Determinants of Profitability of Nepalese Commercial Bank

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Chapter I

1.1 Introduction and Background of the Study

Microeconomic activities as well as macroeconomic activities of an economy largely depend on banking sector. Banking institutions are considered the lifeblood of any economy. A bank is financial institution and a financial intermediary that accepts deposits and channels those deposits into lending activities. In the process of taking deposits and lending, the interest rate is discovered by paying lower interest rate to depositors and receiving higher interest rate from borrower to retain profitability.

The primary function of bank taking deposits and providing loans always run with main motive to generate profit. An efficient financial system improves bank's profitability by increasing the amount of funds available for investment, while enhancing the quality of services provided for the customers.

Profitability is measure of firm's efficiency. Profit is the oxygen that governs all the activities of a bank. The two main functions of a bank, i.e., taking deposits and making advances, run around the prime motive to generate profits. Profitability is necessary for a bank to maintain ongoing activity and for its shareholders to obtain fair returns.

Financial profitability lies in a firm's ability to generate revenues more than its costs, for either long or short term. Therefore, the factors which affect the bank profitability would be those that affect the bank's revenue and cost. Hence, the impact of the internal and external determinants of commercial bank profitability is analyzed with a view to show their impact on bank revenue and cost. Banks are using different strategies for maximizing their profitability. The stability of the bank depends in the profitability level. Therefore, an efficient management of banking operations aimed at ensuring the growth of profits.

Factors affecting commercial banks performance according to profitability are broadly categorized into two, internal and external factors. Internal factors are mainly influenced by a bank management decisions and policy objectives whereas external factors focus on industry–related and macroeconomic variable reflected in the economic and legal environment where banks operate.

The determinants of bank profitability have attracted the interest of academic research as well as of bank management, financial markets, and bank regulators. The significance of variables as determinants of profitability differs from bank to bank. Some variables have greater influencing the profitability of the bank whereas some variables have no significant effect.

1.2 Statement of the problem

Profitability is the net income after tax of banks commonly measured by return on assets and return on equity ratios. Identifying profit determinants provide an opportunity to know which variables' influencing banks profit, management can concentrate their attention and at the time of decisions making to adjust the factors.

Increasing competition has forced banks to search for more income at the expense of more risk. Technological changes have also heightened competition by making it easier to imitate bank services. The traditional advantage of physical proximity to clients given by extended networks of branches has vanished. Banks must compete with money market mutual funds for deposit business, commercial papers, and medium-term notes for bank loans. New sources of income, such as fee-based income from investment services and derivatives, are becoming increasingly relevant for the income statement of commercial banks.

Knowledge of the factors that affects the profitability of financial sector would be useful in helping the regulatory authorities and bank managers formulate future policies aimed at improving the profitability of the banking sector. Given the relation between the well-being of the banking sector and the growth of the economy, knowledge of the underlying factors that influence the financial sector's profitability is therefore essential not only for the managers of the banks, but also for numerous stakeholders such as the central banks, bankers' association, governments, and other financial authorities.

The significance of variables as determinants of profitability differs from bank to bank. Some variables have greater influencing the profitability of the bank whereas some variables have no significant effect.

Hoffman (2011) examined the determinants of the profitability of the US banks during the period 1995-2007. This study combined bank specific and macroeconomic variables through generalized

methods of moment's system estimator. The results revealed negative link between capital ratio and profitability, which supported the notion that banks were operating over-cautiously and ignoring potentially profitable trading opportunities. Ben Naceur and Goaied (2008) examined the impact of specific variables related to commercial banks of Tunisia as well as macroeconomic indicators on the profitability and financial structure's effect on banking sector's profitability in Tunisia from 1980 to 2000 period. It was found Capital adequacy ratio has positive effect on profitability and negative impact of bank size on profitability. And there was no impact of macroeconomic indicators on bank's profitability in Tunisia.

Bilal et al.(2013) studied the influence of bank specific and macroeconomic factors on profitability of commercial banks in Pakistan over the period 2001-2011 using linear multiple regressions. The study used descriptive statistics, correlation and regression analysis and found that bank size and net interest margin have positive and significant impact on the ROA and ROE. Non-performing loans to total assets and inflation have negative significant impact on ROA while capital ratio has positively significant impact on ROE.

Financial development in many developing economies like Nepal is still faced by several obstacles such as macroeconomic instability, the fragility of stock markets, the limitation of capital markets and the inefficiency of development and specialized banks. Despite some of these limitations, banking systems in underdeveloped countries remain integral components if the general economic systems and they can be considered as a key element in any development effort (Zeinab, 2006). The commercial banks are currently regarded as key driver of financial institution of Nepal.

In Nepalese context, stability in the banking sector helps to maintain stability in the economy (Baral, 2005). Few studies have been done on determinants of profitability of commercial banks in Nepal. Neupane (2013) found positive relationships between capital adequacy and profitability. Joshi (2002) found that the liquidity and bank loans were positively related to banks' profitability. Bam et al. (2014) revealed that profitability (ROA) is positively related with asset composition, expenses management variable, assets size. Maharjan et al.(2014) showed that inflation, capital adequacy was positively related with bank profitability. So, studies related to banking profitability carry huge importance. Studies and necessary implications are required in Nepal that not only

enhances the performance and profitability of the banks but also promote economic activities and growth.

Though there are above mentioned empirical evidence in the context of other countries and in Nepal, no such evidence using more recent data exist in the context of Nepal. This study therefore deals with the following issues in the context of Nepalese banks:

1. What are the factors influencing the profitability of Nepalese commercial banks?
2. How does capital adequacy determine the profitability of Nepalese commercial banks?
3. Does bank size affect the Nepalese commercial banks profitability?
4. How does liquidity ratio relate to Nepalese commercial bank's profitability?
5. What is the relationship between asset quality and Nepalese commercial bank's profitability?
6. Is there any significant relationship between inflation and profitability in Nepalese commercial banks?
7. How does non-performing loan affect Nepalese commercial banks profitability?
8. What is the relationship between net interest margin and Nepalese commercial banks profitability?

