RISK MANAGEMENT AND FINANCIAL PERFORMANCE OF NEPALESE COMMERCIAL BANKS

A Dissertation submitted to the Office the Dean, Faculty of Management in partial fulfillment of the requirements for the Master's Degree

by

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July, 2023

CERTIFICATION OF AUTHORSHIP

I hereby corroborate that I have researched and submitted the final draft of dissertation entitled **"RISK MANAGEMENT AND FINANCIAL PERFORMANCE OF NEPALESE COMMERCIAL BANKS"**. The work of this dissertation has not been submitted previously for the purpose of conferral of any degrees nor it has been proposed and presented as part of requirements for any other academic purposes.

The assistance and cooperation that I have received during this research work has been acknowledged. In addition, I declare that all information sources and literature used are cited in the reference section of the dissertation.

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Ms.Gita Sapkota has defended research proposal entitled **RISK MANAGEMENT AND FINANCIAL PERFORMANCE OF NEPALESE COMMERCIAL BANKS** successfully. The research committee has registered the dissertation for further progress. It is recommended to carry out the work as per suggestions and guidance of supervisor and submit the thesis for evaluation and viva voce examination.

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APPROVAL SHEET

We have examined the dissertation entitled **RISK MANAGEMENT AND FINANCIAL PERFORMANCE OF NEPALESE COMMERCIAL BANKS** by Gita Sapkota for the degree of Master of Business Studies We hereby certify that the dissertation is acceptable for the award of degree.

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ACKNOWLEDGEMENTS

The entitled Research Project Report "**RISK MANAGEMENT AND FINANCIAL PERFORMANCE OF NEPALESE COMMERCIAL BANKS**" has been prepared for the partial fulfillment of the requirement of Master's in Business Studies (MBS) under the Faculty of Management, Tribuvan University.

Iextendmydeepsenseofindebtednesstomyrespectedsupervisorforhispreciousguidelines,inspirationandsuggestionthoroughly during the period of this research. Without his valuable insight, Iwould not think of accomplishment of this thesis.

A lot of people deserve a great deal of thanks for their help and support in completing this research. I am very grateful to Srijana Sharma for the inspirations not only in conducting this research but throughout my MBS study. I am also grateful to the College for making necessary arrangements of study rooms and encouraging and motivating me to complete this research in designated time frame.

Finally, I would like to express my sincere gratitude to all my family members and friends for their assistance, timely encouragement in every steps and financial support.

Gita Sapkota

ABSTRACT

Banks play an important role for economic development and foster economic growth by providing number of financial services. Risk is the probability of an outcome having a negative effect on people, systems or assets. Risk is typically depicted as being a function of the combined effects of hazards, the assets or people exposed to hazard and vulnerability of those exposed elements. Risk management is the identification, assessment and prioritization of risks followed by coordinated and economical application of resources to minimize, monitor and control the probability or impact of unfortunate events. Risk management is the process of identifying, assessing and controlling financial, legal, strategic and security risks to an organization's capital and earning. The purpose of risk management is to identify potential problems before they occur so that risk handling activities may be planned and invoked as needed across the life of the product or project to mitigate adverse impacts on achieving objectives.

The study examines the risk management and financial performance of Nepalese commercial banks. The return of assets and earning per share are the dependent variables. Non-performing loan, liquidity ratio, capital adequacy ratio, debt to asset ratio, interest rate spread, cost to income ratio and bank size are the dependent variables. The study is based on secondary data of 3 commercial banks for the period of 2014/15 to 2021/22, leading to a total of 24 observations. The data are collected from the Banking and Financial Statistics and Bank Supervision Report published by Nepal Rastra Bank and annual reports of the selected Nepalese commercial banks. The regression model are estimated to test the significance and importance of the risk management and financial performance of Nepalese commercial banks.

Keywords : Return on assets, Return on equity and Earning per sh

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ABBREVIATIONS

ROA	Return on Assets
ROE	Return on Equity
EPS	Earnings Per Share
NPL	Non-Performing Loan Ratio
LR	Liquidity Ratio
CAR	Capital Adequacy Ratio
DA	Debt to Asset Ratio
IRS	Interest Rate Spread
CIR	Cost to Income Ratio
BS	Bank Size
NBL	Nepal Bank Limited
MBL	Machhapuchhre Bank Limited
NMB	NMB Bank Limited

Chapter I

Introduction

1.1 Background of the study

Risk management is the identification, assessment and prioritization of risks followed by coordinated and economical application of resources to minimize, monitor, and control the probability and/or impact of unfortunate events (Njogo, 2012). Risk management is described as the performance of activities designed to minimize the negative impact of uncertainty regarding possible losses (Schmit and Roth, 1990). Risk management has always been a focal point for finance enthusiasts since the beginning of the industrial revolution (Dima & Orzea, 2014).

Risk implies exposure to uncertainty or threat. Risks can be described as the adverse impact on profitability of several distinct sources of uncertainty. While the types and degree of risks an organization may be exposed to depend upon a number of factors such as its size, complexity business activities and volume. It is believed that generally the banks fianace credit, market, liquidity, operational, compliance/legal/regulatory and reputation risks.(Kannan and Thangavel 2008).

Rop and Rotich (2018) found that significant relationship between financial performance of commercial state corporation and operational, financial and strategic risk management practices to an extent of 98.7%, 92.7% and 87.4% respectively. The findings indicate that there is a fairly strong positive relationship between reputational risk management practices and financial performance to an extent of 56.2%. Efficient management of operational risks leads to lower operating expenses and increased profitability. Practices that lead to general reduction of liabilities would positively affect firm's financial performance.

The inefficiency of the financial institution in managing risks not only hindering the profitability but also increasing interest rate and retard the economic growth which eventually rendered them unsuccessful in realizing their business objectives. The study discovered that lack of risk management may lead to an increase in non-performing loans which threatens the profitability of banks. Haneef et al. (2012). The good risk management would determine quality of credit portfolio control thus the financial sustainability of MFIs and performance of the institution has been improved. (Ayayi and Sene 2010).

According to Kozarevic et al. (2013) found that the financial performance of banking institutions that actively practiced risk management were improved as compared to the period during they implemented only some extent during the outbreak of financial crisis in 2008. Al-Tamimi et al. (2007) revealed that all banks are exposed to a large number of risks such as credit, liquidity risk, foreign exchange risk, market risk and interest rate risk, among others- the risk which may create some source of threat for a bank's survival and success. Olusanmi (2015) revealed the importance of risk management that has become a concept and has been given more attention from practitioners in today's competitive economic world. These cannot be underrated or overlooked as the practice of risk management minimizes financial losses to the firm.

Owojori et al. (2011) explained the nature of banking business that contains an environment of high risk that it is the only business in where proportion of borrowed funds is far higher than the owner's equity. Akindele (2012) revealed that there is a positive relationship between risk management and bank performance; furthermore, the study affirms that effective risk management enhance bank profitability and bank performances depends largely on risk management and corporate governance being enshrined into the organization.

Collier et al. (2002) stated that risk management in an organization influence the organization profitability, through enhanced risk management practices. Moore (1983) stated that by creating a good discipline in risk management it helps improve governance process and therefore improves effectiveness. Soin and Collier (2013) argued that risk management has moved away from being an issue of narrow concern to finance (value at risk, derivatives, etc.) or accountants (financial statement disclosure, etc.) to an issue about management control and therefore a key area in which management accountants

need to engage. The potential side-effects of risk management including issues around trust and accountability but also the focus on secondary or defensive risk management and the rise of reputation risk. Beckmann (2007) found that proper mechanism and system of risk control should be put in place to establish, prevent and mitigate the risks encountered in operations of the organizations.

Saleem &Ul-Abideen (2011) found that implementing risk management, organization can reduce unexpected and costly surprises and effective allocation of resources could be more effective. It improves communication and provides senior management a concise summary of threats, which can be faced by the organization, thus ultimately helping them in better decision making. Holland (2010) stated that the risks facing financial institutions are mainly classified into; strategic, operational, credit and market risks. Anthony Santomero (1997) found that better risk management indicates that banks operate their activities at lower relative risk and at lower conflict of interests between parties. Cebenoyan and Strahan (2004) stated that banks which have advanced in risk management have greater credit availability, rather than reduced risk in the banking system. The greater credit availability leads to the opportunity to increase the productive assets and bank's profit.

Lopez (2003) revealed that it is an important element in risk management to decide the tolerance and extent of risk. Therefore, it is important for banks to keep away from accepting any unnecessary risks for the smooth running and continuity of banking operations. Carey (2001) explained that risk management is more important in the financial sector than in the other parts of the economy. The important element in risk management is to create balance between risk and returns and minimize profits by providing many financial services, especially by administering risks. Fatemi and Fooladi (2006) stated that the adoption of risk management in banks directs them to a better trade-off between risk and return. Oluwafemi et al. (2013) found that a significant relationship between performance and risk management in Nigerian banks.

Oluwafemi et al. (2013) and Tandelilin et al. (2007) revealed that risk management is important to safeguard the bank's assets and for the protection of the shareholders' interests. The banks which have better risk management might have certain advantages such as: (i) It is aligned with the compliance function toward the regularity requirements; (ii) It improves bank reputation and increases the opportunity to attract more customers

which enhanced bank portfolio of fund resources and; (iii) It enhances the efficiency and profitability of the bank. Berk (2005) revealed that more risk awareness to banks have showed a better financial performance and effectiveness in assets management. Gupta (2011) concluded that risk management is useful practice to improve the organizational performance.

In the context of Nepal, Poudel (2012) found that default rate (NPLR) is the single most influencing predictor of bank financial performance in Nepal whereas cost per loan assets is not significant predictors of bank performance among the risk management indicators. Gautam (2016) found that capital adequacy, non-performing loan and profitability have statistically significant effect on the liquidity of Nepalese commercial banks. Baral (2005) revealed that risks arises when depositors of commercial bank seek to withdraw money. They become insolvent if the assets are not enough to meet the liability withdrawals. Similarly, the second types of liquidity risk arise when money supply cannot meet the demand of unexpected loans due to the lack of funds. Shrestha (2012) found that credit risk and liquidity which are internal factor influencing banks profitability, and focused on its relationship with bank profitability, and sought some solutions to increase efficiency and profitability for bank managers. Overall profitability of the sample banks has normally an increasing trend. The overall trend of liquidity ratios is not largely smooth.

Pradhan and Shrestha (2015) found that return on assets shows positive and significant relationship with capital adequacy ratio. Likewise return on assets shows negative and significant relationship with non-performing loan ratio. Return on equity shows positive and significant relationship with size of the bank whereas negative and significant relationship with capital adequacy ratio, liquidity ratio.Net interest margin shows positive and significant relationship with capital adequacy ratio and size of the bank. Poudel (2012) revealed a significant inverse relationship between commercial bank performance measured by ROA and credit risk measured by default rate and capital adequacy ratio.

Mamari et al.(2022) revealed that risk management is positively meaningful while avoiding risk and pointed that the risk management has significant relation with a ROA. The management has a significant influence on banks performance (ROA).As well as the risk management insignificantly related to (ROE).

Bhattarai et al. (2015) found that non-performing loan, earning ability and liquidity position have positive relationship bank performance. Bariya et al. (2016) found that firm

size has significant positive relationship with bank profitability whereas non-performing loan has negative relationship with return on asset, return on equity and net interest margin.

The study aims to identify risk management strategies undertaken by commercial banks of Balochistan, Pakistan, to mitigate or eliminate credit risk.The findings of the study are significant as commercial banks will understand the effectiveness of various risk management strategies and may apply them for minimizing credit risk.(Rehman and et. al, 2019).

The above discussion shows that the studies dealing with risk management and financial performance in the Nepalese commercial banks are of greater significance. Though there are these findings in the context of different countries, no such findings using more recent data exist in the context of Nepal. Hence, this study focuses on the risk management and financial performance in Nepalese commercial banks.

1.2 Statement of the problem

Banking system plays an important role in the development of a country's economy and its financial stability (Ryu et al., 2012). Pyle (1997) mentioned that risk management among banks has been inadequate and stressed the importance for a uniform procedure to monitor and regulate risks.

Cebenoyan&Strahan (2004) find evidence that banks which have advanced in risk management have greater credit availability, rather than reduced risk in the banking system. The greater credit availability leads to the opportunity to increase the productive assets and bank's profit. The survival and success of a financial organization depends critically on the efficiency of managing risks (Khan & Ahmed, 2001).

Abba et al. (2013) examined the relationship between capital adequacy and banking risk. Three independent variables were used - risk-weighted asset ratio, deposit ratio and inflation rate. The study revealed that there is a significant negative relationship between risk and the capital adequacy ratio of banks, meaning that when risk levels rise; the capital adequacy ratio falls in the Nigerian banking industry. (Ali et al. 2012) found that capital adequacy ratio, operational efficiency, asset management and gross domestic product have significant influence in the profitability of commercial banks. Olajide et al.

(2011) found that bank specific characteristics have a significant effect on bank profitability level and efficiency level, while industry structure variables have no impact on bank profitability and efficiency.

The financial performance of a firm can be analyzed in terms of profitability, dividend growth, sales turnover, asset base, capital employed among others. However, there is still debate among disciplines regarding how the performance of firms should be measured and the factors that affect financial performance (Liargovas and Skandalis, 2010). Khan (2014) found that strong and positive correlation between interest rate and commercial bank profitability. If the value of interest rate is increases as result value of banks profitability will also increases and vice versa. Ngugi (2000) argued that spread is core to bank performance and those banks which manage to keep wider spread perform better than other banks holding another factor constant and revealed that interest has indirect influence on financial performance and has negative impact on banks performance.

This requires more dynamic and sound financial risk management methods to perform well in an ever dynamic and highly competitive banking industry, which will translate into having a competitive advantage and thus generate growth in profits. Some aspects of risks present opportunities through which firms can have a competitive edge over others and contribute to improvement of financial performance (Stulz, 1996). Market risk by its nature can be hedged but cannot be diversified away completely. Two market risks that are of concern to the banking sector are interest rates and relative value of currencies. The banking operation is solely dependent on these as it impacts on performance (Anthony Santomero, 1997).

According to Molyneux (1992) revealed that banks with high level of equity can reduce their cost of capital and that could impact positively on profitability. Ariffin and Kassim (2009) found that credit variable is positively related to profitability, while liquidity variable is insignificant across all banks and have no impact on profitability. The study found that strong link between capital adequacy and commercial bank return, with high capitalization being the hindrance to return. The capital is a sunk cost with large banks realizing high profits in absolute but not in percentage terms.

Risk management is more important in the financial sector than in the other parts of the economy. The important element in risk management is to create balance between risk and returns and minimize profits by providing many financial services, especially by administering risks (Carey, 2001). Bank investment in risk management during 1990s helped to reduce earnings and loss volatility during the 2001 recession (Drzik, 2005).

Burner (2011) found that a reduction in real risk-free rates of interest to historically low levels led to credit expansion in a ferocious search for yield among investors on taking excessive risk to boost performance. Prudent risk management practices reduce the volatility in institutions' financial performance, namely operating income, earnings, firm's market value, share return and return on equity (Smith, 1995). Gordon (2009) and Gupta (2011) argued that the relation of enterprise risk management and performance is contingent upon some factors such as environmental uncertainty, industry competition, firm complexity, firm size, and board of directors' monitoring.

