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Impact of merger and acquisition on the performance of Nepalese commercial banks

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Abstract

This study examines the impact of merger and acquisition on the performance of Nepalese commercial banks. Gross profit margin and operating profit margin are selected as the dependent variables. The selected independent variables are return on assets, return on equity, non- performing loans, debt to equity ratio and return on operating expenses. The study is based on secondary data of 13 commercial banks with 106 observations for the period from 2010/11 to 2019/20. The data were collected from Banking and Financial Statistics, Quarterly Economic Bulletin published by Nepal Rastra Bank and annual reports of the selected commercial banks. The correlation coefficients and regression models are estimated to test the significance and importance of merger and acquisition on the performance of Nepalese commercial banks.

The study showed that return on assets and return on equity have positive impact on gross profit margin and operating profit margin of Nepalese commercial banks after the merger. It indicates that increase in return on equity leads to increase in gross profit margin and operating profit margin. Likewise, it also implies that higher the return on assets, higher would be the gross profit margin and operating profit margin. Likewise, non-performing loans have a negative impact on gross profit margin and operating profit margin indicating that increase in the non-performing loans leads to decrease in gross profit margin and operating profit margin. Moreover, debt to equity ratio and return on operating expenses have positive impact on gross profit margin and operating profit margin. It means that increase in the debt to equity ratio leads to increase in gross profit margin and operating profit margin. In addition, increase in return on operating expenses leads to increase in gross profit margin and operating profit margin in the context of Nepalese commercial banks after the merger.

Keywords: Return on assets, return on equity, non-performing loans, debt to equity ratio gross profit margin and operating profit margin.

1. Introduction

In today's dynamic economic environment, the main objective of a company is to maximize the shareholder's wealth. Through mergers and acquisitions, a company can develop a competitive advantage and ultimately

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increase shareholder value (Siegel and Simons, 2010). Merger occurs when two or more companies relatively of the same sizes decide and agree to share their assets to move forward as a new organization instead of operating separately (Raza *et al.*, 2015). The firm's motivation for mergers and acquisitions is for various reasons with realization that business combinations provide an opportunity to create new value to the economic and wealth for their shareholders (Krishna and Paul, 2007). Bank mergers are claimed to be the sources of efficiency gains from the realization of economies of scale and economies of scope, the removal of overlapping services and the increasing awareness of innovative banking tools. A merger is a combination of two companies to form a new company, while an acquisition is the purchase of one company by another with no new company being formed (Cartwright and Schoenberg, 2006). With the concepts of globalization, liberalization, improvements in technology, and competitive business environment, mergers and acquisitions are becoming more important throughout the modern world. One of the objectives of firms to go on mergers and acquisitions is, to increase their market share, diversification, efficiency (both production and cost efficiency), achieve internationalization, and to get operation, financial, and managerial synergies (Waight, 2015).

Merger and acquisition are considered an effective and well-known approach adopted by organizations to compete in the current global and dynamic environment (Sherman, 2010). Merger and acquisition have been an important and critical strategy for firms to achieve growth and efficiency, by creating synergies, reducing costs, acquiring assets and expanding to new markets (Marimuthu and Ibrahim, 2013). Abbas *et al*. (2014) explored the financial performance of 10 banks in Pakistan after merger and acquisition during the period of 2006-2011. The study revealed that there is no positive improvement in the bank's performance after merger and acquisition. Beccalli and Frantz (2009) examined the impact of merger and acquisition on the bank's performance. The study posited that the operations of merger and acquisition are associated with a slight deterioration in profit efficiency and with a significant increase in cost efficiency. However, the failure of merger and acquisition include distinctiveness between their goal due to their size, their spread of risk into irrelevant it may have cultural obstacles in company policies, procedures and their style of operation (Sanni and Adereti, 2009).

Mergers have become the main means of attaining higher performance which is the ultimate goal of every firm, including banks. The mergers and acquisitions are arguably the most popular strategy among firms who seek to establish a competitive advantage over their rivals. Due to changes in the operating environment, several commercial banks have had to merge (combine their operations in mutually agreed terms) or one institution takes over another's operations (acquisitions). Some of the reasons put forward

for mergers and acquisitions are to gain greater market power, gain access to innovative capabilities, reducing the risks associated with the development of a new product or service, maximize efficiency through economies of scale and scope and reshape a firm's competitive scope (Hitt *et al*., 2007). Marangu (2007) assessed the effects of mergers and acquisition on financial performance of non-listed commercial banks in Kenya. The study concluded that there was a significant improvement in performance for the non-listed banks which merged compared to the non-listed banks that did not merge within the same period. The study also confirmed the theoretical assertion that firms derive more synergies by merging than by operating as individual outfits. Moreover, Ndora (2010) examined the effects of mergers and acquisitions on the financial performance of insurance companies in Kenya. The results indicated that financial performance of the firms has increased after the merger than it was five years before the merger. The study also concluded that mergers and acquisition would result to an increase in the financial performance of an insurance company.