1.3 Need and Significance of the Study

The study focuses on the determinants of profitability of the Nepalese commercial banks. Thus, the study is particularly significant to bank management teams, bank regulators, investors, shareholders, and other stakeholders who are interested in understanding the factor determining the profitability of commercial banks.

The study provides insight for bank management teams on factors that determine bank profitability and efficient utilization of resources, for sustainable competitiveness. Thus, this study contributes to understand more of the factors that have an impact on commercial banks profitability in Nepal. This study expects to help those bankers who will get information to improve the profitability of Nepalese commercials bank.

Similarly, this study helps shareholders to know how well the bank is being able to utlilze equity capital and earn return. With the help of this study results, policy maker can understand how

different factor determine the commercial banks profitability and implement new policy or amend the existing policy to better improve banking sector profitability. A sound and profitable banking system is better able to improve financial system stability and economic growth as it makes the economy more endurable to negative and external shock.

For the investors, it is crucial to know how well the bank is performing before they make decission to invest in any bank share in order to acquire desirable return with lesser risk. And this study helps them in knowing how good the performance of different commercial banks in term of Return of Asset (ROA) and Return of Equity (ROE). Likewise, Further studies can be carried out to generalize the determinants of bank profitability in the developing nation like Nepal.

1.4 Objectives of the Study

The major purpose of this study is to analyze the determinants of profitability of Nepalese commercial banks. However, the specific objectives of the study are as follows:

1. To identify the relationship between capital adequacy and bank profitability.
2. To analyze the relationship between non-performing loan and profitability.
3. To examine the relationship between liquidity position and profitability.
4. To evaluate impact of bank size on profitability.
5. To identify the relationship between net interest margin and bank profitability.
6. To examine the relationship between inflation rate and bank profitability.

1.5 Operational definition

This section deals with the operation definition of the variables that have been used in this study. The study attempts to investigate determinant of profitability of commercial bank using 9 variables, 2 of them are dependent variables and other are explanatory variables. The independent variables are divided into two sub-categories as bank specific and macroeconomic determinants of bank profitability. The brief description on how variables that have been used in this study are given below:

1.5.1 Bank profitability measures (Dependent variable)

Profit is the main goal of commercial banks. All the strategies designed, and activities performed thereof are meant to realize this grand objective. However, this does not mean commercial banks have no other goals. Commercial banks could also have additional social and economic goals. However, the intention of this study is related to the first objective, profitability. It is dependent variable. To measure the profitability of commercial banks there are variety of ratios used of which Return on Asset and Return on Equity.

Return on assets (ROA)

Return on assets shows the earning of single assets in rupees. It gives an idea of how efficient management is using its assets to generate earnings. It gives investors an idea how effectively the company is converting the money it must invest into net incomes. For the measurement of profitability ROA has been used in many studies. This ratio can be calculated using the net income to total assets. The ratio indicates how much net income is generated on each unit of assets thus the higher the ROA, the more the profitable the bank (Kumbirai and Webb, 2010). The ratio shows how efficiently the resources of the company are used to generate the income (Ongore and Kusa, 2013). ROA can be increased by firms either by increasing profit margins or asset turnover, but they can't do it simultaneously because of competition and trade-off between turnover and margin.

Return on equity (ROE)

ROE is the ratio of net income to total equity. It indicates the profitability to shareholders of the firm after all expenses and taxes (Van, 2005). It measures how much the firm is earning after tax for each dollar invested in the firm. It is also an indicator of measuring managerial efficiency (Sabi, 1996). A business with high ROE is more likely to be one that can generate cash internally. Thus, the higher the ROE the better the company is in terms of profit generation. It reflects how effectively a bank management is using shareholders' funds. A high ratio indicates success/growth of bank in mobilizing its equity capital and vice-versa.

Bank specific factors (Internal Factors)

Internal factors are bank specific factors that influence the profitability of specific bank. These factors are within the scope of the bank to manipulate them and that they differ from bank to bank. These factors are basically influenced by internal decisions of management and the board. The internal factors that have been used in this study are given below:

Capital adequacy

This is internal factor for the measurement of the profitability and the amount retained by the bank to meet the unexpected loss and danger involved. The ratio measures how much of the banks' assets are funded with owners. It is expected that the higher the ratio, the lower the need for external funding and the higher the profitability of the bank. It shows the ability of bank to absorb losses and handle risk exposure with the shareholder. Capital adequacy is more important for financial institutions of developing economies because it provides more strength to survive in the financial crises and increased safety for depositors in difficult macroeconomics (Deger and Adem, 2011). Wasiuzzaman and Tarmizi (2010) found capital adequacy has positive relationship with bank profitability. Based on it, this study develops the following hypothesis:

H1: Capital adequacy is positively related to bank profitability.

Assets Quality

The important variable that makes significant impact on financial performance of the bank is assets quality (AQ). To address the asset quality two ratios were used in this study: loans to total assets (LA) and non-performing loans to total loans (NPL). As loans was one of the main sources of income of a bank, the ratio loans to total assets were expected to affect profitability positively unless an unacceptable level of risk is taken by a bank. Non-performing loans (loans which are considered not to generate earnings) to total loans ratio measures the asset quality of bank. In other words, it reflected the health of bank's loan portfolio that affects performance of bank negatively. The higher the NPL ratio the poorer the quality of loan portfolio and therefore it leaded to lower profitability. Therefore, loans to total assets (LA) and non-performing loans to total loans (NPL). are the best measures of assets quality of bank. (Bhattarai, 2017) found that non-performing loan ratio has negative effect on overall bank profitability (ROA) whereas, non-performing loan ratio has positive effect on shareholders' return (ROE)

H2: non-performing negatively related with bank profitability.