Ahmed et al. (2011) found a positive and statistically significant relationship with financial risks (credit and liquidity risk), whereas its relation with operational risk is found to be negative and insignificant. The asset management establishes a positive and significant relationship with liquidity and operational risk. The debt equity ratio and non-performing loans (NPLs) ratio have a negative and significant relationship with liquidity and operational risk. In addition, capital adequacy has negative and significant relationship with credit and operational risk, whereas it is found to be positive and with liquidity risk. However, macroeconomic information shows little impact on the possibility of financial distress on financial institution (Zaki et al., 2011). Blunden (2005) found that the stability of the entire economy is affected by a crumple of the financial institutions as a result a robust risk management system is mandatory to keep the financial institutions up and running. The equity ratio which is the measure of the capital strength of the banks posted a positive relation with the banks ROA (AmeyawKarkrah, 2010).

Molyneux (1992) found that banks with high level of equity can reduce their cost of capital and that could impact positively on profitability. Million (2014) found that significant positive relationship between loan loss provision and commercial banks performance on the study that might indicates the presence of potential earning management activities by bank managers. Capital adequacy, non-performing loan ratio significant affects the performance of commercial banks. However, the effect of liquidity on the performance of commercial banks is not strong. The relationship of the bank performance with capital adequacy is found to be positive and for non-performing loan, the relationship found to be negative (Ongore and kus, 2013). Fan & Shaffer (2004) found that if credit risk management are not properly handled then it is sure to be affected the bank's revenue.

Drzik (2005) found that the expenditure by banks in improving the risk management capabilities of credit, market and interest rate risks after the 1991 recession to minimize the volatility of earnings and losses in the recession period of 2001. The return on equity in banks is a direct and an increasing function of lending activities and a strong relationship between capital adequacy and the commercial banks return, with high capitalization acting as a hindrance to return (Hakim and Neami, 2001).

Demirguc-Kunt&Detragiache (1998) stated that minimizing and investigating the degree of systemic risk in banking is a major concern of policy makers. However, when putting an effective risk management in place, some loans turn to be distress in the due course of time for various reasons (Bonfim, 2009). In today's environment of intense competitive pressures, volatile economic conditions, rising default rates and increasing levels of consumer and commercial debt, an organizations ability to effectively monitor and manage its credit risk could mean the difference between success and survival (Altman, 2002). Both the credit risk (non- performing loans ratio) as well as the liquidity risk have negative impact on the performance of banks. Bank's size and bank's asset have a positive effect on the performance of banks (Tabari et al., 2013).

Poudel (2012) found that default rate (non-performing loan ratio) and capital adequacy ratio as major predictors of financial performance in selected banks and concluded that success of bank depends on risk management. Non-performing loan ratio increases the credit risk. Khatri et al. (2015) found that return on assets is positively related to capital adequacy ratio, bank size, bank loan, while net interest margin has significant positive relationship with capital adequacy ratio and bank loan. Maharjan et al. (2016) found that return on asset is positively related to non- performing loan and negatively related to loan to deposit whereas return on equity is positively related to debt to equity and non-performing loan and negatively related to loan to deposit and lesser prudence. However, Pradhan (2015) found that return on assets and earning per shares are positively related to credit to deposit ratio, market share, and gross domestic product, while negatively related to inflation, liquidity and non- performing loan to total assets.

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

More specifically, this study deals with following issues:

1. What is the structure and pattern of return on assets, return on equity and earnings per share in Nepalese commercial banks? How have they changes over the period of time?

2. What is the structure and pattern of non-performing loan ratio, liquidity ratio and capital adequacy ratio in Nepalese commercial banks? How have they changes over the period of time?

3. What is the structure and pattern of debt to asset ratio, interest rate spread, cost to income ratio and bank size in Nepalese commercial banks? How have they changes over the period of time?

4. Is there any relationship of credit risk, liquidity risk, capital risk, market risk and operational risk on financial performance of Nepalese commercial banks?

5. Do non-performing loan ratio, liquidity ratio, capital adequacy ratio, debt to asset ratio, interest rate spread, cost to income ratio and bank size are related to the financial performance of Nepalese commercial banks?

6. What is the impact of credit risk, liquidity risk, capital risk, market risk and operational risk on financial performance of Nepalese commercial banks?

7. To what extent non-performing loan ratio, liquidity ratio, capital adequacy ratio, debt to asset ratio, interest rate spread, cost to income ratio and bank size affect the financial performance of Nepalese commercial banks?

8. Which are the most influencing variables to explain the profitability of Nepalese commercial banks?

1.3 Objective of the study

The major purpose of this study is to examine the relationship of risk management and the financial performance in selected Nepalese commercial banks. However, the specific objectives of this study are as follows:

i. To assess the structure and pattern of non-performing loan ratio, liquidity ratio, capital adequacy ratio, debt to asset ratio, interest rate spread, cost to income ratio and bank size in Nepalese commercial banks.

ii. To examine the relationship between non-performing loan ratio, liquidity ratio, capital adequacy ratio, debt to asset ratio, interest rate spread, cost to income ratio and bank size with the financial performance in Nepalese commercial banks.

iii. To assess the impact of non-performing loan ratio, liquidity ratio, capital adequacy ratio, debt to asset ratio, interest rate spread, cost to income ratio and bank size with the financial performance in Nepalese commercial banks.

iv. To examine the major important variables affecting the financial performance of Nepalese commercial banks.

1.4Research Hypothesis

The operational definitions of the variables used in this study have been discussed in this section. Based on the purpose of the study hypothesis has been developed to study the relation between risk management and financial performance. This section describes and defines the various independent and dependent variables used in this study based on the major assumptions made to conduct the study. To analyze the risk management and financial performance of Nepalese commercial banks, this study has used return on assets, return on equity and earnings per share as the dependent variables while non-performing loan ratio, liquidity ratio, capital adequacy ratio, debt to asset ratio, interest rate spread, cost to income ratio and bank size as the independent variables.

The brief discussion on how these variables have been used or interpreted in this study is presented below:

Dependent variables

Return on assets (ROA)

Return on asset (ROA) shows the percentage of how profitable companies are in generating revenues. It is calculated by dividing net income by total assets. Ariffin&Kassim (2009) found that the higher ROA, the better will be the risk measurement practices and risk monitoring practices. Ariffin and Kassim (2011) have analyzed the relationship between risk management practices and the financial performance in the Islamic banks of Malaysia. Their study results highlight a strong positive relationship between the performance of banks (Return on Assets) and risk management practices.

Return on equity (ROE)

The measurement of ROE indicates the financial performance of bank and it shows how much profit a company earned compared to the total amount of shareholder equity (Ongore and Kusa, 2013). Ariffin&Kassim (2009) found that banks have higher ROE tend to practice better internal control practices. Fredrick (2012) found that there is a strong impact between the CAMEL (Capital adequacy, Assets quality, Management efficiency, Earnings ability, and Liquidity) components on the financial performance of commercial banks measured by ROE.

Earnings per share (EPS)

Earnings per share (EPS) are the portion of a company's profit that is allocated to each outstanding share of common stock, as a result serve as an indicator of company's profitability. Lamont (1989) studied the relationship between the earning and expected returns and found that earning have the ability to forecast return and containerization information because they are correlated with the business conditions. Abu-Rub (2012) argued that the EPS is the basic measurement of corporate performance and the more the EPS, the better the performance of a corporation. Ohlson(1995) considered earning per share as an important variable for measurement of financial performance. Ebrahimi & Arezzo (2011) revealed that the majority of stockholders, investors and other stakeholders give priority to watch movements of earning information of a company and thus earning per share is an important factor for the firm performance. Scott. & Jose (2011) stated that the forecast of earning per share as a measure of firm performances is quite significant.

Independent variables

Non-performing loan ratio (NPL)

Non-performing loan ratio regards as a significant economic indicator. It implies that lower NPLR is related with the lower risk and deposit rate (Brewer et al., 2006). Using the adjusted ROA as a proxy for performance, that banks profitability negatively impacts the level of non-performing loans ratio (Godlewski, 2004). Maghyereh and Awartani (2014) found that the ratio of non-performing loans to total loans is significantly adversely related to the efficiency in the selected banks. They conclude that improved

performance of selected banking institutions is more likely to be related to effective risk management.

To assess the influence of non-performing loan on the profitability by applying different indicators (return on assets and return on equity) and have identified a significant negative relationship between non-performing loan ratio and performance of banks (Singla, 2008; Garza-Garcia, 2012; Nawaz et al., 2012).

Karim et al. (2010) found that a significant negative relationship between the non-performing loan and the cost efficiency of selected banks. Effective credit management can increase cost efficacy by reducing the non-performing loans of the banks. Some relevant studies (Altunbas et al. 2000; Fan and Shaffer, 2004; Girardone, Molyneux and Gardener, 2004; Sufian and Majid, 2008; Noor and Ahmad, 2012), reporting technically more efficient banks have less non-performing loans.

Based on it, this study develops the following hypothesis:

H_1: There is negative relationship between non-performing loan ratio and financial performance.

Liquidity ratio (LR)

Many previous researches has examined the relationship between liquidity ratios and indicators of financial performance or liquidity ratios and profitability ratios such as (Lartey, et al., 2013) which investigated the relationship between liquidity and profitability of the banks listed on the Ghana bursa during the period 2005-2010, the results showed a decrease in ratios of liquidity and profitability of listed banks, also show that there is a weak positive relationship between liquidity and profitability. Ruziqa (2013) and Vayanos and Wang (2012) confirmed the liquidity ratios have positive significant effect on return on assets. Saleem and Rehman, (2011) and Khidmat and Rehman (2014) indicated a relationship between liquidity ratios and return on assets that confirmed the liquidity ratios have positive significant effect on return on assets.

Kosmidou (2008) found that liquidity risk measured by the ratio of net loans to customer and short term funding is negatively related to performance measured by return on average assets (ROA). Chen et al. (2001) found that the ratio of liquid assets to deposits is negatively related to net interest margins. Demirguc-Kunt and Huizinga (1999) found that

liquidity risk measured by the ratio of loans to total assets is negatively related to return on assets ROA and positively related to net interest margins.

Based on it, this study develops the following hypothesis:

H_2: There is negative relationship between liquidity ratio and financial performance.

Capital adequacy ratio (CAR)

Boudriga et al. (2009) found that CAR seems to reduce the level of problem loans which means higher CAR leads to less credit exposures. However, Rime (2001) observed a positive relationship between bank risk and capital ratio of Swiss banks during the period 1989-1995. Equity to total assets ratio is expected to have positive relation with performance that well-capitalized banks face lower costs of going bankrupt which reduces their costs of funding and risks (Berger, 1995; Bourke, 1989). Maghyereh and Awartani (2014) observed a significant positive impact of regulations (capital adequacy ratio) on the performance of selected banks. Das and Ghosh (2006) found that capital adequacy ratio has a significant positive impact on the efficiency. Pasiouras (2008a and b) have also found a significant relationship between capital adequacy ratio and the efficiency of banks. Jha et al. (2013) found that a positive and significant relationship between the technical efficiency scores and the capital adequacy ratio as well as credit to deposit ratio. A significant relationship between capital adequacy ratio and performance of banks have been identified (Singla, 2008; Naceur and Kandil, 2009; Ogboi and Unuafe, 2013).

Based on it, this study develops the following hypothesis:

H_3: There is positive relationship between capital adequacy ratio and financial performance.

Debt to asset ratio (DA)

Nirajini et al. (2013) found that there is positive relationship between capital structure and financial performance. Capital structure is significantly impact on financial performance of the firm showed that debt asset ratio, debt equity ratio and long term debt correlated with gross profit margin (GPM), net profit margin (NPM), Return on Capital Employed (ROCE), Return on Asset (ROA) & Return on Equity (ROE). Bourke (1989) examined debt to asset ratios and revealed that debt ratios are positively related to profitability under assumption that well capitalized bank enjoy access to cheaper and less risky sources of funds. Pahlavan et al. (2015) investigated the relationship between the profitability and the capital structure of banks. The study found that debt to equity and debt to assets have direct and significant relationship with return on equity and return on assets.

Based on it, this study develops the following hypothesis:

H_4: There is positive relationship between debt asset ratio and financial performance.

Interest rate spread (IRS)

As banks lend, they charge interest and for attracting deposits, they offer interest on deposit as compensation for their clients' thriftiness and the difference between the two rates forms the spread (Hamis 2010). Ho and Saunders (1981) expanded by Angbazo (1997) and Maudos and Guevara (2004) found that there is a positive correlation between credit risk or loan quality and interest rate spreads. Khan and Satar (2014) revealed that there is strong positive relationship between interest rate spread and commercial bank profitability. Ngetich and Wanjau (2011) argued that banks which performs well, manage to keep interest spread wide. Interest rates determine the profitability of a commercial bank among other factors (Gardner et al., 2005). Irungu (2013) found that there is strong positive relationship between financial performances of commercial banks with interest rate spread. The study found that interest rate spread affect performance assets in banks as it increases cost of loans charged on the borrowers, regulation on interest rates have far reaching effects on assets non-performance. Obidike et al. (2015) examined the impact of interest rate spread on the performance of Nigerian banking industry for period of 1986-2012. The study found that interest rate spread has negative and significant impact on bank performance in long run.

Based on it, this study develops the following hypothesis:

H_5: There is positive relationship between interest rate spread and financial performance.

Cost to income ratio (CIR)

The cost to income ratio is key financial measure, particularly important in valuing banks. It shows a company's cost in relation to its income. CIR measures a bank operating costs as a proportion of its total income (welch, 2006). The ratio gives investors a clear view of how efficiently the firm is being run- the lower it is, the more profitable the bank will be. Changes in the ratio can also highlight potential problems: if the ratio rises from one period to the next, it means that costs are rising at a higher rate than income. Hess and francis (2004) revealed that there is inverse relationship between the cost to income ratio and bank's profitability. Ghosh et al. (2003) also found negative relation between efficiency and the cost to income ratio.

Based on it, this study develops the following hypothesis:

H_6: There is negative relationship between cost to income and financial performance.

Bank size (BS)

The size of the firm is a very important determinant of its profitability that is why it is included as a controlled variable. Bank size as measured by total assets is one of the control variables used in analyzing performance of the bank system (Smirlock, 1985). According to the researches of Saunders et al. (1990), Cebenoyan et al. (1999) and Megginson (2005), there is a negative relationship between bank risk and bank size. Larger banks are likely to be more skilled in risk management and have also better diversification opportunities. Thus, expect to find that the bank size is negatively related to the level of risk.

The theory asserts that a firm will enjoy economies of scale up to a certain level, beyond which diseconomies of scale set in. This implies that profitability increases with increase in size, and decreases as soon as there are diseconomies of scale. Thus, there is relationship between the bank size and profitability which may be positive or negative (Dietrich and Wanzenried, 2011); (González and Gonzalo Rubio, 2011); Naceur, S. B.

&Omran, M., 2011); (Tarawneh, M., 2006). Based on it, this study develops the following hypothesis:

H_7: There is positive relationship between bank size and financial performance.