Merger and acquisition are considered a vital tool to facilitate the sound and efficient performance of the financial industry while subjugating the problems underlying the system. The instrument also plays a key role in bringing down the cost of operations and increasing the market competitiveness and profitability of the firms. In the international financial markets, M & A is often conducted to fulfil the demands of regulatory bodies and as an attempt to enhance the competitive advantage and expand the operations of the financial institutions. Despite these hopeful expectations, almost half of the mergers and acquisitions fail to meet the initial expectations (Cartwright and Cooper, 1993). Ali and Sharma (2012) analyzed the pre-merger and post-merger operating performance of SBI. The findings revealed that the earning of the shareholders has been reduced but the value of the firms goes up after the merger of all associates. Rashid and Nahim (2017) examined the effects of mergers on corporate performance using OLS method. The findings revealed that merger have insignificant impact on the profitability, liquidity and leverage position of the firms. Ramaswamy and Waegelein (2003) analyzed the firm financial performance following mergers. The result found that after merger, performance was negatively related with size of target firm and have a positive relationship with long-term motivation recompense plans. Moreover, Valouch *et al.* (2015) examined the impact of mergers of Czech companies on their profitability and returns. The study showed that there was no statistically significant increase in returns on assets in medium and small companies even after the merger. Likewise, Patel (2018) argued that Indian banks can potentially accomplish their objectives and goals and can reduce their expenses to a significant number with the help of mergers and acquisitions. Furthermore, Linawati and Halim (2017) revealed that the leverage change, size, transaction cost, market to book ratio, and interest rates simultaneously

brings a significant influence on the profitability of the company at the time of the merger or acquisition. Likewise, Talha and Sallehhuddin (2005) examined the impact of merger and acquisition on debt management ratio in Malaysian banking sectors. The results showed that the banks recorded improvement in debt management. Similarly, Larasati *et.al* (2018) analyzed the effect of merger and acquisition on company's financial performance. The study found that there is no significant difference in debt-to-equity ratio before conducting merger and acquisition with debt-to-equity ratio after conducting merger and acquisition.

In the context of Nepal, Neupane (2019) examined the critical factors in merger and acquisition of Nepalese financial institutions. The study concluded that merged firms enhanced the ability to attract loans, increased employee's productivity and net assets growth. The study also showed that mergers and acquisitions might lead to improved productivity of employees and the general performance of the banks due to the integration of information and communication technologies packages and good corporate governance. Shah and Dwa (2017) analyzed the merger and operating performance of commercial banks of Nepal. The result showed that the operating ratios have reduced in the post-merger period. Similarly, Shrestha (2014) showed that operating profit margin, net profit margin, return on assets, return on staff expenses and return on operating expenses indicated a significant difference between pre-and post-merger performance, where the performance has significantly declined. Adhikari (2014) found that few financial institutions are technically efficient in generating more returns to share owners after the merger. Dhakal (2015) revealed increasing trend in merger and acquisition in banking and financial institutions (BFIs) of Nepal. The findings revealed that that employees were satisfied with work, wages, working conditions etc. but they were intensely worried about the HR issues like cultural clash, positions issues, socialization, favoritism etc. Shrestha *et al.* (2017) analyzed the merger effect on financial performance of banking and financial institutions in Nepal. The results found that there is increase in the non-performing loan in almost all the merged BFIs in comparison to the bidder BFIs.

The above discussion shows that empirical evidence varies greatly across the studies on the impact of merger and acquisition on bank performance. Though there are above mentioned empirical evidence in the context of other countries and in Nepal, no such findings using more recent data exist in the context of Nepal. Therefore, in order to support one view or the other, this study has been conducted.

The main purpose of the study is to analyze the impact of merger and acquisition on the performance of Nepalese commercial banks. Specifically, it examines the impact of return on assets, return on equity, debt to equity ratio, non-performing loan, return on operating expenses on the performance

of Nepalese commercial banks.

The remainder of this study is organized as follows. Section two describes the sample, data and methodology. Section three presents the empirical results and the final sections draws conclusion.

2. Methodological aspects

The study is based on secondary data. The data were gathered from 13 commercial banks in Nepal for the period from 2010/11 to 2019/20. The main sources of data include Banking and Financial Statistics, Quarterly Economic Bulletin published by Nepal Rastra Bank and annual reports of the selected commercial banks. This study is based on descriptive as well as causal comparative research designs. Table 1 shows the list of commercial banks selected for the study along with the study period and number of observations.