H3: loan to total asset is positively related with the bank profitability.

Liquidity position

Liquidity measures the ability of banks to meet short term obligation or commitments when they fall due. Maintaining a sound liquidity position to safeguard against the liquidity risk is a vital policy of commercial banks. The ratio of total loan to total deposit is used in this study as a measure of liquidity. Insufficient liquidity is one of the major reasons for the bank failures. Dawood (2014)

found negative relationship between liquidity and profitability. Bourke (1989) concluded the positive significant relationship between the bank liquidity and profitability. Based on it, this study develops the following hypothesis:

H4: Liquidity is positively related to bank profitability.

Bank size (Bank assets)

In most finance literature, total assets of the banks are used as a proxy for bank size. It is used as independent variable. If the size of bank is high, it will be good for banks to undertake big investment. Bank size is represented by the natural logarithm of total asset (Log TA). Large banks are likely to enjoy higher economics of scale and hence be able to product services at a lower cost and more cheaply and efficiently than can small banks which would have a positive influence on profitability. Bank size has direct impact on profitability by reducing the cost of raising the capital for large bank (Short, 1979). (Bhattarai, 2017) revealed that that bank size has significant positive effect on bank profitability (ROA, ROE). (Islam et al (2017) suggested that asset size has no significant effect on the profitability (Islam, Islam Sarker, Rahman, Sultana, & Prodhan, 2017) Based on it, this study develops the following hypothesis:

H5: Bank size is positively related to bank profitability

Net interest margin (NIM)

Net interest margin is a measure of the difference between the interest income generated by banks and the amount of interest paid out to their lenders, relative to the amount of their assets. The NIM variable is defined as the net interest income divided by the total assets. A positive NIM means the investment strategy pays more than it costs and vice-versa. Nguyen (2012) considered Net Interest Margin as the indicator of profitability of the bank which is the ratio of the net interest to the amount of the earnings assets. Higher the ratio is the indication of the better assets management quality for using the assets in profitable way (Chortareas et.al., 2012). Based on it, this study develops the following hypothesis:

H6: Net Interest Margin is positively related to bank profitability

1.5.2 Macroeconomic factors (External Factors)

Banks profitability is expected to be sensitive to macroeconomic variables. In the literature in terms of external determinants, generally three macro-economic variables are used: Gross Domestic Product, inflation rate and real interest rate. This study has used following external factors:

Inflation:

Inflation is a rise in the price level of goods and services in an economy over a period. A high inflation rate is generally associated with high loan interest rates and therefore generates high income. The relationship between the inflation and profitability may have a positive or negative effect on profitability depending on whether it is anticipated or unanticipated (Perry, 1992). If inflation rate is an anticipated by the bank according to the increase on inflation, it will be useful for bank and vice- versa. The task of keeping the rate of inflation low and stable is usually given to central bank. Central Banks control inflation through setting of interest rate, open market operation, and through the setting of banking cash reserve requirement. It is explored by (Hoggarth et. al., 1998) that an unexpected variation in inflation can create problems in the planning of loans and effect profitability. Molyneux and Thornton (1992) found a positive link between inflation and profitability. Increase in inflation has a positive association with performance of bank (Guru et. al., 2002). Based on this, this study develops following hypothesis:

H7: Inflation is negatively related to bank profitability.

1.6 Conceptual framework

The main objective of the study is to analyze the determinant of profitability of Nepalese commercial banks. The conceptual framework in this study consists of three dependent variables along with six independent variables.

Figure: Schematic diagram showing the relationship between the variables

(This figure shows the theoretical framework of the study. Liquidity position, Capital adequacy ratio, bank size, loan to total asset, non-performing loan, net interest margin and inflation rate denote independent variables. Dependent variables are return on assets and return on equity. All these independent variables are expected to influence the dependent variables.)

Independent variables

Bank specific variables

Liquidity position

Capital adequacy ratio

Bank size

Loan to total asset

Non-performing loan

Net interest margin

Dependent variables

Bank profitability

Return on assets (ROA)

Return on equity (ROE)