1.5 Rationale of the study

The importance of risk management has become heightened in today's competitive economic world. These cannot be underemphasized as the practice of risk management minimizes financial losses to the firm. The analysis of risk management is very important within the department of the management of the risk in any bank to maintain an increasing performance of risk management lot of credits that are granted by the banks are not repaid efficiently, what constitutes a danger to their performance. The continuity and success of banks considerably depend upon risk management (Pastor, 1999; Kao et al. 2011; Scarborough, 2011). Al-Tamimi and Al-Mazrooei (2007) found that good understanding about different risks and risk management among banking staff, improves the ability of the banking institution to manage its risks.

Risk management is an important aspect in the management decision making in financial institutions because risk management must meet certain objectives to keep firms running efficiently. It helps to gain competitive advantage. The study evaluates the relation of different risk variables such as non-performing loan ratio, liquidity ratio, capital adequacy ratio, debt to asset ratio, interest rate spread, cost to income ratio and bank size with the financial performance in Nepalese commercial bank. Thus, the study acts as a tool for the bank manager to identify the need to practice prudent risks management in order to protect the interests of investors.

Several studies carries out on risk management and financial performances of commercial banks in developed countries but few in least developed countries like Nepal. So, this study assumes a greater significance for the country like Nepal. It helps to identify whether the Nepalese commercial banks are efficiently managing the better financial performance.

1.6 Limitation of the study

Despite of the continuous efforts made for arriving at meaningful conclusions from the study, the following major limitations have been outlined.

1. There are all together 21 commercial banks operating in the country, but this study does not cover all the commercial banks. All banks are not considered for the purpose of study. Therefore, inclusion of all the commercial banks in this study would have provided more valid results.
2. This study is based on commercial banks only. Study of other financial and nonfinancial institutions such as insurance companies, finance companies, development banks, manufacturing companies etc. are not taken into consideration in this study. The study results may not be applicable in these enterprises.
3. Only secondary data are considered for the study purpose. Primary survey is not taken into consideration for data collection.

Chapter II

Literature Review

This chapter deals with review of empirical studies associated with risk management and financial performance of banks and provides conceptual framework of the study. It is divided into three sections. First section consists of an in-depth review of related studies in the context of both developed and emerging country around the globe with major and recent studies and deals with a brief review of empirical works in the context of Nepal. Second section presents the conceptual framework. And, finally the third section presents concluding remarks on the conceptual and empirical review. The details about these sections dealt in the following chapter.

2.1 Review of Theoretical Perspectives

The purpose of this study would be to investigate the risk management and financial performance of Nepalese commercial banks. This area of review of the related studies concentrates on the comparable research done by different analysts in past. In numerous examples the definite exploration works are likewise discovered to be done in past and in different cases, comparable sort of related studies are taken in consideration. Such researchers are reviewed from journal articles and books**.**

Inegbedion et.al(2020) examined risk management and financial performance of banks in Nigeria with focus on commercial banks and ascertain the effect of risk asset management on the optimal financial performance of commercial banks in Nigeria.

Miller and Noulas (1997) analyzed the portfolio mix and large-bank profitability in the USA. The study indices of central bank autonomy (CBA) for 163 central banks as of end-2003, and comparable indices for a subgroup of 68 central banks as of the end of the 1980s. The study found a significant negative relationship between credit risk and bank profitability, because a higher loan or asset ratio increases bank exposure to unpaid loans and hence a reduced profit margin. The more financial institutions are exposed to high risk loans, the higher is the accumulation of unpaid loans, implying that these loan losses have produced lower returns to many commercial banks.

Demirguc-Kunt and Huizinga (1999) assessed the determinants of commercial bank interest margins and profitability: some international evidence. Using bank-level data for

80 countries in the year's 1988-1995, the study found that the ratio of Net Loans to Assets (NLA) negatively and significantly affects performance. It indicates that higher NLA ratios could reduce liquidity and increase the number of marginal borrowers that default, thereby reducing bank performance. Higher the equity to assets ratio, the lower the need to external funding and therefore the higher the profitability of the bank and well capitalized banks face lower costs of external financing, which reduces their costs and enhances profits. Foreign banks have higher margins and profits than domestic banks in developing countries, while the opposite holds in industrial countries.

Saiful and Ayu(2019) found that credit and liquidity and operational risk management positively influence Indonesian banks performance that measured by return on asset(ROA) and return on equity(ROE) and operational risks management positively influence Indonesian banks performance that measured by ROA,ROE and net interest margin.

Hakim and Neami (2001) analyzed the relationship between credit risk and bank's performance of Egypt and Lebanon using data from the two countries over the period 1993-1999, the study estimated a fixed effects model of bank return with varying intercepts and coefficients. The study found that credit variable is positively related to performance, while liquidity variable is insignificant across all banks and have no impact on performance.

Goddard et al. (2004) assessed dynamics of growth and profitability in banking. Dynamic panel and cross-sectional regressions are used to estimate growth and profit equations for a sampled of commercial, savings and co-operative banks from five majors European Union countries during the mid-1990s. The study found that there is negative relationship between capital adequacy ratio and bank performance. The study revealed that higher capital adequacy is an indication that banks are operating over-cautiously and are not willing to grasp on to potential profitable opportunities. The study found positive association between bank size and bank performance.

Michael et al (2006) investigated the effect of non-performing assets on operational efficiency of central-cooperative banks. The Prudential Norms of Income Recognition and Asset Classification were implemented for Co-operative Banks in India in 1996-1997 in order to strengthen them and improve their quality. The study emphasized that NPA

(Non-performing Assets) in loan portfolio affect operational efficiency which in turn affects profitability, liquidity and solvency position of banks.

Athanasoglou et al. (2008) examined the bank-specific, industry-specific and macroeconomic determinants of bank profitability. The study used the GMM technique for a panel of Greek banks covering the period from 1985 to 2001. They found that financial risk in the form of credit risk is a bank specific factor, and that credit risk negatively affects the performance of conventional banks which reveals that the increase in credit risk leads to decrease in the performance of banks.

Mathuva (2009) assessed the capital adequacy, cost income ratio and the performance of commercial banks in Kenya. The data used in this study was obtained from the annual financial statements for a selected sample of 41 out of 44 licensed commercial banks. The study period was from 1998-2007. Performance was measured by return on assets and return on equity. The study used multiple regression model represented by ordinary least squares technique to examine the relationship among capital adequacy ratio, cost income ratio and the performance. The result of the study revealed that capital adequacy ratio is positively related to performance. In addition, the study also found that equity capital ratio is negatively related to performance.

Shen et al. (2009) investigated the study on bank liquidity risk and performance, using an unbalanced panel dataset of 12 advanced economies commercial banks over the period 1994-2006. Panel data instrumental variables regression, using two-stage least squares estimators to estimate bank liquidity risk and performance model. The result of the study signified that liquidity risk is negatively associated with bank performance. The result reveals that the increase in liquidity risk leads to decrease in the bank performance.

2.2Review of Relevant Studies

Study	Major findings
Al-Khouri (2011)	Found that credit risk, capital risk and liquidity risk are the key banks specific risks that affect bank performance (ROA) while only liquidity risk affects profitability when measured by ROE.
Kargi (2011)	Found that banks profitability is inversely influenced by the levels of loans and advances, non-performing loans and deposits thereby exposing them to great risk of illiquidity and distress.
Smaoui and Ben Salah (2012)	Found that higher capital, better asset quality and larger bank size lead to higher profitability, while higher cost-to-income ratio leads to lower profitability.
Adeusi et al. (2013)	Found that an inverse relationship between financial performance of banks and doubt loans while capital asset ratio are positive and significant with performance of banks.
Francis (2013)	Found that capital adequacy and credit risk have positive effect on bank profitability whereas operational efficiency and liquidity ratio were negatively and significantly related to bank profitability.
Irungu (2013)	Reveled there is strong positive relationship between financial performances of commercial banks with interest rate spread
Tabari et al. (2013)	Reveled that both the credit risk (non- performing loans ratio) as well as the liquidity risk have negative impact on the performance of banks whereas bank's size and bank's asset have a positive effect on the performance of banks.
Almazari (2014)	Found that cost income ratio has a negative impact on return on assets.
Lukorito et al. (2014)	Found that liquidity has statistically significant and positive relationship with banks' profitability.
Nishanthini and Meerajancy (2015)	Found that negative impact of liquidity on profitability of banks.
Obidike et al. (2015)	Revealed interest rate spread negatively and significantly impact on bank performance in the long-run.
Oudat and Ali. (2021)	Found insignificant relationship between capital risks, liquidity and exchange rate risk and financial performance.

Al-Khouri (2011) assessed the effects of bank specific risk characteristics, and the overall banking environment on the performance of 43 commercial banks operating in 6 of the Gulf Cooperation Council (GCC) countries over the period 1998-2008. Using fixed effect regression analysis, results showed that credit risk, liquidity risk and capital risk are the major factors that affect bank performance (ROA) The liquidity risk has significant relationship with performance (return on equity).

Kargi (2011) studied credit risk and the performance of Nigerian banks. The data collected were from secondary sources mainly the annual reports and accounts of the sampled banks from 2004 to 2008. Descriptive statistics, correlation and regression techniques were used in the analysis. The study found that banks profitability is inversely influenced by the levels of loans and advances, non-performing loans and deposits thereby exposing them to great risk of illiquidity and distress. Improper credit risk management reduce the bank profitability, affects the quality of its assets and increase loan losses and non-performing loan which may eventually lead to financial distress.

Smaoui et al. (2012) investigated how bank-specific characteristics and the overall macroeconomic environment affect the profitability of Islamic Banks in the GCC. The study found that larger bank size contributes to higher profitability in Islamic banks. Utilizing a large panel data of 44 Islamic Banks over the period 1995-2009, the results indicate that higher capital, better asset quality, and larger size lead to higher profitability, while higher cost-to-income ratio leads to lower profitability. Consistent with previous findings on conventional banks, we find that favorable macroeconomic conditions have a positive impact on the profitability of Islamic Banks. The study found that capital strength, measured by the equity to assets ratio, is positively and significantly related to ROA and NIM.

Adeusi et al. (2013) assessed the risk management practices and bank financial performance in Nigeria using a panel of secondary data for 10 banks and for four years. The study found that an inverse relationship between financial performance of banks and doubt loans, capital asset ratio are positive and significant. The study found that the higher the managed funds by banks, the higher the performance. The study found that there is significant relationship between banks performance and risk management. Hence, the need for banks to practice prudent risks management in order to protect the interests of investors.

Francis (2013) investigated the key determinants of commercial banks' profitability in Sub-Saharan Africa. The analysis used an unbalanced panel of 216 commercial banks drawn from 42 countries in Sub-Saharan Africa for the period 1999 to 2006. Using the cost efficiency model, bank profitability was estimated using panel random effects method in static framework. The study revealed that the importance of bank level factors such as assets, capital adequacy, operational efficiency and liquidity and macroeconomic

factors such as growth in GDP and inflation in explaining bank profitability. The study also found that capital adequacy and credit risk have positive effect on bank profitability. However, operational efficiency and liquidity ratio were negatively and significantly related to bank profitability.

Irungu (2013) examined the effect of interest spread on financial performance of commercial banks in Kenya. The data were collected from 43 commercial banks and analyzed by using SPSS (statistical package for social scientists). The study found that there is a strong positive relationship between financial performances of commercial banks with interest rate spread. Study found variables are significance to influencing financial performance of Kenya banks. The study found that interest rate spread affect performance assets in banks as it increases the cost of loans charged on the borrowers, regulation on interest rates have far reaching effects on assets nonperformance.

Tabari et al. (2013) analyzed the impact of the liquidity risk management on the performance of fifteen commercial banks in Iran during the years 2003 to 2010. They have identified that both the credit risk (non- performing loans ratio) as well as the liquidity risk (current ratio) have negative impact on the performance of banks. Bank's size and bank's asset have a positive effect on the performance of banks.

Almazari (2014) investigated internal factors that affecting profitability of banks. The main objective was to compare the profitability of the Saudi and Jordanian banks by using the internal factors for estimations. A sample of twenty three Saudi and Jordanian banks was considered with 161 observations for the period 2005-2011. Financial ratios were calculated and statistical tools including Pearson’s correlation, descriptive analysis of variance and regression analysis were utilized in testing the hypotheses and to measure the differences and similarities between the sample banks according to their different characteristics. The results indicated that there is a significant positive correlation between ROA of Saudi banks with total equity to assets ratio, total investment to total assets ratio and liquidity risk variables, as well as a negative correlation with net credit facilities to total assets ratio, net credit facilities to deposits ratio, cost income ratio and bank size variables. Meanwhile, there is a significant positive correlation between ROA of Jordanian banks with liquidity risk, net credit facilities to total assets ratio, total equity to assets ratio and net credit facilities to total deposits ratio variables, also there is a negative correlation of return on assets with cost income ratio, total investment to total

assets ratio and bank size. Cost income ratio variable and Bank size variable has a negative impact on both models.

Lukorito et al. (2014) assessed the effect of liquidity on profitability of commercial banks in Kenya. The study determined the effect of internal factors on profitability of commercial banks in Kenya particularly the banks liquidity over a period of 5 years from 2009 to 2013. Internal factor was liquidity, while profitability was measured using ROA ratios. The findings of the study show that all the variables liquidity has statistically significant and positive relationship with banks' profitability.

Nishanthini and Meerajancy (2015) analyzed trade-off between liquidity and profitability: a comparative study between state banks and private banks in Sri Lanka. With the samples of State Banks and private Banks in Sri Lanka over period of 2008-2012, descriptive statistics, correlation and regression analysis are used for the study. Liquidity as independent variable and net profit margin (NP), return on assets (ROA) and return on equity (ROE) were used to measure the dependent variable as Profitability. The study found that negative impact of liquidity on profitability in selected Banks in Sri Lanka.

Obidike et al. (2015) investigated the impact of interest rate spread on the performance of Nigerian banking industry for the period of 1986-2012. The study used OLS method of estimation to analyze. The study found that interest rate spread, negatively and significantly impact on bank performance in the long-run. Exchange rate and GDP was found to be positively and significantly affecting bank performance in Nigeria at the long-run and the short-run interest rate spread also negatively but insignificantly affect bank performance in Nigeria.

Hussain et al. (2016) examined risk management and bank performance in Pakistan. The study used capital adequacy ratio, non-performing loans, liquidity risk, interest rate risk and operational risk as proxies for risk management. Panel data from 2005-2014 was taken from the published annual reports of commercial banks. Descriptive statistics, correlation analysis and random effect OLS regression was used to analyze the data. The study found that better risk management system of banks leads to enhance performance and also found that capital adequacy ratio, non-performing loans, interest rate risk, operational risk and liquidity risk are key drivers of profitability in large banks while non-performing loans and capital adequacy ratio are the only drivers of profitability in small commercial banks of Pakistan. The study found that capital adequacy ratio has a positive

significant impact on performance of large banks. Other risk management variables of non-performing loans, interest rate risk, liquidity risk and operational risk are significantly and negatively affecting the return on equity for large commercial banks.