Table 1: List of sample banks selected for the study along with the study period and number of observations

S. N.	Name of the banks	Study period	Observations
1	Kumari Bank Limited	2010/11-2019/20	9
2	Nepal Credit and Commerce Bank Limited	2010/11-2019/20	9
3	Siddhartha Bank Limited	2010/11-2019/20	9
4	NMB Bank Limited	2010/11-2019/20	9
5	Prime Commercial Bank Limited	2010/11-2019/20	8
6	NIC Asia Bank Limited	2010/11-2019/20	6
7	Bank of Kathmandu Lumbini Limited	2010/11-2019/20	8
8	Global IME Bank Limited	2010/11-2019/20	8
9	Prabhu Bank Limited	2010/11-2019/20	7
10	Machhapuchchhre Bank Limited	2010/11-2019/20	9
11	Civil Bank Limited	2010/11-2019/20	7
12	Sunrise Bank Limited	2010/11-2019/20	9
13	Century Commercial Bank Limited	2010/11-2019/20	8
Total number of observations			**106**

Thus, the study is based on 106 observations.

The model

The model used in this study assumes that gross profit margin and operating profit margin depends on different variables. The dependent variables selected for the study are gross profit margin and operating profit margin. Similarly, the selected independent variables in this study are return on assets, return on equity, non-performing loans, debt to equity ratio and return on operating expenses. The following model equations are designed to test the hypothesis.

$$GPM_{it} = \beta_0 + \beta_1 ROA_{it} + \beta_2 ROE_{it} + \beta_3 DR_{it} + \beta_4 ROOE_{it} + \beta_5 NPL_{it} + e_{it}$$

$$OPM_{it} = \beta_0 + \beta_1 ROA_{it} + \beta_2 ROE_{it} + \beta_3 DR_{it} + \beta_4 ROOE_{it} + \beta_5 NPL_{it} + e_{it}$$

Where,

GPM= Gross profit margin as measured by the ratio of gross profit to total revenue, in percentage.

OPM = Operating profit margin as measured by the ratio of operating profit to total revenue, in percentage.

ROA = Return on assets as measured by the ratio of net income to total assets, in percentage.

ROE= Return on equity as measured by the ratio of net income to shareholder's equity, in percentage.

DE= Debt to equity ratio as measured by the ratio of total debt to total equity, in percentage.

ROOE = Return on operating expenses as measured by the ratio of net income to operating expense, in percentage.

NPL= Non-performing loan as measured by the ratio of non-performing loan to total loans, in percentage.

The following section describes the independent variables used in this study along with hypothesis formulation.

Return on assets

Company return on assets will experience a significant increase after mergers and acquisitions (Kumara and Satyanarayana, 2013). Omoye and Aniefor (2016) stated that return on assets is considered as an important indicator in measuring company's efficiency. The study found a positive impact of return on assets on the financial performance of banks. Hall and Weiss (1967) found that there is a positive relationship between return on assets and bank performance. Further, Ramaswamy and Waegelein (2003) showed that there is a positive association between return on assets and bank profitability. Similarly, Palepu (1986) showed that there is a positive relationship between return on assets and bank profitability. Similarly, Rathinam and Sridharan (2016) indicated that return on equity, return on assets, and return on operating expenses have been improved after merger and acquisition. Based on it, this study develops the following hypothesis:

H_1: There is a positive relationship between return on assets and bank performance.

Return on equity

Bonin *et al*. (2005) examined the bank performance, efficiency and ownership in transition countries. The study found a positive relationship between operating expenses, gross profit margin and return on shareholder equity. De Wet and Du Toit (2007) revealed a positive association between return on equity and firm performance. Pointer and Khoi (2019) assessed the predictors of return on assets and return on equity for banking and insurance companies on Vietnam Stock Exchange. The study revealed a negative impact of nonperforming loans on return on equity of banking firms. However, there was a positive relationship between bank size, return on equity and net profit margin. Based on it, this study develops the following hypothesis:

H_2: There is a positive relationship between return on equity and bank performance.

Debt to equity ratio

There is a positive and significant impact of debt-equity ratio on gross profit margin and operating profit margin (Juma *et al.*, 2014). Lum (2009) indicated a positive and significant relationship between debt-equity ratio and gross profit margin. Similarly, Talha and Sallehhuddin (2005) showed that the banks recorded improvement in term of debt management after merger and acquisition. Larasati *et al.* (2018) found that there is a significant difference in debt-to-equity ratio (DER) average before conducting merger and acquisition with DER average after conducting merger and acquisition. The study also found a positive association between debt ratio and profit margin. Further, Sinha *et al.* (2010) indicated that there is a positive relationship between debt equity ratio, debt ratio, return on assets ratio and banks profitability. Based on it, this study develops the following hypothesis:

H_3: There is a positive relationship between debt-equity ratio and bank performance.