Macroeconomic Variable

Inflation rate
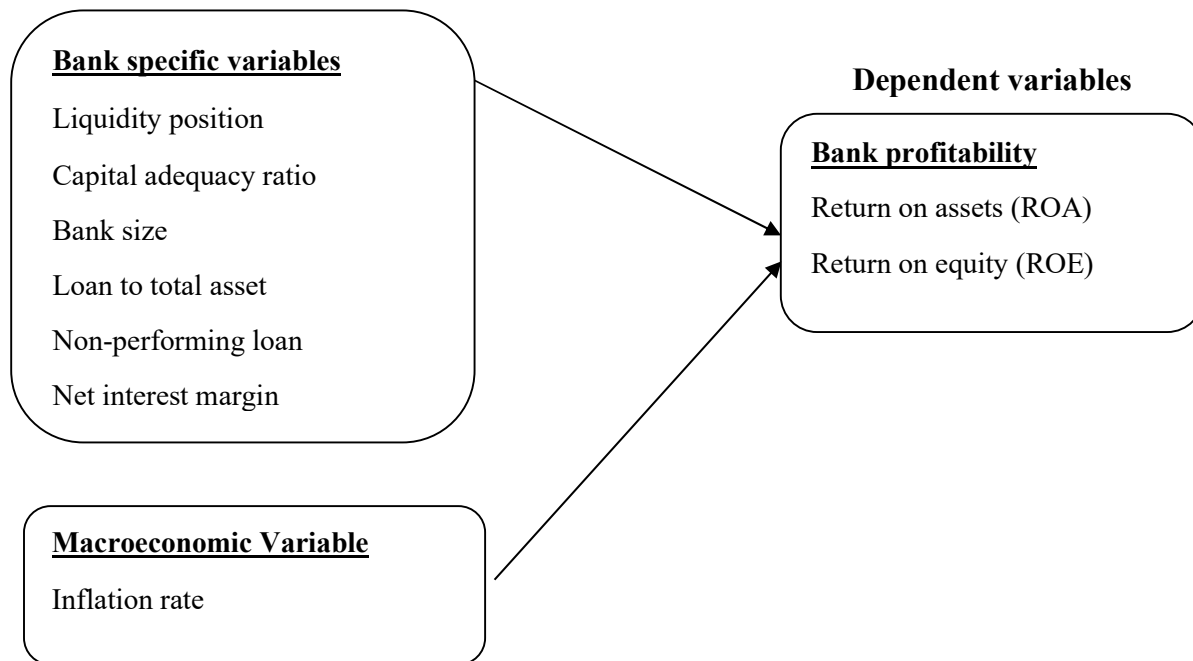
Chapter II

2. RESEARCH METHODOLOGY AND DESIGN

Research methodology sets out overall plan associated with the study. It provides a basic framework on which the study is based upon. Before analysis and interpretation of the data, it is necessary that research methodology be described first. In absence of research methodology, it is likely that conclusions drawn may be misunderstood. This chapter therefore explains the methodology employed in this study in order to achieve and accomplish the objective of the study

2.1 Research Design

This study is based on descriptive, correlation and causal comparative research design. The fact and behavior of the variables under the study has been analyzed using descriptive analysis. Similarly, the direction and magnitude of the relationship of the financial performance of the Nepalese commercial banks and factors affecting it is observed using correlation research design. Finally, the causal comparative research design is used to evaluate the explanatory power of bank specific factors for explaining financial performance of Nepalese commercial banks. The effect of bank specific and macroeconomic variables like capital adequacy, net interest margin, non-performing loan, liquidity position, bank size, loan to total asset and inflation on banks profitability has been analyzed.

2.2 Population and Sample

The entire commercial banks of Nepal are the population of this study. There are all together 27 commercial banks till mid-July 2020. Those banks are selected as samples which are listed on Nepal Stock Exchange and that are operating regularly from financial year 2013/14 to 2019/20. This study is confined on the 10 Nepalese commercial banks. The 10 'A' level banks that have been selected as sample size and the study period is presented in table 1.

Table 1. Selection of banks, study period, and number of observations

S. N	Name of the company	Study period	Observation
1.	Agricultural Development Bank Ltd.	2015-2020	6
2.	Nabil Bank Ltd.	2015-2020	6

3.	Nepal Bank Limited	2015-2020	6
4.	Nepal SBI Bank Ltd.	2015-2020	6
5.	Himalayan Bank Ltd.	2015-2020	6
6.	Nepal Investment Bank Ltd.	2015-2020	6
7.	Everest Bank Ltd.	2015-2020	6
8.	Siddhartha Bank Ltd.	2015-2020	6
9.	Sunrise Bank Ltd.	2015-2020	6
10	Sanima Bank Ltd	2015-2020	6
Total Observations			60

Thus, the study is based on 60 observations.

2.3 Nature and sources of data

This study is solely based on secondary source of data. The required data for this study is collected from annual report of sample commercial banks. This study used balanced panel data of 10 commercial banks of Nepal from 2013/14 to 2019/20. The required data for return on assets (ROA) and return of equity (ROE) is collected using the balance sheet, and data related to capital adequacy (CA), net interest margin (NIM), non-performing loan (NPL), liquidity position (LP), bank size (BS), assets quality (AQ) and inflation (INF) is collected using the key indicator provided by the concern bank.

2.4 Method of data analysis

The main purpose of data analysis in this study is to explain the impact of bank specific and macroeconomic variable on the profitability of Nepalese commercial banks. This study includes the quantitative data, and they are analyzed through the descriptive, co-relational and casual comparative research methods. Statistical package for social science (SPSS) software has been used to analyze the data and to get the required information and results. This section deals with statistical and econometric models for analyzing of secondary data.

a. Model specification

The model estimated in the study assumes that the banks' profitability is dependent variable and capital adequacy, liquidity position, net interest margin, loan to total asset, non-performing loan,

bank size, and inflation are independent variables. The profitability of the bank is measured in ROA and ROE. Hence, the model is as follow:

Bank profitability= f(bank profitability determinants)

More specifically,

Model 1:

Model 1 tries to find out the relationship between the bank profitability in terms of return on assets and bank specific and macroeconomic variables.

$ROA = \beta_0 + \beta_1(CA) + \beta_2(NIM) + \beta_3(LP) + \beta_4(BS) + \beta_5(LTA) + \beta_6(NPL) + \beta_7(INF) + er$

Model 2:

Model 2 tries to find out the relationship between bank profitability in terms of return on equity and bank specific and macroeconomic variables.