Al-Khouri (2011) assessed the effects of bank specific risk characteristics, and the overall banking environment on the performance of 43 commercial banks operating in 6 of the Gulf Cooperation Council (GCC) countries over the period 1998-2008. Using fixed effect regression analysis, results showed that credit risk, liquidity risk and capital risk are the major factors that affect bank performance (ROA) The liquidity risk has significant relationship with performance (return on equity).

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the differences and similarities between the sample banks according to their different characteristics. The results indicated that there is a significant positive correlation between ROA of Saudi banks with total equity to assets ratio, total investment to total assets ratio and liquidity risk variables, as well as a negative correlation with net credit facilities to total assets ratio, net credit facilities to deposits ratio, cost income ratio and bank size variables. Meanwhile, there is a significant positive correlation between ROA of Jordanian banks with liquidity risk, net credit facilities to total assets ratio, total equity to assets ratio and net credit facilities to total deposits ratio variables, also there is a negative correlation of return on assets with cost income ratio, total investment to total assets ratio and bank size. Cost income ratio variable and Bank size variable has a negative impact on both models.

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The financial risks and financial performance of commercial and investment banks listed on Bahrain stock exchange for the period 2015-19. However, selected financial risks contain capital risk, liquidity and exchange rate risk, meanwhile the financial performance measured by return on equity. To achieve the the research purpose the panel regression analysis of data approach was employed. While for the data were collected from annual financial reports for the banks .The study found for both models as concluded to there is insignificant relationships between capital risks , liquidity risks and exchange rate risk and financial performance for both models except the liquidity risk for investment banks found to be significant relationship with financial performance.(Oudat and Ali,2021).

Chapter III

Research methodology

Research methodology sets out overall plan associated with the study. It provides overall framework, plan that is associated with the study. It provides overall structure on which study is based. Methodology is carried out to shape and provide the appropriate outlook by describing, explaining and predicting a basic framework on which study is based. Before presenting the analysis and interpretation of data, it is necessary that research methodology should be described first because without this part, conclusions drawn from the analysis may be misunderstood. A focus is given to research question, model, definition of variable, sample selection and size, sources of data and limitation. This chapter therefore explains the methodology employed in this study.

In this chapter, the context of the study is presented, which provides the background against which the findings of the study were assessed from which reliability and dependable conclusions were made. Thus, this chapter provides a description of research plan and design, nature and sources of data, selection of enterprises, method of analysis and empirical models for the study.

3.1 Research Design

This study has employed descriptive research design and causal comparative research design in order to analyze the risk management and financial performance of the commercial banks in the context of Nepal. The descriptive research design has been adopted for fact finding and searching adequate information about risk management and the performance of the Nepalese commercial banks. Descriptive statistics is used with respect to variables like return on assets, return on equity, earnings per share, non-performing loan ratio, liquidity ratio, capital adequacy ratio, debt to asset ratio, interest rate spread, cost to income ratio and bank size. It is used to depict the accurate results and further describe about the characteristics of the sample.

The study has also adopted causal comparative research design to determine the relationship between financial risk management and financial performance of Nepalese commercial banks. More specifically, the study analyzes the impact of risk management variables like non-performing loan ratio, liquidity ratio, capital adequacy ratio, debt to

asset ratio, interest rate spread, cost to income ratio and bank size on the financial performance of Nepalese commercial banks.

3.2 Population and Sampling Procedures

In order to examine the risk management variables on financial performance of banks of Nepalese commercial banks, this study contains a sample of 3 commercial banks of Nepal whose respective data are collected from the time period of 2014/15 to 2021/22 leading to a total of 3observations. While selecting the banks for the study, convenience sampling has been adopted. Convenience sampling is a type of non-probability sampling that involves the sample being drawn from the part of the population that is close to hand. This study has adopted convenience sampling technique in order to select the banks as sample. Table 3.1 presents the list of sample banks being selected for the study along with the study period and number of observations.

Table 3. 1

List of the banks selected for the study along with the study period and number of observations

S.N	Name of the banks	Study period	Observations
1	Nepal Bank Limited (NBL)	2014/15-2021/22	8
2	Machhapuchhre Bank Limited(MBL)	2014/15-2021/22	8
3	NMB Bank Limited(NMB)	2014/15-2021/22	8
	Total observations		24

Thus, the study is based on the 24 observations.

3.3 Nature and sources of data

This study is based on secondary data. The variables used in the study are categorized into non-performing loan ratio, liquidity ratio, capital adequacy ratio, debt to asset ratio, interest rate spread, cost to income ratio, bank size with return on assets, return on equity and earnings per share. The secondary data used are of annual in nature. The secondary data and information have been collected from banking and financial statistics of NRB

and annual reports of the selected commercial banks. The data regarding the dependent and independent variables of the sample banks are collected and coded with unique code for each sample banks so that the data could be easily identified and assessed. The secondary data consists of financial data of commercial banks during the sample period of 2014/15 to 2021/22 covering the period of 8 years.

3.4 Data Analysis Techniques

The main purpose of data analysis in this study is to analyze the risk management and financial performance of selected commercial banks in context of Nepal. Therefore, this section deals with statistical and econometric models used for the purpose of analysis of secondary data.

Descriptive statistics are used to present quantitative data in a manageable form. It helps us to simplify large amounts of data in a sensible way (like mean, standard deviations, minimum and maximum values). Correlation analysis is the process of studying the strength of that relationship with available statistical data and it is used to identify direction and magnitude between two set of variables. Along with this, regression analysis is a statistical process for estimating the relationship among variables and also it is used to find out the influence of independent variables over dependent variables exclusively and combined with other variables.

3.5 Research Framework and Variables

This study focuses on the risk management and financial performance in Nepalese commercial banks. Risk management is a systematic process of understanding, evaluating and addressing risks to maximize the chances of objectives being achieved and ensuring organizations, individuals and communities are sustainable. It also enables the organization to be aware of new possibilities. A description of this framework contributes for the study in two ways: it identifies research variables and clarifies relationships among variables. Linked to the statement of problem, the conceptual framework sets the stage for presentation of the specific study questions that drives the investigation being reported. Figure 3.1 shows the schematic diagram of risk management and financial performance in Nepalese commercial banks.

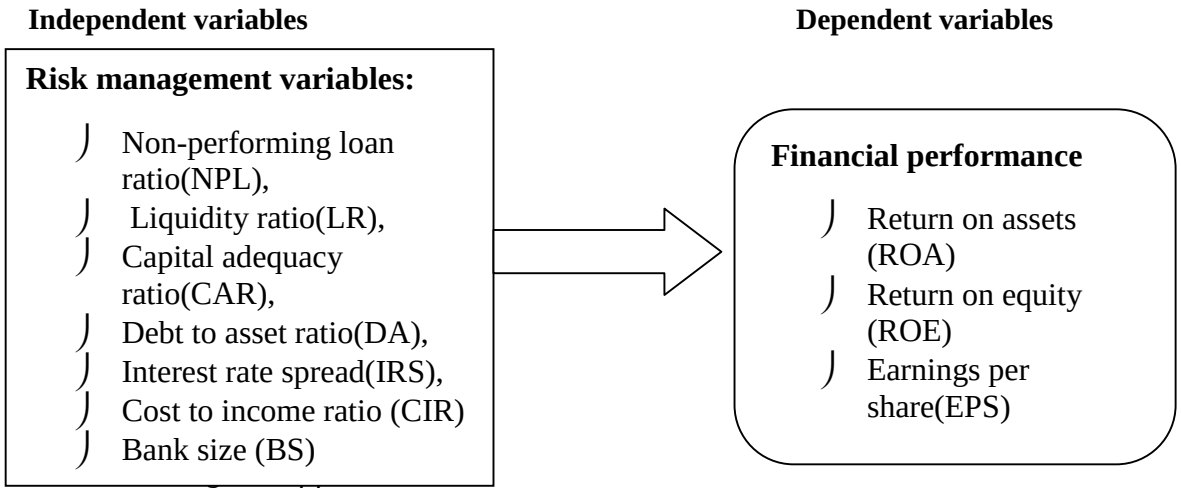

Figure 3. 1

Schematic diagram of factors influencing Nepalese bank's financial performance

Model specification

The econometric models used in this study tries to analyze the relationship between the risk management variables and financial performance variables. The following regression models are used in this study to examine the empirical relationship between the risk management variables and the financial performance of Nepalese commercial banks. Therefore, the following model equation is designed to test the hypothesis.

Financial Performance= f (credit risk, liquidity risk, capital management risk, interest rate risk, operating risk and bank size).

More specifically, the given model has been segmented into following models:

Model 1

In this model, the dependent variable is return on assets (ROA) indicated by percentage of net income to total assets. The model is presented as follows:

$ROA_{it} = \beta_0 + \beta_1 NPL_{it} + \beta_2 LR_{it} + \beta_3 CAR_{it} + \beta_4 DA_{it} + \beta_5 IRS_{it} + \beta_6 CIR_{it} + \beta_7 BS_{it} + e_{it.}$

Model 2

In this model, the dependent variable is return on assets (ROE) indicated by percentage of net income divided by shareholder's equity. The model is presented as follows:

$ROE_{it} = \beta_0 + \beta_1 NPL_{it} + \beta_2 LR_{it} + \beta_3 CAR_{it} + \beta_4 DA_{it} + \beta_5 IRS_{it} + \beta_6 CIR_{it} + \beta_7 BS_{it} + e_{it.}$

Model 3

In this model, the dependent variable is earnings per share (EPS) indicated by net earnings divided by total outstanding shares, in Rupees per share. The model is presented as follows:

$EPS_{it} = \beta_0 + \beta_1 NPL_{it} + \beta_2 LR_{it} + \beta_3 CAR_{it} + \beta_4 DA_{it} + \beta_5 IRS_{it} + \beta_6 CIR_{it} + \beta_7 BS_{it} + e_{it.}$

Where,

ROA= Return on assets

ROE= Return on equity

EPS = Earnings per share

NPL= Non-performing loan

LR = Liquidity ratio

CAR =Capital adequacy ratio

DA = Debt to assets ratio

IRS= Interest rate spread

CIR= Cost to income ratio

BS = Bank size

e = Error term

β_0= Constant term

β_1, β_2, β_3, β_4, β_5, β_6 and β_7= Coefficients of variables.

The description of the variables used in the study is presented in Table 3.2.

Table 3.2

Description of Variables

S.N.	Variables	Description	Measurement
1	ROA	Return on assets	Net income / total assets, in percentage.
2	ROE	Return on equity	Net income/shareholder's equity, in percentage.
3	EPS	Earnings Per Share	Net Earnings/total outstanding shares, in Rupees per share.
4	NPL	Non-performing loan	Non-performing loan to total gross loan, in percentage.
5	LR	Liquidity ratio	Loan and advances/deposit, in percentage.
6	CAR	Capital adequacy ratio	(Tier 1 capital + Tier 2 capital)/ Risk weighted assets, in percentage.
7	DA	Debt to assets ratio	Total debt/total assets, in percentage.
8	IRS	Interest rate spread	Weighted average difference of lending rates and deposit rates, in percentage.
9	CIR	Cost to income ratio	Operating expenses/operating income, in percentage.
10	BS	Bank size	In terms of total assets of banks, in Rupees in billion.

Chapter IV

Result and Discussion

Data analysis is the process of developing answer to the questions through the examination and interpretation of data. This chapter presents the systematic and orderly results of the study in the form of presentation, interpretations and analysis of the secondary data. The basic steps in the analytical process consist of identifying issues, determining the availability of suitable data, deciding the method appropriate for answering the questions of interest, applying the methods and evaluating, summarizing and communicating the results. Chapter four provides systematic presentation, interpretation, and analysis of secondary data in order to deal with various issues associated with risk management and financial performance of the Nepalese commercial banks.

The purpose of this chapter is to analyze and interpret the data collected during the study. Various statistical tools described in chapter three have been used for this purpose. This chapter is divided into five sections. The first section deals with structure and pattern analysis of data, second section deals with descriptive statistics, third section deals with the correlation analysis, fourth section deals with step wise regression analysis and the final section ends with concluding remarks about the result derived for the secondary data.

4.1 Structure and pattern analysis

This chapter deals with the structure and pattern of non-performing loan ratio, liquidity ratio, capital adequacy ratio, debt to asset ratio, interest rate spread, cost to income ratio, bank size and performance of Nepalese commercial banks. It includes average values and standard deviations. The structure and pattern of dependent variable i.e. bank performance measured as return on assets, return on equity and earnings per share and the independent variables are non-performing loan ratio, liquidity ratio, capital adequacy ratio, debt to asset ratio, interest rate spread, cost to income ratio, bank size is shown below.

4.1.1 Structure and pattern of return on assets

This section is contributed to the analysis of structure and pattern of profitability measures. The structure and pattern of return on assets for the period of 2014/15 to 2021/22 has been presented in Table 4.1.

Table 4.1 shows that NBL has highest average return on assets (1.84 percent) followed by NMB (1.51 percent) and MBL (1.34 percent),.

Table 4.1

Structure and pattern of return on assets (in percentage)

Banks	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	Mean	S. D.
NBL	2.06	2.32	2.78	2.41	1.51	1.22	1.33	1.22	1.84	0.58
MBL	1.26	1.51	1.89	1.47	1.61	1.02	1.02	0.94	1.34	0.31
NMB	1.21	1.49	1.89	1.96	1.83	1.09	1.32	1.35	1.51	0.31
Mean	1.51	1.77	2.18	1.94	1.65	1.11	1.22	1.13		
S. D.	0.38	0.38	0.41	0.38	0.13	0.08	0..14	0.16		

(Source : Annual Report)

Table 4.1 has shown that return on assets varies widely within the individual banks. It is observed that return on assets is decreased from 2.06 percent in 2015 to 1.12 percent in 2022 for NBL, from 1.26 percent in 2015 to 0.94 percent in 2016 for MBL, from 1.21 percent in 2015 to 1.35 percent in 2022 for NMB. Thus, when return on assets is compared over a period of time for individual banks, it is noticed that return on assets has decreased in majority of selected commercial banks in recent years. The average return on assets for selected commercial banks has decreased from 1.84percent in 2015 to 1.51percent in 2022.

Figure 4.1 shows the pattern of average return on assets of selected commercial banks of Nepal (in percent).