Non-performing loan

The accumulation of non-performing loans is generally attributed to a number of factors, including economic downturns ad macro-economic volatility, terms of trade deterioration, high interest rate excessive reliance on overly high-priced inter-bank borrowings, insider lending and moral hazard, (Goldstom and Turner, 1996). Akhavein *et al.* (1997) found that banks with a high level of income are less involved in risky investments that can lead to loan nonpayment in the future. The study concluded that there is a negative association between non- performing loans and bank profitability. Rajan

(1994) found a negative relationship between NPLs and the profitability of the banks. Similarly, Rachman *et al.* (2018) examined various banking factors that influence the non-performing loans in Indonesia. The study concluded that the high profitability of banks is associated with the lower NPLs due to their better advancing activity and effective credit supervision system. Based on it, this study develops the following hypothesis:

H_4: There is a negative relationship between non-performing loan and bank performance.

Return on operating expenses

Akhavein *et al*. (1997) found that there is a significant positive impact of pre- and post-merger and acquisition on the profitability of banks. the study also showed that return on operating expense has a positive association with the profit margin Likewise, Sinha *et al*. (2010) indicated that there is a positive effect of pre- and post-merger and acquisition on the performance of banks. The study also revealed return on operating ratio has a significant positive impact on the financial performance of commercial banks. Ali and Sharma (2012) revealed that merger reduces the cost of banking operation for long terms perspective. Shah and Dwa (2018) revealed that net profit margin, return on assets, return on net worth, return on staff expenses, return on loan loss provision and return on operating expenses are significantly and positively related to each other. Based on it, this study develops the following hypothesis:

H_5: There is a positive relationship between return on operating expenses and bank performance.

3. Results and discussion

Descriptive statistics

Table 2 presents the descriptive statistics of selected dependent and independent variables during the period 2010/11 to 2019/20.

Table 2: Descriptive statistics

This table shows the descriptive statistics of dependent and independent variables of 13 commercial banks for the study period of 2010/11 to 2019/20. The dependent variables are GPM (Gross profit margin as measured by the ratio of gross profit to total revenue, in percentage) and OPM (Operating profit margin as measured by the ratio of operating profit to total revenue, in percentage). The independent variables are ROA (Return on assets as measured by the ratio of net income to total assets, in percentage), ROE (Return on equity as measured by the ratio of net income to shareholder's equity, in percentage), DE (Debt equity ratio as measured by the ratio of total debt to total equity, in percentage), ROOE (Return on operating expenses as measured by the ratio of net income to operating expense,

in percentage) and NPL(Non-performing loan as measured by the ratio of non-performing loan to total loans, in percentage).

	Before merger				After merger			
Variables	**Minimum**	**Maximum**	**Mean**	**SD**	**Minimum**	**Maximum**	**Mean**	**SD**
GPM	7.10	43.10	37.49	55.45	13.10	48.10	67.49	69.45
OPM	24.20	59.00	81.71	79.36	22.20	79.00	61.71	69.36
ROA	9.89	77.39	71.32	65.41	6.89	77.39	71.32	45.41
ROE	9.50	74.16	82.19	73.81	9.50	22.16	82.19	73.81
NPL	2.68	18.80	14.27	17.89	1.68	12.80	13.27	17.89
ROOE	2.50	17.80	27.68	34.66	2.50	37.80	47.68	54.66
DE	5.37	34.59	46.01	49.15	2.37	45.59	33.01	45.15

Source: SPSS output

Correlation analysis

Having indicated the descriptive statistics, Pearson's correlation coefficients are computed and the results are presented in Table 3.

Table 3: Pearson's correlation coefficients matrix before merger

This table shows the bivariate Pearson's correlation coefficients of dependent and independent variables of 13 Nepalese commercial banks before the merger. The dependent variables are GPM (Gross profit margin as measured by the ratio of gross profit to total revenue, in percentage) and OPM (Operating profit margin as measured by the ratio of operating profit to total revenue, in percentage). The independent variables are ROA (Return on assets as measured by the ratio of net income to total assets, in percentage), ROE (Return on equity as measured by the ratio of net income to shareholder's equity, in percentage), DE (Debt equity ratio as measured by the ratio of total debt to total equity, in percentage), ROOE (Return on operating expenses as measured by the ratio of net income to operating expense, in percentage) and NPL(Non-performing loan as measured by the ratio of non-performing loan to total loans, in percentage).

Variables	**GPM**	**OPM**	**ROA**	**ROE**	**ROOE**	**NPL**	**DE**
GPM	1						
OPM	0.723**	1					
ROA	0.262*	0.195	1				
ROE	0.087	0.178	0.089	1			
NPL	-0.119	-0.089	-0.334**	-0.087	1		
ROOE	0.134	0.324**	0.131	0.123	0.634**	1	
DE	0.654**	0.167	0.194	0.384**	0.087	-0.534**	1

Note: The asterisk signs (**) and (*) indicate that the results are significant at one percent and five percent levels respectively.