$ROE = \beta_0 + \beta_1(CA) + \beta_2(NIM) + \beta_3(LP) + \beta_4(BS) + \beta_5(LTA) + \beta_6(NPL) + \beta_7(INF) + er$

Where,

NIM= Net interest margin

CA = Capital adequacy

LTA = Loan to total asset

LP   = Liquidity position

NPL= Non-Performing Loan

BS   = Bank size (natural logarithm of total assets)

INF = Inflation,   Er = Error

a. **Variables and measurement**

The independent and dependent variables used in the study and their measurement is shown in the table given below:

Table 2 Study Variables and its measurement

Name of Variables	Symbols	Measurement	Type
Return on assets (%)	ROA	Net income to total assets	Dependent variables
Return on equity (%)	ROE	Net income to total equity	
Liquidity position (%)	LP	Total loan to total deposit	Independent Variables
Capital adequacy (%)	CA	Total equity to total assets	
Net interest margin (%)	NIM	Net interest income to total assets	

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Bank size	BS	Natural logarithm of total assets	
Loan to total asset (%)	AQ	Total Loans to total assets	
Non-Performing Loan (%)	NPL	Non-performing loan to total loan	
Inflation (%)	INF	Annual inflation rate	

2.5 Limitation of the study

Following are the major limitations of this study:

a. This study includes data of commercial banks only. Study of other financial and non-financial institutions such as finance companies, development banks, microfinance, manufacturing company, insurance company are not taken into consideration. So, the conclusions drawn from the study needs precaution for generalizing the findings.

b. There are all together 27 commercial banks operating in the country, but the study does not cover all the commercial banks. Only 10 commercial banks are considered for the study purpose. Therefore, inclusion of all 27 commercial banks in this study would have provided more valid results.

c. This study used firm specific and macroeconomic variables such as capital adequacy, non-performing loan, loan to total asset, net interest margin, liquidity position, bank size and inflation. Besides, there are other firm specific variables and macro-economic variables which can be used.

d. The study also does not include the other different profitability measures of the bank like net operating margin.

e. This study is based on the assumptions of linear relationship between dependent variables and independent variables. Hence, linear models are used in testing the relationship between dependent and independent variables. Thus, this has not considered the non-linearity biases.

f. Only limited statistical and financial tools have been used in the study. Not using more scientific and sophiscated tools may limit the validity of the study-findings.

g. All the portion of the analysis is based on the secondary data and available information. Therefore, the consistency of findings and conclusions are dependent upon the reliability of secondary data and information.

CHAPTER III

3. RESULTS AND DISCUSSION

This chapter provides systematic presentation and analysis of secondary data to deal with the various issues related to the determinant of profitability. Various statistical and econometric models described in previous chapter have been used for this purpose. This chapter is divided into three sections. The first section deals with descriptive statistics, second section deals with the correlation analysis and third section deals with regression.

3.1 Descriptive statistics

Descriptive analysis has been made to understand the facts regarding the determinants of profitability of commercial banks. The descriptive statistics includes minimum value, maximum value, mean value and standard deviation. Table 3.1 presents the descriptive statistics for total sample of this study.

Table 3.1: Descriptive statistics

(Table 3.1 shows the descriptive statistic of determinant of profitability of banks of 10 sample banks for the study period of 2014/15 to 2019/20. The dependent variables are return on assets, and return on equity, whereas bank size, non-performing loan, capital adequacy, loan to total assets, net interest margin, liquidity position and inflation are independent variables.)

Variables	N	Minimum	Maximum	Mean	Std. Deviation
ROA (%)	60	0.55	3.12	1.8643	0.49120
ROE (%)	60	7.48	42.94	16.8370	5.60587
BS (Million)	60	3738.8814893	23768.0029570	12135.1916721	4345.4637543
NPL (%)	60	0.01	5.35	1.4755	1.33266
CA (%)	60	7.49	20.41	13.6450	2.44502
LTA (%)	60	53.89	74.65	66.4635	5.68549
NIM (%)	60	1.05	5.60	3.4475	.84127
LP (%)	60	64.43	95.64	82.6532	7.74994
IFL (%)	60	4.15	9.93	6.0883	2.04024

Source: SPSS output result outcome

Table 3.1 clearly shows the descriptive statistics for the selected variables considered in this study. Return on assets has minimum value of 0.55 percent and maximum of 3.12 percent with a mean

of 1.86 percent. The average return on equity of selected banks during the study period is noticed to be 16.84 percent with minimum value of 7.48 percent and a maximum value of 42.94 percent. Bank size varies from a minimum value of Rs. 3738.8814893 million to a maximum of Rs. 23768.0029570 million with an average of Rs. 12135.1916721 million. The Non-performing loan (NPL) ranges from 0.01 percent to 5.35 percent with the average of 1.48 percent and standard deviation of 1.33 percent. The capital adequacy has a minimum value of 7.49 percent and a maximum value of 20.41 percent with an average of 13.65 percent. The Loan to total assets varies from a minimum of 53.89 percent to maximum of 74.65 percent leading to the average of 66.46 percent. The net interest margin of selected banks ranges from a minimum value of 1.05 percent to maximum value of 5.60 percent with an average of 3.44 percent. Liquidity position varies from a minimum value of 64.43 percent to a maximum of 95.64 percent with an average of 82.65 percent.

Similarly, the inflation rate varies from a minimum value of 4.15 percent to a maximum of 9.93 percent leading to an average of 6.09 percent.

3.2 Correlation analysis

Having indicated the descriptive statistics, the Pearson correlation coefficients have been computed and the results are presented in Table 3.2.

Table 3.2: Correlation matrix for dependent and independent variables

This table 3.2 presents the bivariate Pearson correlation coefficients between various variables used in the study. The correlation coefficients are based on the data from 10 sample banks with 60 observations for the period 2014/15 to 2019/20.) The dependent variables are return on assets (ROA in percentage) and return of equity (ROE in percentage). The independent variables are bank size (in million), non-performing loan (NPL in percentage), capital adequacy (CA in percentage), loan to total assets (LTA in percentage), net interest margin (NIM in percentage) liquidity position (LP in percentage) and inflation rate (IFL in percentage)

Correlations									
	ROA	ROE	BS	NPL	CA	LTA	NIM	LP	IFL
ROA	1								
ROE	.530[**]	1							
BS	.058	-.294[*]	1						
NPL	.222	-.128	.081	1					
CA	.299[*]	-.323[*]	.293[*]	.280[*]	1				
LTA	.159	-.057	-.346[**]	-.116	.112	1			
NIM	.575[**]	.091	-.003	.548[**]	.391[**]	.144	1		
LP	.161	-.248	-.145	.024	.429[**]	.737[**]	.352[**]	1	
IFL	-.151	.356[**]	-.331[**]	.075	-.270[*]	-.169	-.256[*]	-.244	1

**. Correlation is significant at the 0.01 level (2-tailed).	
*. Correlation is significant at the 0.05 level (2-tailed).	