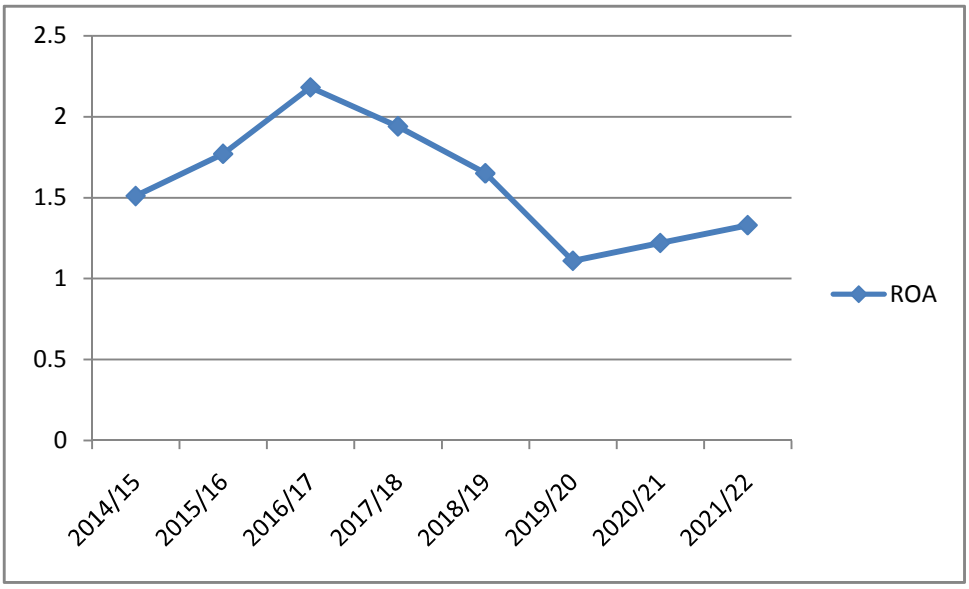

Figure 4.1

Pattern of average return on assets

Figure 4.1 presents the pattern of average return on assets of selected Nepalese commercial banks from year 2014/15 to 2021/22.The figure indicates various fluctuations over the study period. Overall, the graph shows return on assets is in increasing and decreasing trend over the study period.

4.1.2 Structure and pattern of return on equity

The structure and pattern of return on equity for the period of 2014/15 to 2021/22 has been presented in Table 4.2. It shows that NBL has highest average return on equity (25.76 percent) followed by MBL (12.89 percent) and NMB(12.36).

Table 4.2

Structure and pattern of return on equity (in percentage)

Banks	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	Mean	S. D.
NBL	22.73	36.39	25.86	35.25	25.86	22.66	24.26	22.67	25.76	4.89
MBL	7.24	4.13	11.82	14.27	11.82	14.78	18.01	21.07	12.89	5.11
NMB	10.15	12.17	15.75	13.54	13.32	8.94	12.08	12.95	12.36	1.96
Mean	13.37	17.56	17.81	21.02	17.00	15.46	18.11	18.10		
S. D.	6.72	13.71	5.91	10.06	6.29	5.62	4.97	4.25		

(Source: Annual Report)

Table 4.2 has shown that the return on equity varies widely with the individual banks. It is observed that the return on equity decreased from 22.73 percent in 2015 to 22.67 percent in 2022 for NBL but return on equity increased from 7.24 percent in 2015 to 21.07 in 2022 for MBL.Similarly, 10.15 percent in 2015 to 12.95 percent in 2022.

Figure 4.2 shows the pattern of average return on equity of Nepalese commercial banks (in percent).

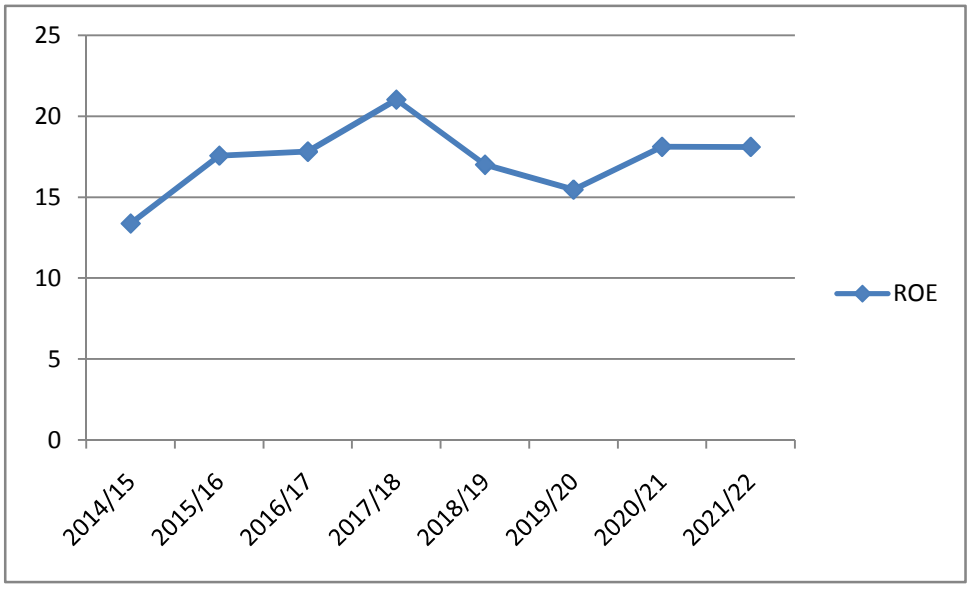

Figure 4.2

Pattern of average return on equity (in percent)

Figure 4.2 show that the pattern of return on equity of Nepalese commercial banks from year 2014/15 to 2021/22.The figure indicates various fluctuations over the study period. Return on equity is in declining trend till 2019 and slightly increase in the year 2021/22. Overall, the trend line shows that return on equity is in decreasing and increasing trend over the study period.

4.1.3 Structure and pattern of earnings per share

The structure and pattern of earnings per share for the period of 2014/15 to 2021/22 has been presented in Table 4.2. It shows that NBL has highest average earnings per share (Rs.36.48 per share) followed by NMB (Rs.21.57 per share)and MBL (Rs.18.19 per share).

Table 4.3

Structure and pattern of earnings per share (in Rupees per share)

Banks	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	Mean	S. D.
NBL	57.24	59.27	38.77	39.98	26.99	22.66	24.26	22.67	36.48	14.09
MBL	16.15	19.57	24.00	23.16	15.81	14.78	15.67	16.44	18.19	3.37
NMB	20.5	25.05	27.78	26.88	18.79	16.73	16.73	20.15	21.57	4.13
Mean	31.29	34.63	30.18	30.00	20.53	18.05	18.88	19.75		
S. D.	18.43	17.56	6.26	7.21	4.72	3.35	3.82	2.55		

(Source: Annual Report)

Table 4.3 shows that the average earnings per share vary widely within individual banks also. It is observed that earnings per share are decreased from Rs.57.24 per share in 2015 to Rs.22.67 per share in 2022 for NBL, from Rs.16.15 per share in 2015 to Rs.16.44 per share in 2022 for MBL, from Rs.20.5 per share in 2015 to Rs.27.15 per share in 2022 for NMB.The variation in earnings per share as indicated by standard deviation is lowest for MBL followed by NBL and NMB.The earnings per share are highest for NBL 57.24 in 2016. On the other side, earning per share is lowest for MBL in 2020.

Figure 4.3 shows the pattern of average earnings per share different commercial banks of Nepal (in rupees).

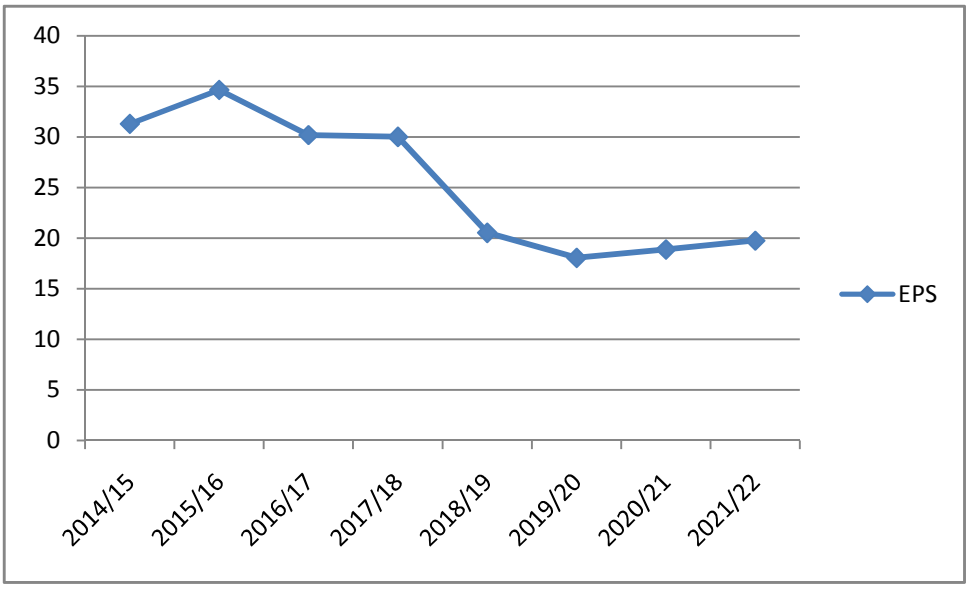

Figure 4.3

Pattern of average earnings per share in rupees

Figure 4.3 shows the pattern of earnings per share of Nepalese commercial banks from year 2015 to 2022. The figure indicates various fluctuations over the study period. Earnings per share are in declining trend till 2016 and slightly decrease in the year 2017. Overall, the trend line shows that earning per share is in decreasing and increasing trend over the study period.

4.1.4 Structure and pattern of non-performing loan ratio

The structure and pattern of non-performing loan ratio for the period of 2014/15 to 2021/22 has been presented in Table 4.4. It shows that NBL has highest average non-performing loan ratio (2.41 percent) followed by NMB (1.50 percent) and MBL (0.61 percent).

Table 4.4

Structure and pattern of non-performing loan ratio in percentage

Banks	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	Mean	S. D.
NBL	1.82	1.14	3.30	2.96	2.64	2.47	1.91	3.11	2.41	0.69
MBL	0.64	0.55	0.38	0.44	0.37	0.52	0.57	1.41	0.61	0.31
NMB	0.42	1.81	1.68	0.88	0.82	2.68	1.49	2.24	1.50	0.71
Mean	0.96	1.16	1.78	1.42	1.27	1.89	1.32	2.25		
S. D.	0.61	0.51	1.19	1.09	0.98	0.97	0.55	0.69		

Source: (Annual Report)

Table 4.4 has shown that the table, non-performing loan ratio varies widely within the individual banks also. It is observed that the non-performing loan ratio is increased from 1.82 percent in 2015 to 3.11 percent in 2022 for NBL, from 0.64 percent in 2015 to 1.41 percent in 2022 for MBL, from 0.42 percent in 2015 to 2.24 percent in 2022 for NMB.

Figure 4.4 shows the pattern of average non-performing loan ratio of diffeent commercial banks of Nepal (in percentage).

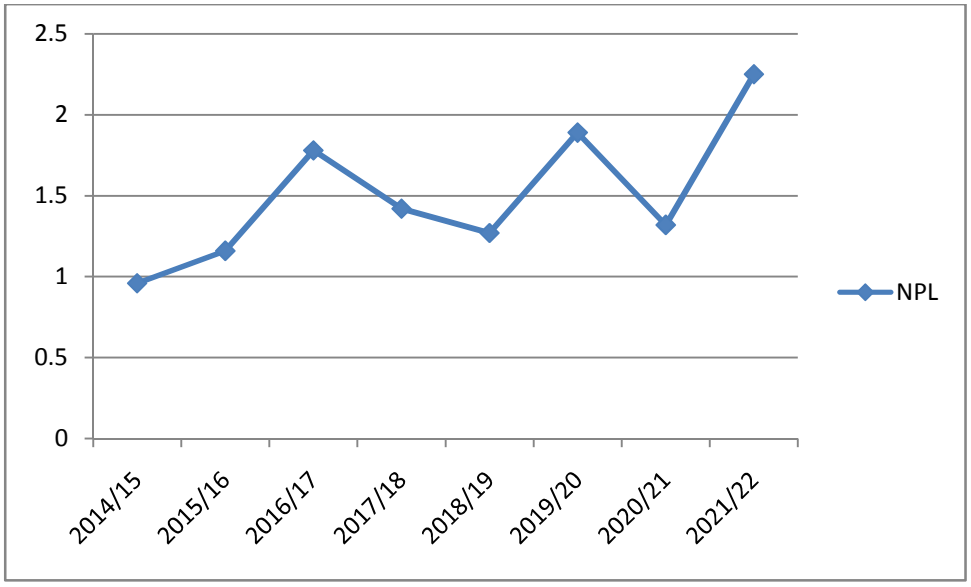

Figure 4.4

Pattern of average non-performing loan ratio in percentage

Figure 4.4 shows the pattern of non-performing loan ratio of selected Nepalese commercial banks from year 2014/15 to 2021/22. The figure indicates various fluctuations over the study period. Non-performing loan ratio is in increasing trend in 2016 and decreasing trend till 2018 and again in increasing trend till the year 2019. Overall, the trend line shows that non-performing loan ratio is in increasing trend over the study period.

4.1.5 Structure and pattern of liquidity ratio

Table 4.5 shows that average liquidity ratio has highest for MBL (85.95 percent) followed by NMB (84.17 percent) and NBL(75.24 percent).

Table 4.5

Structure and pattern of liquidity ratio in percentage

Banks	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	Mean	S. D.
NBL	62.83	69.01	79.17	75.68	78.14	72.25	82.76	82.12	75.24	6.41
MBL	77.51	83.44	88.47	89.78	87.00	88.56	86.53	86.32	85.95	3.65
NMB	74.31	81.84	85.50	88.30	87.71	86.39	86.51	85.55	84.17	4.26
Mean	71.55	78.09	84.38	84.58	84.28	82.40	85.26	84.66		
S. D.	6.30	6.45	3.87	6.32	4.35	7.23	1.77	1.82		

Source:(Annual Report)

Table 4.5 has shown that liquidity ratio varies widely within the individual banks also. It is observed that the liquidity ratio is increased from 62.83 percent in 2015 to 82.12 percent in 2022 for NBL, from 77.51 percent in 2015 to 86.32 percent in 2022 for MBL and from 74.31 percent in 2015 to 85.55percent in 2022..The variation in liquidity ratio as indicated by standard deviation is lowest for MBL followed by NMB and NBL.

Figure 4.5 shows the pattern of average liquidity ratio of different commercial banks of Nepal (in percent).

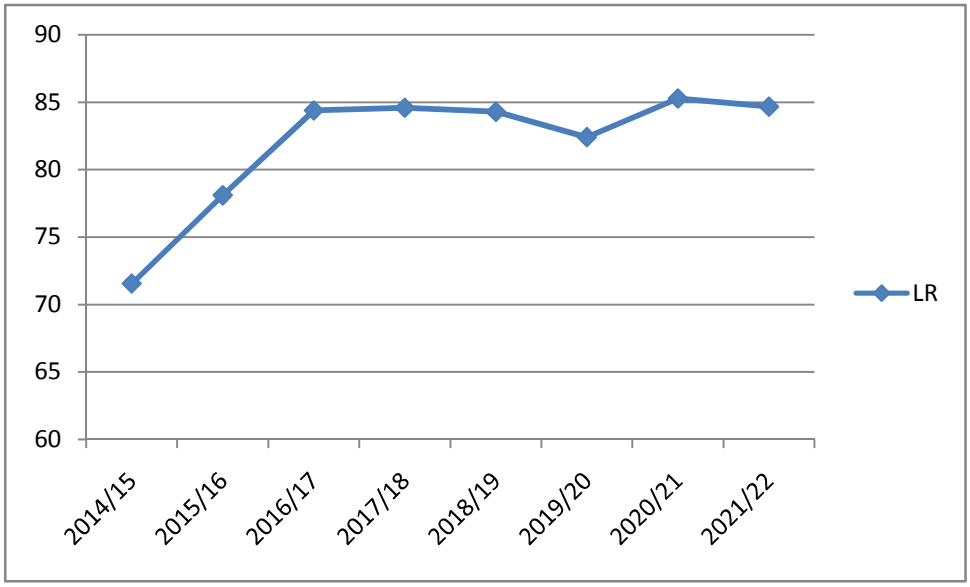

Figure 4.5

Pattern of average liquidity ratio (in percentage)

Figure 4.5 shows the pattern of liquidity ratio of Nepalese commercial banks from year 2014/15 to 2021/22. The figure indicates various fluctuations over the study period. Liquidity ratio is in increasing trend in 2017 and decreasing trend till 2019 and again increasing trend till 2022.