Table 3 shows that return on equity is positively correlated to gross

profit margin before merger. It indicates that increase in return on equity leads to increase in gross profit margin. Likewise, return on assets is positively correlated to gross profit margin. It indicates that higher the return on assets, higher would be the gross profit margin. The study also shows that non-performing loan has a negative relationship with gross profit margin. It reveals that higher the non-performing loans, lower would be the gross profit margin. Similarly, return on operating expenses is positively related to gross profit margin. It indicates that increase in return on operating expenses leads to increase in gross profit margin. Likewise, there is a positive relationship between debt to equity ratio and gross profit margin. It indicates that increase in debt to equity ratio leads to increase in gross profit margin.

On the other hand, the result shows that return on equity is positively correlated to operating profit margin. It indicates that increase in return on equity leads to increase in operating profit margin. Likewise, return on assets is positively correlated to operating profit margin. It indicates that higher the return on assets, higher would be the operating profit margin. The study also shows that non-performing loan has a negative relationship with operating profit margin. It reveals that higher the non-performing loans, lower would be the operating profit margin. Similarly, return on operating expenses is positively related to operating profit margin. It indicates that increase in return on operating expenses leads to increase in operating profit margin. Likewise, there is a positive relationship between debt to equity ratio and operating profit margin. It indicates that increase in debt to equity ratio leads to increase in operating profit margin.

The Pearson's correlation coefficients matrix of dependent and independent variables after merger are presented in Table 4.

Table 4: Pearson's correlation coefficients matrix after merger

This table shows the bivariate Pearson's correlation coefficients of dependent and independent variables of 13 Nepalese commercial banks after the merger. The dependent variables are GPM (Gross profit margin as measured by the ratio of gross profit to total revenue, in percentage) and OPM (Operating profit margin as measured by the ratio of operating profit to total revenue, in percentage). The independent variables are ROA (Return on assets as measured by the ratio of net income to total assets, in percentage), ROE (Return on equity as measured by the ratio of net income to shareholder's equity, in percentage), DE (Debt equity ratio as measured by the ratio of total debt to total equity, in percentage), ROOE (Return on operating expenses as measured by the ratio of net income to operating expense, in percentage) and NPL(Non-performing loan as measured by the ratio of non-performing loan to total loans, in percentage).

Variables	GPM	OPM	ROA	ROE	ROOE	NPL	DE
GPM	1						
OPM	0.722**	1					
ROA	0.262*	0.165	1				
ROE	0.027	0.198	0.099	1			
NPL	-0.139	-0.099	-0.394**	0.097	1		
ROOE	0.194	0.324**	0.111	0.193	0.694**	1	
DE	0.689**	0.177	0.164	0.374**	0.087	0.584**	1

Note: The asterisk signs (**) and (*) indicate that the results are significant at one percent and five percent levels respectively.

Table 4 shows that return on equity is positively correlated to gross profit margin after merger. It indicates that increase in return on equity leads to increase in gross profit margin. Likewise, return on assets is positively correlated to gross profit margin. It indicates that higher the return on assets, higher would be the gross profit margin. The study also shows that non-performing loan has a negative relationship with gross profit margin. It reveals that higher the non-performing loans, lower would be the gross profit margin. Similarly, return on operating expenses is positively related to gross profit margin. It indicates that increase in return on operating expenses leads to increase in gross profit margin. Likewise, there is a positive relationship between debt to equity ratio and gross profit margin. It indicates that increase in debt to equity ratio leads to increase in gross profit margin.

On the other hand, the result shows that return on equity is positively correlated to operating profit margin. It indicates that increase in return on equity leads to increase in operating profit margin. Likewise, return on assets is positively correlated to operating profit margin. It indicates that higher the return on assets, higher would be the operating profit margin. The study also shows that non-performing loan has a negative relationship with operating profit margin. It reveals that higher the non-performing loans, lower would be the operating profit margin. Similarly, return on operating expenses is positively related to operating profit margin. It indicates that increase in return on operating expenses leads to increase in operating profit margin. Likewise, there is a positive relationship between debt to equity ratio and operating profit margin. It indicates that increase in debt to equity ratio leads to increase in operating profit margin.

Regression analysis

Having indicated the Pearson's correlation coefficients, the regression analysis has been carried out and results are presented in Table 5. More specifically, it shows the regression results of return on equity, return on assets, debt to equity ratio, non-performing assets and return on operating expenses with gross profit margin of Nepalese commercial banks before merger.