Table 3.2 shows that the positive relationship between bank size and return on assets reveals that larger the bank size, higher would be return on assets. Likewise, non-performing loan is positively corelated with the return on assets. It means higher the non-performing loan, higher would be return on assets. The return on assets is positively related with capital adequacy and loan to total assets. It indicates that higher the value of capital adequacy and loan to total assets, higher would be return on assets. Similarly, net interest margin and liquidity position is positively related with return on assets. This means higher the net interest margin and liquidity; higher would be return on assets. however, return on assets is negatively related with inflation. It indicates that higher the inflation rate, lower would be return on assets.

The result also shows that there is negative relationship of bank size, capital adequacy and non-performing loan with return on equity which indicates that higher the value of bank size, capital adequacy and non-performing loan, lower would be return on equity. Similarly, loan to total assets and liquidity position is negatively related with return on equity. It means higher the value of loan to total assets and liquidity position, lower would be return on equity. However, net interest margin and inflation have positive relationship with return on equity. It reveals that higher the value of net interest margin and inflation, higher would be return on equity.

3.3 Regression analysis

3.3.1Regression analysis

Having indicated the Pearson correlation coefficients, the regression analysis has been conducted and the results are presented in Table 3.3.

Table 3.3: Regression of bank specific and macroeconomic variables on return on assets

This table 3.3 shows the regression result of regression result of ROA with bank specific and macroeconomic variables based on time series data of 6 years from 2014-2020l. Tested regression model is $ROA=\beta0+\beta1(CA)+\beta2(NPL)+\beta3(NIM)+\beta4(BS)+\beta5(LTA)+\beta6(LP)+B7(IFL) + E$. Where, ROA= Return on assets, CA=capital adequacy, NPL= non-performing loan, NIM= net interest margin, BS=bank size, LTA=loan to total assets, LP= liquidity position, and INF= inflation rate. The reported results also include value of F- statistic (F), coefficient of determination (R^2)).

Model	Intercept	Regression coefficients of							R^2	SEE	F
		CA	NPL	NIM	BS	LTA	LP	IFL			
1.	1.045 (2.99*)	0.06 (2.38*)							0.09	47.57	5.69
2.	1.74 (18.65**)		0.08 (1.73)						0.49	48.30	3.00
3.	0.71 (3.18**)			0.34 (5.35**)					0.33	40.55	28.58
4.	-2.65 (0.64)				0.41 (1.10)				0.020	49.04	1.20
5.	0.95 (1.27)					0.014 (2.23)			0.025	48.90	1.51
6.	1.018 (1.50)						0.010 (1.25)		0.026	48.89	1.55
7.	2.09 (10.40**)							-0.04 (1.16)	0.023	48.97	1.35
8.	0.44 (1.31)	0.02 (0.84)	-0.05 (1.10)	0.34 (4.56**)					0.35	40.62	10.08
9.	-5.64 (1.44)			0.38 (5.32**)	0.53 (1.58)	0.30 (2.02*)	-0.018 (1.67)		0.39	39.81	8.67
10.	-2.61 (0.64)			0.34 (4.88**)	0.31 (0.88)		-0.001 (0.18)	0.007 (0.25)	0.34	41.28	7.13
11.	0.028 (0.037)	0.021 (0.87)	-0.054 (1.04)	0.36 (4.26**)		0.004 (0.45)		0.014 (0.47)	0.36	41.22	5.95

1. *Figures in parenthesis are t-values.*
2. *The asterisk (*) sign indicates that result is significant at 5% level and double asterisk (**) sign indicates that result is significant at 1%.*
3. *Dependent variable is Return on Assets (ROA).*

The regression result of independent variables on return on assets shows that beta coefficients for capital adequacy, non-performing loan, net interest margin, loan to total interest, bank size and liquidity position are positive. However, beta coefficient is negative for inflation in table. It indicates that higher the capital adequacy, higher would be return on assets. The beta coefficient is significant for capital adequacy at 5 percent level of significance. The finding is in consistent with the finding of Wasiuzzaman and Tarmizi (2010). The result also indicates that increase in non-performing loan leads to increase in return on asset, but beta coefficient is not significant for non-performing loan. The finding is in contrast with the finding of (Bhattarai, 2017).

Similarly, increase in net interest margin leads to increase in return on assets. The beta coefficient is significant for net interest margin at 1 percent level of significance. Likewise, increase in bank size leads to increase in return on assets. The beta coefficient is not significant for bank size. The result is in line with the result of (Islam et al (2017). Similarly, increase in loan to total assets and liquidity position leads to increase in return on asset but beta coefficient is not significant.

However, increase in inflation leads to decrease in return on asset but beta coefficient is not significant. The finding is in contrast with the finding of (Guru et. al., 2002).

The regression result of bank specific and macro-economic variables on return on equity is presented in below table 3.4.