4.1.6 Structure and pattern of capital adequacy ratio (in percentage)

Table 4.6 presents the structure and pattern of capital adequacy ratio of Nepalese commercial banks.It shows that NBL has highest average capital adequacy ratio (14.40 percent) followed by NMB (13.83 percent) and NMB (12.93 percent).

Table 4.6

Structure and pattern of capital adequacy ratio in percentage

Banks	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	Mean	S. D.
NBL	11.57	11.73	16.41	11.27	17.01	16.80	15.05	15.43	14.40	2.31
MBL	11.84	11.24	12.36	16.82	12.79	13.02	12.06	13.36	12.93	1.59
NMB	11.13	10.98	13.61	15.75	15.45	15.08	15.08	13.59	13.83	1.76
Mean	11.51	11.31	14.12	14.61	15.08	14.96	14.06	14.12		
S. D.	0.29	0.31	1.69	2.40	1.74	1.54	1.41	0.92		

Source: (Annual Report)

Table 4.6 has shown that capital adequacy ratio varies widely within the individual banks also. It is observed that the capital adequacy ratio is increased from 11.57 percent in 2015 to 15.43percent in 2022 forNBL , from 11.84 percent in 2015 to 13.36 percent in 2022 for MBL, from 11.13percent in 2015 to 13.59 percent in 2022 forNMB. The highest for MBL (16.82) in year 2018, NMB (15.45 percent) in 2019.

Figure 4.6 shows the pattern of average capital adequacy ratio of different commercial banks of Nepal (in percentage).

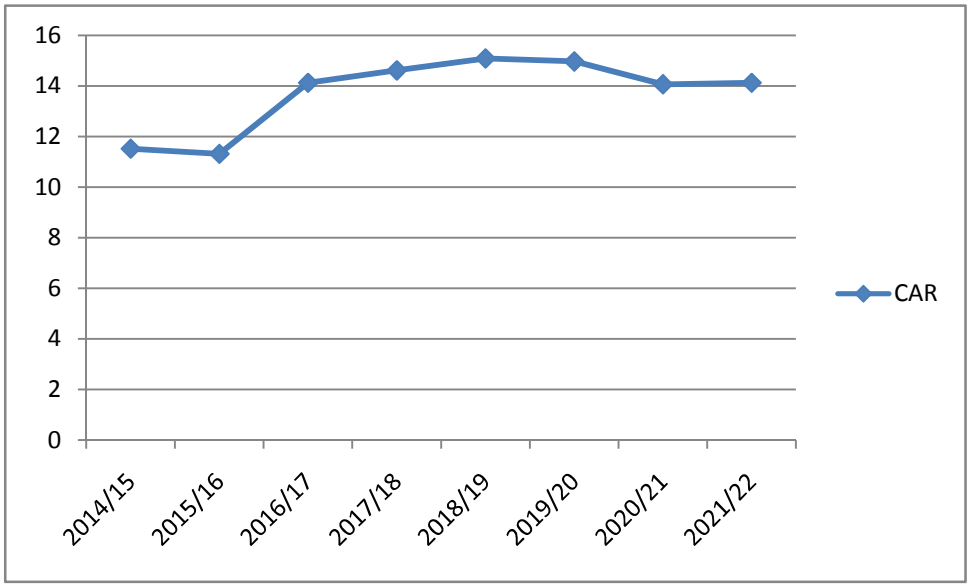

Figure 4.6

Pattern of capital adequacy ratio in percentage

Figure 4.6 shows the pattern of capital adequacy ratio of Nepalese commercial banks from year 2014/15 to 2021/22. The figure indicates various fluctuations over the study period. Capital adequacy ratio is in decreasing and increasing trend till 2021/22.

4.1.7 Structure and pattern of debt to asset ratio (in percentage)

Table 4.7 presents the structure and pattern of debt to asset ratio of Nepalese commercial banks.It shows that MBL has highest average debt to asset ratio(87.15 percent) followed by NBL (80.77 percent) and NMB (79.21 percent).

Table 4.7

Structure and pattern of debt to assets ratio in percentage

Banks	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	Mean	S. D.
NBL	91.82	90.89	83.04	72.79	69.01	74.87	76.13	87.78	80.77	8.20
MBL	91.81	91.01	87.95	85.06	85.47	86.99	85.00	83.98	87.15	2.71
NMB	92.02	90.8	82.45	75.71	72.72	75.12	71.89	73.04	79.21	7.67
Mean	91.88	90.9	84.48	77.85	75.73	78.93	77.67	81.6		
S. D.	0.09	0.08	2.46	5.23	7.04	5.69	5.46	6.24		

Source: (Annual Report)

Table 4.7 has shown that debt to asset ratio varies widely within the individual banks also. It is observed that the debt to asset ratio is decreased from91.82percent in 2015 to 87.78percent in 2022 for NBL, from 91.81percent in 2015 to 83.98percent in 2022 for MBL and from 92.02 percent in 2015 to 73.04 in 2022.

Figure 4.7 shows the pattern of average debt asset ratio of different commercial banks of Nepal (in percentage).

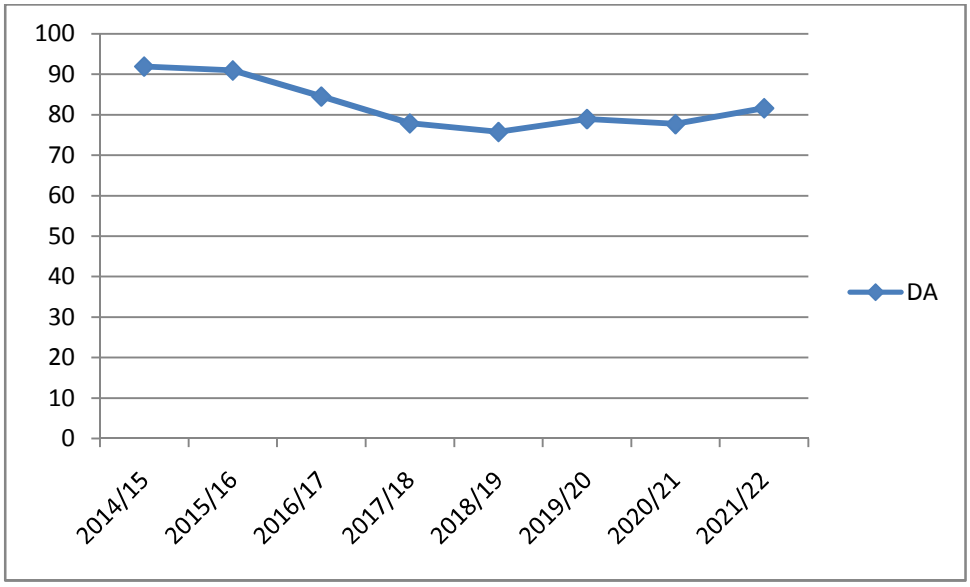

Figure 4.7

Pattern of average debt to asset ratio in percentage

Figure 4.7 shows the pattern of debt to asset ratio of Nepalese commercial banks from year 2014/15 to 2021/22. The figure indicates various fluctuations over the study period. Debt to asset ratio is in decreasing and increasing trend till 2022.

4.1.8 Structure and pattern of interest rate spread (in percentage)

Table 4.8 presents the structure and pattern of interest rate spread of Nepalese commercial banks.It shows that MBL has highest average interest rate spread (4.26 percent) followed by NBL (4.21 percent) and NMB(3.99).

Table 4.8

Structure and pattern of interest rate spread (in percentage)

Banks	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	Mean	S. D.
NBL	3.97	3.74	4.80	4.99	4.45	3.70	4.34	3.69	4.21	0.47
MBL	4.65	4.59	4.27	4.75	4.27	4.36	3.82	3.38	4.26	0.43
NMB	4.19	4.31	3.89	4.14	4.26	4.05	3.09	4.05	3.99	0.36
Mean	4.27	4.21	4.32	4.62	4.32	4.03	3.75	3.70		
S. D.	0.28	0.35	0.37	0.35	0.08	0.26	0.51	0.27		

Source: (Annual Report)

Table 4.8 has shown thatinterest rate spread varies widely within the individual banks also. It is observed that the interest rate spread is 3.97percent in 2015 and3.69 percent in 2022 for NBL, from 4.65percent in 2015 to 3.38 percent in 2022 for MBL, from 4.19percent in 2015 to 4.05percent in 2022 for NMB.The variation in interest rate spread as indicated by standard deviation is lowest for NMB followed by MBL and NBL.

Figure 4.8 shows the pattern of average interest rate spread of different commercial banks of Nepal (in percentage).

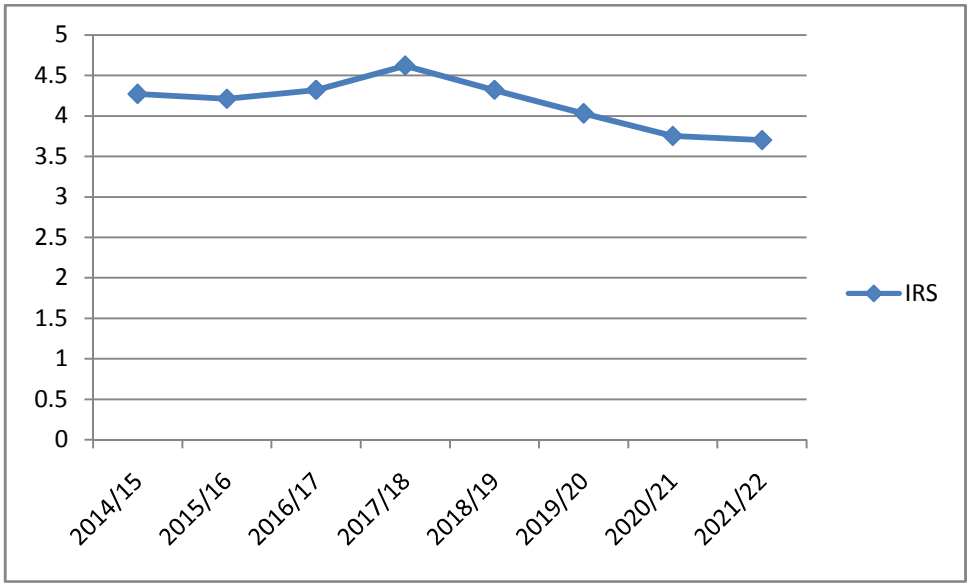

Figure 4.8

Pattern of average interest rate in percentage

Figure 4.8 shows the pattern of interest rate spread of Nepalese commercial banks from year 2014/15 to 2021/22. The figure indicates various fluctuations over the study period. Interest rate spread is in increasing trend till 2017 and decreasing trend upto 2021/22. Overall, the graph shows interest rate spread is in decreasing trend over the study period.

4.1.9 Structure and pattern of cost to income ratio (in percentage)

Table 4.9 presents the structure and pattern of cost to income ratio of Nepalese commercial banks.It shows that MBL has highest average cost to income ratio (41.21 percent) followed by NBL(37.87percent) and NMB(37.87 percent).

Table 4.9

Structure and pattern of cost to income ratio in percentage

Banks	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	Mean	S. D.
NBL	28.49	24.08	51.88	41.51	41.04	48.12	46.28	21.61	37.87	10.82
MBL	44.66	39.07	33.53	37.59	41.82	46.28	44.71	42.03	41.21	3.99
NMB	37.35	36.49	36.71	36.90	35.01	37.98	38.70	39.97	37.38	1.40
Mean	36.83	33.21	40.70	38.66	39.29	44.12	43.23	34.53		
S. D.	6.61	6.54	8.00	2.03	3.04	4.41	3.26	0.27		

(Source: Annual Report)

Table 4.9 has shown that cost to income ratio varies widely within the individual banks also. It is observed that the cost to income ratio is decreased from 28.49percent in 2015 to 21.61percent in 2022 for NBL, from 44.66 percent to 2015 to 42.03 in 2022 for MBL. The result also shows that the cost to income ratio is increased from 37.35 percent in 2015 to 39.97percent in 2022 for NBM.

Figure 4.9 shows the pattern of average cost to income of different commercial banks.

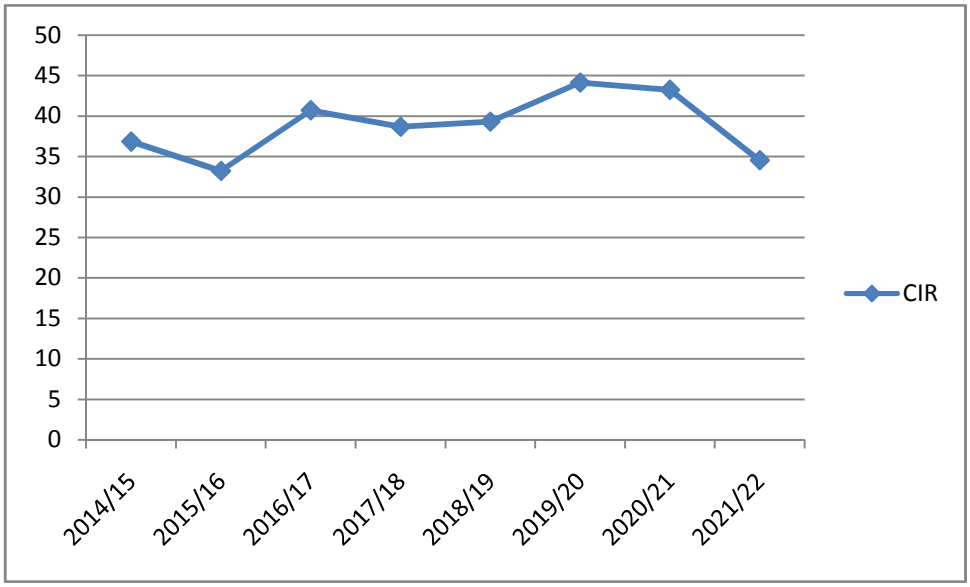

Figure 4.9

Pattern of average cost to income ratio in percentage

Figure 4.9 shows the pattern of cost to income ratio of Nepalese commercial banks from year 2014/15 to 2021/22. The figure indicates various fluctuations over the study period. Cost to income ratio is in decreasing trend till 2018, increasing trend till 2020 and again decreasing trend till 2021/22. Overall, the graph shows interest rate spread is increasing and decreasing trend over the study period.

4.1.10 Structure and pattern of bank size

Table 4.10 presents the structure and pattern of bank size of Nepalese commercial banks.It shows that NBL has highest average bank size(Rs.164.60 Billion) followed by NMB (Rs.139.75 Billion) and MBL(103.57).

