAP Ratio	Type
1	Bank of Kathmandu Limited*	Lumbini Bank Limited	08/07/2016	100:83	Merger
2	Century Commercial Bank Limited*	Sagarmatha Finance Ltd.	10/07/2017	100:95	Acquisition
		Innovative Development Bank Ltd.	31/05/2017	100:85	Acquisition
		Araniko Development Bank Ltd.	31/05/2017	100:90	Acquisition
		Alpine Development Bank Ltd.	31/05/2017	100:93	Acquisition
		Seti Finance Ltd.	20/11/2017	100:70	Acquisition
3	Citizen Bank International Limited	Sahayogi Vikas Bank Ltd.	24/06/2020	100:91.75	Acquisition
		Premier Finance Ltd.	04/07/2016	100:28	Acquisition
		Nepal Housing and Merchant Finance	09/04/2015	100:40	Acquisition
		Peoples Finance Ltd.	09/04/2015	100:40	Acquisition
4	Civil Bank Limited*	Unique Finance Ltd.	15/06/2017	100:90	Acquisition
		Hama Merchant and Finance Ltd.	15/06/2017	100:89	Acquisition
		International Leasing & Finance	27/09/2017	100:74.72	Acquisition
		Axis Development Bank Ltd.	27/09/2016	100:79	Acquisition
		Civil Merchant Bitiya Sanstha Ltd.	6/04/2014	100:79	Acquisition
5	Global IME Bank Limited*	Bank of Kathmandu Limited*	03/01/2023	100:100	Merger
		Janata Bank Nepal Limited	20/12/2019	100:85	Merger
		Hathway Finance Ltd.	01/09/2019	100:42	Acquisition
		Reliable Development Bank Ltd.	09/07/2017	100:82.9	Acquisition
		Pacific Development Bank Ltd.	12/02/2017	100:69.26	Acquisition
		Social Development Ltd.	09/07/2013	100:40	Merger
		Gulmi Bikash Bank Ltd.	09/07/2013	100:50	Merger
		Commerz & Trust Bank Ltd.	03/04/2014	100:65	Acquisition
		IME Finance Ltd.	25/06/2012	100:79	Merger
		Lord Buddha Finance Ltd.	25/06/2012	100:70	Merger
6	Kumari Bank Limited*	Nepal Credit & Commerce Bank Ltd.*	26/12/2022	100:100	Merger
		Kasthamandap Development Bank Ltd.	26/06/2017	100:85	Acquisition
		Mahakali Bikash Bank Ltd.	26/06/2017	100:86	Acquisition
		Kakrebihar Bikash Bank Ltd.	26/06/2017	100:87	Acquisition
		Paschimanchal Finance Ltd.	26/06/2016	100:88	Acquisition
7	Laxmi Sunrise Bank Limited*	Sunrise Bank Limited*	07/07/2023	100:100	Merger
		Professional Diyalo Development Bank	26/12/2006	100:50	Acquisition
		Hisef Finance Ltd.	02/04/2004	100:100	Merger
8	Macchapuchhre Bank Limited	Standard Finance Ltd.	25/12/2006	100:85	Merger
9	Mega Bank Nepal Limited*	Gandaki Bikas Bank Ltd.	24/06/2020	100:100	Acquisition
		Tourism Development Bank Ltd.	22/04/2018	100:95	Merger
		Pashchimanchal Development Bank Ltd	12/04/2016	104.25:67	Merger
10	Nepal Credit & Commerz Bank Limited*	Infrastructure Development Bank Ltd	05/12/2016	100:76	Merger
		Apex Development Bank Ltd.	05/12/2016	100:47	Merger
		Supreme Development Bank Ltd.	05/12/2016	100:77	Merger
		International Development Bank Ltd.	05/12/2016	100:72	Merger
11	Nepal Investment Mega Bank Limited*	Mega Bank Nepal Limited*	29/11/2022	100:90	Merger
		City Express Finance Ltd.	10/07/2019	100:30	Acquisition
		Jebil's Finance Ltd.	10/07/2019	100:33	Acquisition
		Ace Development Bank Ltd.	13/07/2017	100:41	Acquisition
12	NIC Asia Bank Limited	Bank of Asia Limited	30/06/2013	100:50	Merger
13	NMB Bank Limited	Kanchan Development Bank Ltd.	09/08/2020	100:85	Acquisition
		Om Development Bank Ltd.	19/09/2018	100:76	Merger
		Pathibara Bikas Bank Ltd.	23/09/2015	100:67	Merger
		Bhrikuti Bikas Bank Ltd.	23/09/2015	100:87	Merger
		Clean Energy Development Bank Ltd.	23/09/2015	100:75	Merger
		Prudential Finance Ltd.	23/09/2015	100:43	Merger
14	Prabhu Bank (Kist Bank Ltd.) *	Century Commercial Bank Limited*	03/01/2023	100:100	Acquisition
		Kist Bank Limited	06/08/2014	107.31:97.31	Acquisition
		Prabhu Bikas Bank Ltd.	06/08/2014	100:107.31	Acquisition
		Grand Bank Nepal Ltd.	29/01/2016	121.45:65.58	Acquisition
		Gaurishankar Development Ltd.	06/08/2014	107.31:107.31	Acquisition
		Zenith Finance Ltd	06/08/2014	107.31:92.31	Acquisition
15	Prime Commercial Bank Limited	Kailash Bikas Bank Ltd.	01/03/2020	100:94	Acquisition
		Kanki Bikas Bank Ltd.	01/09/2019	100:71.50	Acquisition
		Biratlaxmi Bikash Bank Ltd.	03/04/2017	100:75	Acquisition
		Country Development Bank Ltd.	03/04/2017	100:40	Acquisition
16	Sanima Bank Limited	Bagmati Development Bank Ltd.	16/12/2016	100:41	Acquisition
17	Siddhartha Bank Limited	Business Universal Development Ltd.	05/06/2016	100:55	Merger
18	Sunrise Bank Limited*	NIDC Capital Market Ltd.	26/01/2017	100:65	Acquisition
		Narayani National Finance Ltd.	03/07/2016	100:77	Acquisition
19	Nepal Bangladesh Bank Limited*	Nepal Bangladesh Finance Ltd.	18/09/2007	100:50	Merger
		Nepal Srilanka Merchant Finance Ltd.	02/01/2011	100:50	Merger
20	Everest Bank Limited	No M&A			
21	Himalayan Bank Limited*	Civil Bank Limited*	24/02/2023	100:80.28	Acquisition
22	Nepal SBI Bank Limited	No M&A			
23	Standard Chartered Bank Limited	No M&A			
24	Nabil Bank Limited*	Nepal Bangladesh Bank Limited*	29/06/2022	100:43	Acquisition

Appendix A.9 (continued)

S. N	Commercial bank Names after M&A	Acquired/Merged BFls Names	Final Approval Date	Share SWAP Ratio	Type
25	Agriculture Development Bank Limited	No M&A			
26	Nepal Bank Limited	No M&A			
27	Rastra Banijya Bank Limited	No M&A			

Source: (Adhikari et al., 2023) Notes: *M&A deal completed in 2022–2023 (Bank of Kathmandu, Civil Bank, Sunrise Bank, Mega Bank Nepal, Nepal Credit & Commerz Bank, and Nepal Bangladesh Bank no longer exist in their names after M&A deals completed in 2022/2023).

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