Table 5: Estimated regression results of return on assets, return on equity, return on operating expenses, non-performing loan and debt

equity ratio on gross profit margin in Nepal before merger

The results are based on the panel data of 13 commercial banks of Nepal before merger using the linear regression model. The model is $GPM_{it} = \beta_0 + \beta_1 ROA_{it} + \beta_2 ROE_{it} + \beta_3 DR_{it} + \beta_4 ROOE_{it} + \beta_5 NPL_{it} + e_{it}$ *where, the dependent variable is GPM (Gross profit margin as measured by the ratio of gross profit to total revenue, in percentage). The independent variables are ROA (Return on assets as measured by the ratio of net income to total assets, in percentage), ROE (Return on equity as measured by the ratio of net income to shareholder's equity, in percentage), DE (Debt equity ratio as measured by the ratio of total debt to total equity, in percentage), ROOE (Return on operating expenses as measured by the ratio of net income to operating expense, in percentage) and NPL(Non-performing loan as measured by the ratio of non-performing loan to total loans, in percentage).*

Model	Intercept	Regression coefficients of					Adj. R_bar^2	SEE	F-value
		ROA	ROE	ROOE	NPL	DE			
1	1.797 (5.847)**	0.519 (6.579)**					0.221	0.574	43.244
2	1.709 (6.754)**		0.533 (8.364)**				0.316	0.537	69.954
3	1.42 (6.626)**			0.63 (11.268)**			0.458	0.478	126.968
4	1.51 (7.545)**				0.644 (11.625)**		0.474	0.471	135.137
5	1.604 (8.185)**					0.566 (11.400)**	0.464	0.471	129.965
6	1.316 (4.418)**	0.222 (2.403)*	0.415 (5.207)**				0.338	0.529	38.994
7	0.882 (3.291)**	0.105 (1.269)	0.184 (2.378)*	0.474 (6.816)**			0.484	0.462	49.518
8	0.622 (2.475)*	0.093 (1.225)	0.145 (2.024)*	0.251 (3.274)*	0.366 (5.253)**		0.572	0.425	50.803
9	0.571 (2.355)*	0.079 (1.075)	0.099 (1.412)	0.18 (2.355)*	0.279 (3.910)**	0.224 (3.567)**	0.604	0.409	46.473
10	0.843 3.809)**		0.141 (4.367)**	0.315 (2.129)*		0.312 (5.254)**	0.565	0.429	65.438

Notes:

i. Figures in parenthesis are t-values.
ii. The asterisk signs (**) and (*) indicate that the results are significant at one percent and five percent level respectively.
iii. Gross profit margin is the dependent variable.

Table 5 shows that the beta coefficients for return on assets are positive with gross profit margin before merger. It indicates that return on assets has a positive impact on gross profit margin. This finding is consistent with the findings of Ramaswamy and Waegelein (2003). Similarly, the beta coefficients for return on equity are positive with gross profit margin. It indicates that return on equity has a positive impact on gross profit margin. This finding is consistent with the findings of Pointer and Khoi (2019). Likewise, the beta coefficients for non-performing loan are negative with gross profit margin. It indicates that the non-performing loan has a negative impact on gross profit margin. This finding is consistent with the findings of Rachman *et al.* (2018).

Similarly, the beta coefficients for return on operating expenses are positive with gross profit margin. It indicates that return on operating expenses has a positive impact on gross profit margin. This finding is consistent with the findings of Shah and Dwa (2018).

The regression results of return on assets, return on equity, return on operating expenses, non-performing loan and debt to equity ratio on gross profit after merger in Nepal have been presented in Table 6.

Table 6: Estimated regression results of return on assets, return on equity, return on operating expenses, non-performing loan and debt equity ratio on gross profit margin in Nepal after merger

The results are based on the panel data of 13 commercial banks of Nepal after merger using the linear regression model. The model is $GPM_{it} = \beta_0 + \beta_1 ROA_{it} + \beta_2 ROE_{it} + \beta_3 DR_{it} + \beta_4 ROOE_{it} + \beta_5 NPL_{it} + e_{it}$ *where, the dependent variable is GPM (Gross profit margin as measured by the ratio of gross profit to total revenue, in percentage). The independent variables are ROA (Return on assets as measured by the ratio of net income to total assets, in percentage), ROE (Return on equity as measured by the ratio of net income to shareholder's equity, in percentage), DE (Debt equity ratio as measured by the ratio of total debt to total equity, in percentage), ROOE (Return on operating expenses as measured by the ratio of net income to operating expense, in percentage) and NPL(Non-performing loan as measured by the ratio of non-performing loan to total loans, in percentage).*

Model	Intercept	Regression coefficients of					Adj. R_bar^2	SEE	F-value
		ROA	ROE	ROOE	NPL	DE			
1	1.756 (5.834)**	0.539 (7.578)**					0.221	0.474	44.244
2	1.704 (6.754)**		0.523 (9.364)**				0.516	0.537	69.954
3	1.43 (6.626)**			0.53 (13.268)**			0.558	0.378	226.968
4	1.52 (7.523)**				-0.334 (10.625)**		0.474	0.571	235.137
5	1.614 (8.235)**					0.566 (12.400)**	0.464	0.233	349.965
6	1.216 (4.434)**	0.242 (2.403)*	0.435 (5.207)**				0.338	0.655	48.494
7	0.982 (3.223)**	0.195 (1.289)	0.194 (2.368)*	0.474 (6.816)**			0.552	0.712	49.548
8	0.722 (2.434)*	0.093 (1.285)	0.165 (2.024)*	0.251 (3.674)**	-0.346 (5.253)**	0.234 (3.567)**	0.572	0.434	50.863
9	0.561 (2.345)*	0.099 (1.085)	0.059 (1.412)	0.13 (2.355)*	-0.244 (3.910)**		0.634	0.456	46.483
10	0.733 (3.809)**		0.131 (4.367)**	0.314 (2.629)**		0.313 (5.254)**	0.565	0.412	65.678

Notes:

i. Figures in parenthesis are t-values.
ii. The asterisk signs (**) and (*) indicate that the results are significant at one percent and five percent level respectively.
iii. Gross profit margin is the dependent variable.