Table 3.4: Regression of bank specific and macroeconomic variables on return on equity

This table shows 3.4 the regression result of regression result of ROE with bank specific and macroeconomic variables based on time series data of 6 years from 2014/15-2019/20. Tested regression model is $ROE=\beta0+\beta1(CA)+\beta2(NPL)+\beta3(NIM)+\beta4(BS)+\beta5(LTA)+\beta6(LP)+B7(IFL) + E$. Where, ROE= Return on equity, CA=capital adequacy, NPL= non-performing loan, BS=bank size, LTA=loan to total assets, LP= liquidity position, and INF= inflation rate. The reported results also include value of F- statistic (F), coefficient of determination (R^2)).

Model	Intercept	Regression coefficients of							R^2	SEE	F
		CA	NPL	NIM	BS	LTA	LP	IFL			
1.	26.95 (6.82**)	-0.74 (2.60*)							0.10	535.07	6.76
2.	17.63 (16.25**)		-0.54 (0.98)						0.016	560.77	0.96
3.	14.75 (4.77**)			0.60 (0.93)					0.008	563.07	0.48
4.	104.74 (2.27*)				-7.95 (1.91)				0.059	548.38	3.66
5.	20.56 (2.39*)					-0.056 (0.43)			0.003	564.48	0.19
6.	31.67 (4.15**)						-0.18 (1.95)		0.062	547.71	3.81
7.	10.88 (5.01**)							0.98 (2.90**)	0.13	528.31	8.43
8.	70.78 (1.58)	-0.83 (2.61*)	-0.89 (1.46)	2.38 (2.38*)	-4.49 (1.08)				0.21	516.38	3.63
9.	19.41 (2.05*)	-0.36 (1.01)			0.19 (1.05)	-0.18 (1.23)	0.78 (2.24*)		0.21	517.76	3.54
10.	75.41 (1.29*)			1.34 (1.59)	-0.67 (1.19)	-0.091 (0.66)		0.91 (2.34*)	0.18	524.65	3.09
11.	5.59 (1.83)	-0.71 (2.53*)	-1.50 (2.61*)	3.45 (3.63**)				1.18 (3.59**)	0.35	469.53	7.28
12	128.44 (2.62*)		-1.37 (2.29*)	3.07 (3.02**)	-8.78 (2.12*)	0.14 (0.76)	-0.39 (2.89**)		0.27	498.78	4.11

Notes:

1. *Figures in parenthesis are t-values.*
2. *The asterisk (*) sign indicates that result is significant at 5% level and double asterisk (**) sign indicates that result is significant at 1%.*
3. *Dependent variable is Return on Equity (ROE).*

The regression result of independent variables on return on equity shows that beta coefficients are negative for capital adequacy (CA), non-performing loan (NPL), bank size (BS), loan to total assets (LTA) and liquidity position (LP). It indicates higher the value of capital adequacy; lower would be return on equity and the beta coefficient is significant for capital adequacy at 5 percent level of significance. The result is in contrast with the result of Wasiuzzaman and Tarmizi (2010). It also indicates higher the non-performing loan (NPL), lower would be return on equity but the beta coefficient is not significant. The result is in line with the result of (Bhattarai, 2017) . Similarly, it reveals higher the value of bank size (BS), lower would be return on equity and the beta coefficient is not significant. Likewise, increase in loan to total assets (LTA) leads to decrease in return on equity. Likewise, it indicates that higher the liquidity position, lower would be return on equity but beta coefficient is not significant. The result is consistant with the result of (Islam et al (2017).

However, beta coefficient for net interest margin (NIM) and inflation rate (IFL) are positive.

It shows higher the value of net interest margin (NIM), higher would be return on equity. The beta coefficient is not significant.

Likewise, the result revealed that increase in inflation rate (IFL) leads to increase in return on equity. The beta coefficient is significant at 1 percent level. The result is in line with the result of Molyneux and Thornton (1992) but contrast with the result of bank (Guru et. al., 2002).

Chapter IV
Summary and conclusions

This chapter provides the summary of the entire study and highlights the major findings of the study. In addition, major conclusions are discussed in separate section of this chapter which is followed by the recommendations based upon the study findings to Nepalese commercial banks. Finally, the chapter ends with short paragraph on scope for future research in same topic.

4.1 Summary

Microeconomic activities as well as macroeconomic activities of an economy largely depend on banking sector. Banking institutions are considered the lifeblood of any economy. A bank is financial institution and a financial intermediary that accepts deposits and channels those deposits into lending activities. In the process of taking deposits and lending, the interest rate is discovered by paying lower interest rate to depositors and receiving higher interest rate from borrower to retain profitability. Banks are such types of business where deposits are considered as liabilities and issuing debt securities are considered as assets on the other part (Fama, 1980). Banks make a profit by intermediating between depositors and borrowers (Acaravci and Calim, 2013). The primary function of bank taking deposits and providing loans always run with main motive to generate profit.

Profitability is simply the difference between total revenue and total cost. Therefore, the factors which affect the bank profitability would be those that affect the bank's revenue and cost. Hence, the impact of the internal and external determinants of commercial bank profitability is analyzed with a view to show their impact on bank revenue and cost.

The determinants of bank profitability have attracted the interest of academic research as well as of bank management, financial markets, and bank regulators. The significance of variables as determinants of profitability differs from bank to bank. Some variables have greater influencing the profitability of the bank whereas some variables have no significant effect.

This study aims to investigate the determinants of profitability of Nepalese commercial banks. The specific objectives of the study are to evaluate the impact of bank specific and macroeconomic factors on the profitability of Nepalese commercial banks, to provide empirical evidence on how

bank specific and macroeconomic factors affect bank profitability and to fill a demanding gap in the context of Nepalese literature.

This study is has used secondary data which were collected from concerned banks annual reports. ROA and ROE indicate the proxy to bank profitability, whereas bank specific variables include capital adequacy, liquidity position, net interest margin, loan to total asset, non-performing loan, and bank size. Similarly macroeconomic variables consist of inflation. Out of 27 commercial bank 10 banks has been taken as sample size.