Table 4.10

Structure and pattern of bank size in percentage

Banks	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	Mean	S. D.
NBL	115.98	127.29	130.22	133.46	171.51	191.16	222.64	224.61	164.60	41.27
MBL	48.75	59.45	59.45	84.78	105.24	124.51	158.21	178.72	103.57	44.13
NMB	41.33	74.61	88.81	111.62	135.47	179.45	231.55	255.20	139.75	71.29
Mean	68.68	87.11	92.82	109.95	137.40	165.04	204.13	219.51		
S. D.	33.57	29.07	29.03	19.90	27.08	29.05	32.67	31.43		

Source: (Annual Report)

The variation in bank size as indicated by standard deviation is lowest for MBL followed by NBL and NMB.

Figure 4.10 shows the pattern of average bank size of different commercial banks of Nepal (in Rs. Billion).

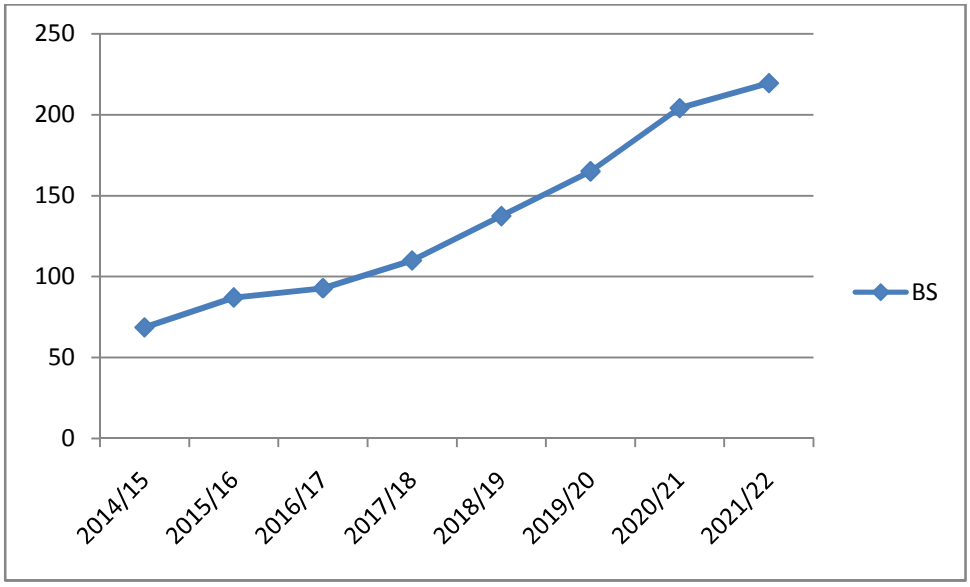

Figure 4.10

Pattern of average bank size in Billion

Figure 4.10 shows the pattern of bank size of Nepalese commercial banks from year 2014/15 to 2021/22 .Bank size is in increasing trend till 2016. The trend line shows that firm size is in increasing trend over the study period.

4.2 Descriptive statistics

The descriptive statistics used in this study consists of mean, standard deviation, minimum, and maximum values associated with variables under consideration. Table 4.11 summarizes the descriptive statistics of variables used in this study during period 2014/15 through 2021/22 with 3 commercial banks in Nepal which are NBL,MBL and NMB.

Table 4.11

Descriptive statistics

The descriptive statistics are shown for dependent and independent variables. Dependent variables are ROA (return on assets defined as net income divided by total assets, in percentage) and EPS (earnings per share, in Rupees per share) and independent variables are NPL(non-performing loan non-performing loan to total gross loan, in percentage), LR (liquidity ratio defined as loan and advances divided by deposits, in percentage), CAR (capital adequacy ratio defined as sum of tier I and tier II capital divided by risk weighted assets, in percentage), DA (debt to assets ratio defined as total debt divided by total

assets, in percentage), IRS (interest rate spread defined as weighted average difference of lending rates and deposit rates, in percentage), CIR (cost to income ratio defined as operating expenses divided by operating income, in percentage) and BS (bank size defined in terms of total assets, in Rupees in Billion).

Variables	Minimum	Maximum	Mean	S.D.
ROA	0.94	2.78	1.56	0.25
ROE	4.13	36.39	17.30	7.19
EPS	14.78	57.24	25.41	7.98
NPL	0.37	3.30	1.50	0.82
LR	62.83	88.47	81.90	4.76
CAR	10.98	17.01	13.72	1.28
DA	69.01	92.02	82.38	4.03
IRS	3.09	4.99	4.15	0.30
CIR	21.61	51.88	38.82	5.38
BS	41.33	224.61	135.58	28.98

Table 4.11 clearly shows that return on assets ranges from a minimum of 0.94 percent to a maximum of 2.78 percent, leading to an average of 1.56 percent. Earnings per share ranges from a minimum of Rs. 14.78 per share to a maximum of Rs.57.24 per share, leading to average Rs.25.41 per share. The non-performing loan ranges from a minimum of 0.37 percent to a maximum of 3.30 percent leading to an average of 1.50 percent. The average liquidity ratio of selected banks during the study period is noticed to be 81.90 percent with a minimum of 62.83 percent and a maximum of 88.47 percent. The average capital adequacy ratio of selected banks during the study period is noticed to be 13.72 percent with a minimum of 10.98 percent and a maximum of 17.01 percent. The debt to asset ratio ranges from 69.01 percent to 92.02 percent, leading to an average of 82.38 percent. Likewise, interest rate spread ranges from 3.09 percent to 4.99 percent, leading to an average of 0.30 percent. The cost to income ratio ranges from 21.61 percent to 51.88 percent, leading to an average of 38.82 percent. The firm size ranges from a minimum of Rs.41.33 billion to a maximum of Rs.224.61 billion leading to an average of Rs.135.58 billion.

4.3 Correlation analysis

Having indicated the descriptive statistics, Pearson correlation coefficients are computed and the results are presented in Table 4.12. More specifically, it shows the correlation coefficients of dependent and independent variables for Nepalese commercial banks.

Table 4.12

Pearson's correlation coefficients for dependent and independent variables

Table 4.12 shows the Pearson's correlation coefficients among different dependent and independent variables. Dependent variables are ROA (return on assets defined as net income divided by total assets, in percentage) and EPS (earnings per share, in Rupees per share) and independent variables are NPL(non-performing loan non-performing loan to total gross loan, in percentage), LR (liquidity ratio defined as loan and advances divided by deposits, in percentage), CAR (capital adequacy ratio defined as sum of tier I and tier II capital divided by risk weighted assets, in percentage), DA (debt to assets ratio defined as total debt divided by total assets, in percentage), IRS (interest rate spread defined as weighted average difference of lending rates and deposit rates, in percentage), CIR (cost to income ratio defined as operating expenses divided by operating income, in percentage) and BS (bank size defined in terms of total assets, in Rupees in Billion).

Variable	ROA	ROE	EPS	NPL	LR	CAR	DA	IRS	CIR	BS
ROA	1									
ROE	0.353**	1								
EPS	0.748	0.03**	1							
NPL	-0.302	0.252*	-0.502*	1						
LR	-0.005**	0.731**	-0.554**	0.590	1					
CAR	-0.130*	0.413	-0.711**	-0.553	0.839	1				
DA	0.222*	-0.490**	0.746**	-0.357	-0.839	-0.938**	1			
IRS	0.805*	0.179*	0.0.646**	-0.457	-0.195	-0.048	0.104	1		
CIR	-0.184**	-0.050**	-0.554**	0.126**	0.408	0.636	-0.602	-0.085	1	
BS	0.748**	0.231**	-0.877**	0.620	0.632**	0.553**	-0.630	0.811**	0.281**	1

Notes: The asterisk signs (**) and (*) indicate that the results are significant at 1 percent and 5 percent level respectively.

The result shows that there is negatuve relationship between non-performing loan and bank performance (return on assets and earnings per share). This means that lower the non-performing loan, higher would be the bank performance. Likewise, the result shows that there is a negative relationship between liquidity ratio and bank performance. This

means that higher the liquidity ratio, lower would be the bank performance. Similarly, capital adequacy ratio has a negative relationship with bank performance. This means that higher the capital adequacy ratio, lower would be the bank performance. Similarly, the result shows that there is positive relationship between debt to assets ratio and bank performance. This means that higher the debt to assets ratio, higher would be the bank. Likewise, the result shows that there is a positive relationship between interest rate spread and bank performance. It indicates that higher the interest rate spread, higher would be the bank performance. Similarly, cost to income ratio has negative relationship with bank performance. This means that higher the cost to income ratio, lower would be the bank performance. Similarly, the result show there is positive relationship between bank size and bank performance. It indicates that higher the bank size, higher would be the bank performance.

4.4 Regression analysis

Having indicated the Pearson's correlation coefficients, the regression analysis has been performed and results are presented in the Table 4.13. More specifically, it shows the regression result of dependent and independent variables for Nepalese commercial banks.

The estimated regression results of non-performing loan, liquidity ratio, capital adequacy ratio, debt to asset ratio, interest rate spread, cost to income ratio and bank size on return on assets of Nepalese commercial banks are presented in Table 4.13.

Table 4.13

Estimated regression results of non-performing loan, liquidity ratio, capital adequacy ratio, debt to asset ratio, interest rate spread, cost to income ratio, bank size on return on assets of Nepalese commercial banks

The results are based on panel data of 3 commercial banks with observations for the period of 2014/15 to 2021/22 by using linear regression model. The model is ROAit = β0 + β1NPLit + β2LRit + β3CARit + β4DAit + β5IRSit+ β6CIRit + β7BSit + eit.whereas, Dependent variable is ROA (return on assets defined as net income divided by total assets, in percentage) and independent variables are NPL(non-performing loan non-performing loan to total gross loan, in percentage), LR (liquidity ratio defined as loan and advances divided by deposits, in percentage), CAR (capital adequacy ratio defined as sum of tier I and tier II capital divided by risk weighted assets, in percentage), DA (debt to assets ratio defined as total debt divided by total assets, in percentage), IRS (interest rate spread defined as weighted average difference of lending rates and deposit rates, in percentage), CIR (cost to income ratio defined as operating expenses divided by operating income, in percentage) and BS (bank size defined in terms of total assets, in Rupees in Billion).

		Regression coefficients of ROA							Adj. R_bar^2	SEE	F
Model	Intercept	NPL	LR	CAR	DA	IRS	CIR	BS			
	1.651	-0.063									
1	(19.348)**	(-1.551)							0.011	0.658	2.407
	2.681		-0.015								
2	(6.498)**		(-2.757)**						0.049	0.645	7.600
	2.114			-0.044							
3	(7.387)**			(-1.996)*					0.023	0.654	3.984
	0.237				0.015						
4	(0.411)				(2.293)*				0.032	0.650	5.256
	0.933					0.150					
5	(3.461)**					(2.360)*			0.035	0.650	5.570
	3.409						-0.050				
6	(20.098)**						(-11.276)**		0.498	0.468	127.147
	1.075							0.011			
7	(10.522)**							(5.485)**	0.186	0.596	30.085
	2.777	-0.063	-0.015								
8	(6.699)**	(-1.590)	(-2.772)**						0.061	0.641	5.1110
	3.201**	-0.068	-0.014	-0.040							
9	(6.806)	(-1.739)	(-2.547)*	(-1.847)					0.079	0.635	4.609
	2.111	-0.062	-0.013	-0.031	0.010						
10	(2.568)*	(-1.581)	(-2.480)*	(-1.393)	(1.611)				0.090	0.631	4.150
	1.394	-0.076	-0.012	-0.043	0.011	0.185					
11	(1.679)	(-1.987)*	(-2.354)*	(-1.944)	(1.729)	(3.031)**			0.147	0.611	5.378
	3.677		-0.007	-0.024		0.062	-0.045	0.003			
12	(8.067)**		(-1.810)	(-1.475)		(1.321)	(-9.511)**	(1.450)	0.536	0.450	30.354
	0.756	-0.050	-0.007	-0.020	0.010	0.115		0.008			
13	(0.925)	(-1.351)	(-1.436)	(-0.931)	(1.625)	(1.862)		(3.449)**	0.217	0.585	6.865

Note: The asterisk signs (**) and (*) indicate that the coefficients are significant at 1 percent and 5 percent levels respectively.

Table 4.13 shows that the beta coefficients are positive and significant for debt to asset ratio at 5 percent level. This indicates that debt to asset ratio has a positive significant impact on return on assets of Nepalese commercial banks. This finding is similar to the findings of Bam et al. (2015). The result also shows that beta coefficients are positive and

significant for interest rate spread at 5 percent level. This indicates that interest rate spread has a positive significant impact on return on assets of Nepalese commercial banks. This finding is similar to the findings of Saunders and Schumacher (2000) and Irungu (2013). The result shows that beta coefficients are positive and significant for bank size at 1 percent level. This indicates that bank size has a positive significant impact on return on assets of Nepalese commercial banks. This finding is similar to the findings of Goddard et al. (2004), Smaoui and Ben Salah (2012) and Tabari et al. (2013).

The result shows that beta coefficients are negative for non-performing loan ratio. This indicates that non-performing loan ratio has a negative impact on return on assets. This finding is consistent with the findings of Kargi (2011), Tabari et al.(2013) and Bhattarai (2016). Similarly, the result shows that beta coefficients are negative and significant for liquidity ratio at 1 percent level of significance. This indicates that liquidity ratio has a negative significant impact on return on assets. This finding is consistent with the findings of Athanasoglou et al. (2008), Shen et al. (2009), Tabari et al. (2013), Pradhan (2014) and Nishanthini and Meerajancy (2015). Likewise, the result also shows that beta coefficients are negative and significant for capital adequacy ratio at 5 percent level of significance. This indicates that capital adequacy ratio has a negative significant impact on return on assets. This finding is consistent with the findings of Goddard et al. (2004), Poudel (2012) and Pradhan &Parajuli (2017). The result also shows that beta coefficients are negative and significant for cost to income ratio at 1 percent level of significance. This indicates that cost to income has a negative significant impact on return on assets. This finding is consistent with the findings of Almazari (2014) and Pradhan &Parajuli (2017).

The estimated regression results of non-performing loan, liquidity ratio, capital adequacy ratio, debt to asset ratio, interest rate spread, cost to income ratio and bank size on return on equity of Nepalese commercial banks are presented in Table 4.14.

Table 4.14

Estimated regression results of non-performing loan, liquidity ratio, capital adequacy ratio, debt to asset ratio, interest rate spread, cost to income ratio, bank size on return on equity of Nepalese commercial banks

The results are based on panel data of 3 commercial banks with observations for the period of 2014/15 to 2021/22 by using linear regression model. The model is EPSit = β0+ + β1NPLit + β2LRit + β3CARit + β4DAit + β5IRSit+ β6CIRit + β7BSit + eit. whereas, the dependent variable is ROE (return on equity defined as net income divided by shareholder's equity, in percentage) and independent variables are NPL(non-performing loan non-performing loan to total gross loan, in percentage), LR (liquidity ratio defined as loan and advances divided by deposits, in percentage), CAR (capital adequacy ratio defined as sum of tier I and tier II capital divided by risk weighted assets, in percentage), DA (debt to assets ratio defined as total debt divided by total assets, in percentage), IRS (interest rate spread defined as weighted average difference of lending rates and deposit rates, in percentage), CIR (cost to income ratio defined as operating expenses divided by operating income, in percentage) and BS (bank size defined in terms of total assets, in Rupees in Billion).