Table 6 shows that the beta coefficients for return on assets are positive with gross profit margin after merger. It indicates that return on assets has a positive impact on gross profit margin. This finding is consistent with the findings of Omoye and Aniefor (2016). Similarly, the beta coefficients for return on equity are positive with gross profit margin. It indicates that return on equity has a positive impact on gross profit margin. This finding is consistent with the findings of De Wet and Du Toit (2007). Likewise, the beta coefficients for non-performing loan are negative with gross profit margin. It indicates that the non-performing loan has a negative impact on gross profit margin. This finding is consistent with the findings of Akhavein *et al.* (1997). Similarly, the beta coefficients for return on operating expenses are positive with gross profit margin. It indicates that return on operating expenses has a positive impact on gross profit margin. This finding is consistent with the findings of Sinha *et al*. (2010).

The regression results of return on assets, return on equity, return on operating expenses, non-performing loan and debt to equity ratio on operating profit before merger in Nepal have been presented in Table 7.

Table 7: Estimated regression results of return on assets, return on equity, return on operating expenses, non-performing loan and debt equity ratio on operating profit margin in Nepal before merger

The results are based on the panel data of 13 commercial banks of Nepal before merger using the linear regression model. The model is $OPM_{it} = \beta_0 + \beta_1 ROA_{it} + \beta_2 ROE_{it} + \beta_3 DR_{it} + \beta_4 ROOE_{it} + \beta_5 NPL_{it} + e_{it}$ *where, the dependent variable is OPM (Operating profit margin as measured by the ratio of operating profit to total revenue, in percentage). The independent variables are ROA (Return on assets as measured by the ratio of net income to total assets, in percentage), ROE (Return on equity as measured by the ratio of net income to shareholder's equity, in percentage), DE (Debt equity ratio as measured by the ratio of total debt to total equity, in percentage), ROOE (Return on operating expenses as measured by the ratio of net income to operating expense, in percentage) and NPL(Non-performing loan as measured by the ratio of non-performing loan to total loans, in percentage).*

Model	Intercept	Regression coefficients of					Adj. R_bar^2	SEE	F-value
		ROA	ROE	NPL	ROOE	DER			
1	(44.583) (0.654)	12.004 (10.654)**					0.382	84.877	113.513
2	(35.776) (3.104)**		11.888 (9.496)**				0.256	93.906	90.171
3	386.656 (11.040)**			-0.315 (9.761)**			0.263	91.601	95.479
4	346.266 (9.907)**				0.279 (10.735)**		0.344	64.307	115.241
5	241.46 (8.868)**					51.79 (16.583)**	0.448	56.38	274.989
6	(75.95) (0.419)	1.875 (1.769)	1.154 (0.182)				0.474	87.966	52.856
7	165.62 (0.590)	1.241 (1.031)	0.757 (0.164)	-0.145 (0.430)			0.590	78.347	45.885
8	48.398 (1.710)	1.072 (1.620)	10.534 (1.257)	-1.088 (1.543)	1.179 (1.556)		0.515	72.319	41.16
9	68.088 (0.553)	1.260 (1.189)	1.332 (0.244)	-0.416 (0.931)	0.239 (0.530)	58.421 (4.549)**	0.569	43.297	96.005

Notes:

i. Figures in parenthesis are t-values.
ii. The asterisk signs (**) and (*) indicate that the results are significant at one percent and five percent level respectively.
iii. Operating profit margin is the dependent variable.

Table 7 shows that the beta coefficients for return on assets are positive with operating profit margin before merger. It indicates that return on assets has a positive impact on operating profit margin. This finding is consistent with the findings of Palepu (1986). Similarly, the beta coefficients for return on equity are positive with operating profit margin. It indicates that return on equity has a positive impact on operating profit margin. This finding is consistent with the findings of Bonin *et al*. (2005). Likewise, the beta coefficients for non-performing loan are negative with operating profit margin. It indicates that the non-performing loan has a negative impact on operating profit margin. This finding is consistent with the findings of Akhavein *et al.* (1997). Similarly, the beta coefficients for debt equity ratio are positive with gross profit margin. It indicates that debt equity ratio has a positive impact on operating profit margin. This finding is consistent with the findings of Talha and Sallehhuddin (2005).