This study has used financial analysis, descriptive statistics, correlation analysis, regression analysis, stepwise regression for data analysis and get the accurate findings regarding determinants of profitability of Nepalese commercial banks. Similarly, different statistical tests of significance for validation of model such as F-test and t-test have been used to ensure the significance of stepwise regression models and individual variables.

Based on the analysis of data, the major findings of the study are summarized as follows:
1. The results reveal that return of asset is positively related with Capital adequacy, bank size, non-performing loan, loan to total assets, net interest margin and liquidity position with Nepalese commercial banks profit in term of return of assets, whereas negatively related with the inflation rate.
2. The study shows that Capital adequacy, bank size, non-performing loan, loan to total assets, and liquidity position are negatively related with return on equity whereas net interest margin and inflation is positively related with return on equity.
3. Positive beta coefficient is observed for Capital adequacy, bank size, non-performing loan, loan to total assets, net interest margin and liquidity position with return on assets which indicates that higher the Capital adequacy, bank size, non-performing loan, loan to total assets, net interest margin and liquidity position, higher would be return on assets, Likewise, the beta coefficient is negative for inflation with return on asset which means higher the inflation, lower would be return on asset.
4. Capital adequacy and net interest margin is the major determining variables of bank profitability in terms of return on asset.

5. The result reveals that the beta coefficient is negative for Capital adequacy, bank size, non-performing loan, loan to total assets, and liquidity position with return on equity. It indicates that higher the value of Capital adequacy, bank size, non-performing loan, loan to total assets and liquidity position, lower would be return on equity. The beta coefficient is significant for capital adequacy only.

6. The result found positive beta coefficient for net interest margin and inflation with return on equity, but the coefficient is not significant for net interest margin. The beta coefficient is significant for inflation only. It indicates that higher the net interest margin and inflation, higher would be return on equity.

7. The beta coefficient for capital adequacy is negative and significant for return on equity and positive and significant for return on asset.

8. In case of net return on equity, capital adequacy and inflation have the most explanatory power.

4.2 Conclusion

The major conclusion of this study is that bank specific and macroeconomics variables like capital adequacy, liquidity position, net interest margin, loan to total asset, non-performing loan, bank size, and inflation rate play a major role in determining Nepalese commercial banks profitability.

There is positive relationship of capital adequacy, bank size, non-performing loan, loan to total assets, net interest margin and liquidity position with Nepalese commercial banks profit in term of return of assets. It indicates higher the capital adequacy, bank size, non-performing loan, loan to total assets, net interest margin and liquidity position, higher would-be Nepalese commercials banks profit in term of return on assets. Similarly, inflation has negative relationship with the return on assets. In means increase in inflation rate will decrease the bank profit.

The study also concludes that capital adequacy, bank size, non-performing loan, loan to total assets, and liquidity position has negative relationship with Nepalese commercial bank's profit in term of return on equity. It indicates higher holding of capital adequacy, bank size, non-performing loan, loan to total assets, net interest margin and liquidity position leads to lower profit and vice-versa. The study further concludes that inflation and net interest margin have both positive relationship with bank profitability measures.

4.3 Recommendations

Since banks are quite different from other corporate entities in terms of numbers of stakeholders and others, the findings of this study are equally important for the promoters of the banks, general shareholders, bank's management, regulators, depositors, investors, etc. To study the determinants of profitability of Nepalese commercial banks, this study has been able to document the significant influence of various factors in banks profitability. Based on the findings of this study, following recommendations are offered:

1. The study observed a positive relationship between return on assets and capital adequacy and hence the banks willing to increase return on assets should increase the capital adequacy.

2. Based on the study, banks are recommended to increase the holding of liquidity position to have higher return on assets. Because the study found the positive relationship between liquidity position and return on assets.

3. The study results strongly suggest that bank must focus on increasing net interest margin to increase bank profitability.

4. The study suggests that banks should focus to increase the bank size to increase return on assets as the study result indicates the positive relationship between bank size and return on assets.

5. Negative relationship has been observed between capital adequacy and return on equity and hence the banks willing to increase return on equity should maintain the capital adequacy.

6. The study observed a negative relationship of liquidity position with return on equity. Hence banks willing to increase return on equity, should not increase the holding of liquidity position.

7. The banks are suggested to increase bank size to increase return on equity and net interest margin as the study showed the positive relation of bank size with return on equity and net interest margin.

8. The result suggest that bank should worry during the high inflation as there is positive relationship between inflation and return on equity.

9. The results indicate higher the net interest margin, higher would be return on equity as there is positive relationship between them. Thus, banks willing to increase return on equity should increase net interest margin.

4.4 Scope for future research

1) This study has total 10 sample size over ten-year period with 60 observations. Thus, the future studies can be done with more sample size and number of observations to examine determinant of profitability of Nepalese commercial banks which can get better result.

2) This study has capital adequacy, liquidity position, net interest margin, loan to total asset, non-performing loan, and bank size as bank specific factors, whereas inflation has been used as macroeconomic factor affecting banks profitability. For further studies bank specific variables and macroeconomics variables can be increased.

3) This study has used secondary data from published source to study determinants of profitability of Nepalese commercial banks. Further studies can be extended using primary data to see the banks employees, shareholders, and bank regulator perception towards the impact of bank specific variables and macroeconomic variables on profitability of Nepalese commercial banks.

4) Future studies can include other financial institutions like finance companies, micro finance, developments banks, cooperatives, etc. to grasp the wider view.

5) Similarly, future studies can use some advanced statistical tools. For example, the future studies can use non- linear statistical tools and bidirectional causality tools.