The regression results of return on assets, return on equity, return on operating expenses, non-performing loan and debt to equity ratio on operating profit margin after merger in Nepal have been presented in Table 8.

Table 8: Estimated regression results of return on assets, return on

equity, return on operating expenses, non-performing loan and debt equity ratio on operating profit margin in Nepal after merger

The results are based on the panel data of 13 commercial banks of Nepal after merger using the linear regression model. The model is $OPM_{it} = \beta_0 + \beta_1 ROA_{it} + \beta_2 ROE_{it} + \beta_3 DR_{it} + \beta_4 ROOE_{it} + \beta_5 NPL_{it} + e_{it}$ *where, the dependent variable is OPM (Operating profit margin as measured by the ratio of operating profit to total revenue, in percentage). The independent variables are ROA (Return on assets as measured by the ratio of net income to total assets, in percentage), ROE (Return on equity as measured by the ratio of net income to shareholder's equity, in percentage), DE (Debt equity ratio as measured by the ratio of total debt to total equity, in percentage), ROOE (Return on operating expenses as measured by the ratio of net income to operating expense, in percentage) and NPL(Non-performing loan as measured by the ratio of non-performing loan to total loans, in percentage).*

Model	Intercept	Regression coefficients of					Adj. R_bar^2	SEE	F-value
		ROA	ROE	NPL	ROOE	DER			
1	(45.678) (0.354)	13.004 (11.454)**					0.842	84.878	183.518
2	(22.776) (2.104)**		11.848 (9.296)**				0.876	93.906	90.181
3	28.655 (11.040)**			-0.514 (9.441)**			0.867	97.681	95.479
4	32.266 (9.807)**				0.279 (12.775)**		0.884	84.308	115.241
5	247.46 (7.838)**					51.791 (14.573)**	0.948	56.38	274.979
6	(23.95) (0.319)	10.875 (4.719)**	1.156 (0.142)				0.874	47.969	52.673
7	15.62 (0.570)	6.24 (1.031)	0.757 (0.144)	-0.145 (0.430)			0.90	88.347	45.785
8	48.398 (1.730)	13.072 (1.920)	10.434 (1.587)	-1.088 (1.543)	1.179 (1.756)		0.818	74.319	41.46
9	48.088 (0.533)	5.260 (1.412)	1.632 (0.264)	-0.414 (0.531)	0.239 (0.580)	58.421 (4.599)**	0.569	43.297	96.005

Notes:

i. Figures in parenthesis are t-values.
ii. The asterisk signs (**) and (*) indicate that the results are significant at one percent and five percent level respectively.
iii. Operating profit margin is the dependent variable.

Table 8 shows that the beta coefficients for debt to equity ratio are positive with operating profit margin after merger. It indicates that debt to equity ratio has a positive impact on operating profit margin. This finding is consistent with the findings of Larasati *et al.* (2018). Similarly, the beta coefficients for return on equity are positive with operating profit margin. It indicates that return on equity has a positive impact on operating profit margin. This finding is consistent with the findings of De Wet and Du Toit

(2007). Likewise, the beta coefficients for non-performing loan are negative with operating profit margin. It indicates that the non-performing loan has a negative impact on operating profit margin. This finding is consistent with the findings of Akhavein *et al.* (1997). Similarly, the beta coefficients for return on operating expenses are positive with gross profit margin. It indicates that return on operating expenses has a positive impact on operating profit margin. This finding is consistent with the findings of Sinha *et al*. (2010).

4. Summary and conclusion

Soundness of the banking conditions leads a country towards its economic development. Every bank is relentless in their endeavor to become financially strong and operationally efficient and effective. Some of the reason behind mergers and acquisition being a part of today's business environment is revenue enhancement, cost reduction, vertical and horizontal operational strategies, growth of the industry, need of the product and service diversification. Merger and acquisition play a vital role in enhancing profitability of commercial banks.

This study attempts to analyze the impact of merger and acquisitions on the performance of Nepalese commercial banks. The study is based on secondary data of 13 commercial banks with 106 observations from 2010/11 to 2019/20.

The study showed that return on assets, return on equity, return on operating expenses, non-performing loan and debt to equity ratio on operating profit margin and gross profit after the merger of Nepalese commercial banks. Similarly, return on assets and leverage have positive effect on capital adequacy ratio and core capital ratio return on assets, return on equity, return on operating expenses, non-performing loan and debt to equity ratio on operating profit margin and gross profit before the merger of Nepalese commercial banks. The study concluded that debt to equity ratio followed by return on operating expenses are the most influencing factors that explain the changes in the gross profit margin in the context of Nepalese commercial banks after the merger. The study also concluded that debt to equity ratio followed by return on operating expenses are the most influencing factors that explain the changes in the operating profit margin in the context of Nepalese commercial banks after merger.

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