		Regression coefficients of ROE							Adj. R_bar^2	SEE	F
Models	Intercept	NPL	LR	CAR	DA	IRS	CIR	BS			
	20.143	-1.065									
1	(20.651)**	(-2.309)*							0.033	7.520	5.332
	36.029		-0.233								
2	(7.748)**		(-3.807)**						0.096	7.271	14.493
	23.849			-0.424							
3	(7.176)**			(-1.645)					0.013	7.596	2.706
	0.030				0.205						
4	(0.005)				(2.809)**				0.051	7.448	7.891
	11.363					1.720					
5	(3.647)**					(2.343)*			0.034	7.516	5.489
	39.468						-0.571				
6	(19.711)**						(-10.801)**		0.477	5.532	116.661
	12.663							0.137			
7	(10.867)**							(5.844)**	0.207	6.810	34.158
	37.666	-1.063	-0.232								
8	(8.168)**	(-2.431)*	(-3.879)**						0.130	7.133	10.484
	41.440	-1.112	-0.221	-0.359							
9	(7.884)**	(-2.546)*	(-3.683)**	(-1.474)					0.138	7.100	7.779
	25.008	-1.017	-0.215	-0.222	0.156						
10	(2.745)**	(-2.353)*	(-3.626)**	(-0.896)	(0.185)*				0.164	6.993	7.215
	16.841	-1.176	-0.203	-0.354	0.161	2.111					
11	(1.834)	(-2.795)*	(-3.536)**	(-1.455)	(2.337)*	(3.121)**			0.219	6.757	8.130
	45.240	-0.101	-0.145	-0.150		0.633	-0.489	0.038			
12	(8.634)**	(-0.296)	(-3.182)*	(-0.789)		(1.145)	(-8.632)**	(1.766)	0.541	5.181	25.948
13	9.528	-0.885	-0.148	-0.099	0.149	1.310		0.092	0.288	6.451	9.579
	(1.059)	(-2.161)*	(-2.600)**	(-0.408)	(2.260)*	(1.917)		(3.587)**			

Note: The asterisk signs (**) and (*) indicate that the coefficients are significant at 1 percent and 5 percent levels respectively.

Table 4.14 shows that the beta coefficients are positive and significant for debt to asset ratio at 1 percent level. This indicates that debt to asset ratio has a positive significant impact on return on equity of Nepalese commercial banks. This finding is similar to the findings of Bam et al. (2015). The result also shows that beta coefficients are positive and significant for interest rate spread at 5 percent level. This indicates that interest rate

spread has a positive significant impact on return on equity of Nepalese commercial banks. This finding is similar to the findings of Irungu (2013). The result shows that beta coefficients are positive and significant for bank size at 1 percent level. This indicates that bank size has a positive significant impact on return on equity of Nepalese commercial banks. This finding is similar to the findings of Tabari et al. (2013).

The result shows that beta coefficients are negative and significant for non-performing loan ratio at 5 percent level. This indicates that non-performing loan ratio has a negative significant impact on return on equity. This finding is consistent with the findings of Miller and Noulas (1997), Athanasoglou et al. (2008) and Hussain et al. (2016). Similarly, the result shows that beta coefficients are negative and significant for liquidity ratio at 1 percent level of significance. This indicates that liquidity ratio has a negative significant impact on return on equity. This finding is consistent with the findings of Athanasoglou et al. (2008), Shen et al. (2009), Nishanthini and Meerajancy (2015) and Hussain et al. (2016). Likewise, the result also shows that beta coefficients are negative for capital adequacy ratio. This indicates that capital adequacy ratio has a negative impact on return on equity. This finding is consistent with the findings ofPradhan &Parajuli (2017) and Poudel (2012). The result also shows that beta coefficients are negative and significant for cost to income ratio at 1 percent level of significance. This indicates that cost to income has a negative significant impact on return on equity. This finding is consistent with the findings of Hussain et al. (2016).

The estimated regression results of non-performing loan, liquidity ratio, capital adequacy ratio, debt to asset ratio, interest rate spread, cost to income ratio and bank size on earnings per share of Nepalese commercial banks are presented in Table 4.15.

Table 4.15

Estimated regression results of non-performing loan, liquidity ratio, capital adequacy ratio, debt to asset ratio, interest rate spread, cost to income ratio, bank size on earnings per share of Nepalese commercial banks

The results are based on panel data of 3commercial banks with observations for the period of 2014 /15to 2021/22 by using linear regression model. The model is EPSit = β0+ + β1NPLit + β2LRit + β3CARit + β4DAit + β5IRSit+ β6CIRit + β7BSit + eit. whereas, Dependent variable is EPS (earnings per share, in Rupees per share) and independent variables are NPL(non-performing loan non-performing loan to total gross loan, in percentage), LR (liquidity ratio defined as loan and advances divided by deposits, in percentage), CAR (capital adequacy ratio defined as sum of tier I and tier II capital divided by risk weighted assets, in percentage), DA (debt to assets ratio defined as total debt divided by total assets, in percentage), IRS (interest rate spread defined as weighted average difference of lending rates and deposit rates, in percentage), CIR (cost to income ratio defined as operating expenses divided by operating income, in percentage) and BS (bank size defined in terms of total assets, in Rupees in Billion).

	Regression Coefficients of EPS								Adj. R_bar^2	SEE	F
Models	Intercept	NPL	LR	CAR	DA	IRS	CIR	BS			
1	38.606 (11.711)**	-3.597 (-2.309)*							0.033	25.416	5.330
2	113.179 (7.572)**		-1.063 (-5.413)**						0.182	23.372	29.306
3	63.665 (5.785)**			-2.424 (-2.842)**					0.053	25.155	8.076
4	-39.080 (-1.769)				0.801 (3.281)**				0.071	24.906	10.763
5	0.335 (0.032)					7.887 (3.238)**			0.070	24.932	10.486
6	93.431 (12.331)**						-1.643 (-8.220)**		0.344	20.936	67.563
7	11.526 (3.005)**							0.507 (6.550)**	0.248	22.411	42.909
8	118.709 (8.028)**	-3.591 (-2.561)*	-1.062 (-5.530)**						0.217	22.87	18.578
9	140.638 (8.516)**	-3.872 (-2.823)**	-0.998 (-5.287)**	-2.083 (-2.725)**					0.255	22.307	15.498
10	82.853 (2.910)**	-3.539 (-2.620)**	-0.976 (-5.265)**	-1.603 (-2.070)*	0.550 (2.466)*				0.284	21.863	13.621
11	45.508 (1.663)	-4.265 (-3.402)**	-0.921 (-5.383)**	-2.205 (-3.045)**	0.571 (2.782)**	9.654 (4.788)**			0.393	20.142	17.425
12	138.609 (4.919)**	-1.877 (-1.618)	-0.836 (-5.574)**	-2.052 (-3.241)**	0.055 (0.277)	6.680 (3.662)**	-1.259 (-6.239)**		0.537	17.592	25.523
13	118.541** (3.971)	-1.678 (-1.456)	-0.763 (-4.965)**	-1.687 (-2.573)*	0.087 (0.445)	5.777 (3.093)**	-1.136 (-5.401)**	0.138 (0.137)	0.546	17.409	22.846

Note: The asterisk signs (**) and (*) indicate that the coefficients are significant at 1 percent and 5 percent levels respectively.

Table 4.15 shows that that the beta coefficients are positive and significant for debt asset ratio at 1 percent level. This indicates that debt asset ratio has a positive significant impact on earnings per share of Nepalese commercial banks. This finding is similar to the findings of Bam et al. (2015). The result also shows that beta coefficients are positive and significant for interest rate spread at 1 percent level. This indicates that interest rate spread has a positive significant impact on earnings per share of Nepalese commercial banks. This finding is similar to the findings of Saunders and Schumacher (2000). The result shows that beta coefficients are positive and significant for bank size at 1 percent level. This indicates that bank size has a positive significant impact on earnings per share of Nepalese commercial banks. This finding is similar to the findings of Goddard et al. (2004).

The result shows that beta coefficients are negative and significant for non-performing loan ratio at 5 percent level. This indicates that non-performing loan ratio has a negative impact on earnings per share. This finding is consistent with the findings of Miller and Noulas (1997) and Athanasoglou et al. (2008). Similarly, the result shows that beta coefficients are negative and significant for liquidity ratio at 1 percent level of significance. This indicates that liquidity ratio has a negative significant impact on earnings per share. This finding is consistent with the findings of Shen et al. (2009), Tabari et al. (2013) and Nishanthini and Meerajancy (2015). Likewise, the result also shows that beta coefficients are negative and significant for capital adequacy ratio at 1 percent level of significance. This indicates that capital adequacy ratio has a negative significant impact on earnings per share. This finding is consistent with the findings of Athanasoglou et al. (2008). The result also shows that beta coefficients are negative and significant for cost to income ratio at 1 percent level of significance. This indicates that cost to income has a negative significant impact on earnings per share. This finding is consistent with the findings of Smaoui and Ben Salah (2012).

4.5 Concluding remarks

This study is focused on the relationship between risk management and financial performance of Nepalese commercial banks. This study has used the non-performing loan ratio as a proxy for credit risk, liquidity ratio as a proxy of liquidity risk variable, capital adequacy ratio as a proxy of capital management risk variable, debt to asset ratio as a proxy of credit risk variable, interest rate spread as a proxy of interest rate risk variable,

cost to income ratio as proxy of operating efficiency variable and bank size as proxy of control variable. The dependent variables which are used to measure the financial performance are return on assets, return on equity and earnings per share. The results are based on the secondary data which are collected for 3 commercial banks during the period 2014/15 to 2021/22.

The result shows that average return on assets is highest for NBL (1.84percent) and lowest for MBL (1.34 percent). Similarly, the average return on equity is highest for NBL (25.76 percent) and lowest for NMB (12.36 percent), the average earning per share is highest for NBL (Rs.36.48per share) and lowest for MBL (Rs.18.19per share), the average non-performing loan is highest for NBL (2.41 percent) and lowest for MBL (0.61 percent), the average liquidity ratio is highest for MBL (85.95 percent) and lowest for NBL (75.24 percent), the average capital adequacy ratio is highest for NBL (14.40 percent) and lowest for MBL (12.93 percent), the average debt to asset ratio is highest for NBL (87.15 percent) and lowest for NMB (79.21 percent), the average interest rate spread is highest for MBL (4.26 percent) and lowest for NMB (3.99 percent), the average cost to income is highest for MBL (41.21 percent) and lowest for NMB (37.38 percent) and the average bank size is highest for NBL (Rs.164.60 Billions) and lowest for MBL (Rs.103.57 Billions). The study also reveals that the average values of ROA, ROE, EPS, NPL, LR, CAR, DA, IRS, CIR and BS of Nepalese commercial banks are observed to be 1.56 percent, 17.30 percent, Rs. 25.41 per share, 1.50 percent, 81.90 percent, 13.72 percent, 82.38percent, 4.15 percent, 38.82 percent and Rs.135.58 billion.

The study reveals that debt to asset ratio is positively related to bank performance. This indicates that higher the debt to asset, higher would be the bank performance. The results also show that interest rate spread is positively related to bank performance. It indicates that increase in interest rate spread leads to increase in bank performance. However, the study shows that non-performing loan ratio, liquidity ratio, capital adequacy ratio and cost to income ratio have a negative relationship with bank performance. It indicates that higher the non-performing loan ratio, liquidity ratio, capital adequacy ratio and cost to income ratio, lower would be the bank performance. Likewise, the result shows that bank size has a positive relationship with bank performance. It indicates that larger the bank, higher would be the bank performance. The regression results also show that liquidity ratio and cost to income ratio have a negative and significant impact on bank performance and debt to asset ratio, interest rate spread and bank size have a positive and significant

impact on bank performance of Nepalese commercial banks. Yet, the coefficients are significant only for liquidity ratio, cost to income ratio, debt to asset ratio, interest rate spread and bank size at 5 percent level of significance.

CHAPTER V

SUMMARY AND CONCLUSION

This chapter presents the brief summary of the entire study and highlights the major findings of the study. In addition, the major conclusions are discussed in separate section of this chapter which is followed by some implications and the recommendations regarding the relationship between risk management and financial performance of Nepalese commercial banks. Finally, the chapter ends with the scope of the future research in the same field.

5.1 Summary

A bank is the financial institution which deals with monetary activities by accepting deposits, lending to the various parties. The financial performance of a firm can be analyzed in terms of profitability, dividend growth, sales turnover, asset base, capital employed among others. However, there is still debate among several disciplines regarding how the performance of firms should be measured and the factors that affect financial performance (Liargovas& Skandalis, 2008).

The relationship between risk management and financial performance is of great concern in today's cut throat competition in the banking industry. The risk inherent in bank lending increases the profitability of the banks on one hand while on the other hand, it can lead to the bank failure too if not managed properly. In such circumstances, non-performing loan ratio, liquidity ratio, capital adequacy ratio, debt to asset ratio, interest rate spread, cost to income ratio, bank size and the concept of wise lending plays a great role for analyzing the impact of risk management on the financial performance in the context of commercial banks of Nepal. The survival and success of a financial organization depends critically on the efficiency of managing these risks (Khan & Ahmed, 2001).

The major objective of the study is to assess the relationship between risk management and financial performance of the Nepalese commercial banks. The study is based on secondary data of NBL,MBL and NMB banks with 24 observations for the period of 2014/15 to 2021/22. The main sources of data include various issues of Banking and Financial Statistics, Bank Supervision Report published by Nepal Rastra Bank and

Annual Reports of selected commercial banks. The data were collected on return on assets, return on equity, earnings per share, non-performing loan ratio, liquidity ratio, capital adequacy ratio, debt to asset ratio, interest rate spread, cost to income ratio and bank size. The panel cross sectional data analysis has been undertaken in the study. The research design adopted in this study is descriptive and causal comparative research design as it deals with the relationship between risk management and financial performance of Nepalese commercial banks.

The relationship between dependent and independent variables are analyzed using simple and multiple regression analysis. The dependent variables used in the study are return on assets, return on equity and earnings per share whereas the independent variables are non-performing loan ratio, liquidity ratio, capital adequacy ratio, debt to asset ratio, interest rate spread, cost to income ratio and bank size. The statistical methods used in the analysis are descriptive statistics, correlation analysis and regression analysis.

Based on the analysis of data, the major findings are summarized as under:

1. The average return on assets is highest for NBL (1.84percent) and lowest for MBL (1.34 percent). It has been found that the average return on assets has decreased from 1.51 percent in 2014/15 to 1.13 percent in 2021/22 for the commercial banks during the study period.

2. The average return on equity is highest for NBL (25.76 percent) and lowest for NMB (12.36 percent). It has been found that the average return on equity has increased from 13.37 percent in 2014/15 to 18.10 percent in 2021/22 for the commercial banks during the study period.

3. The average earnings per share is highest for NBL (Rs.36.48per share) and lowest for MBL (Rs.18.19per share).It has been found that the average earning per share has decreased from Rs.31.29per share in 2014/15 to Rs.19.75per share in 2021/22 for the commercial banks during the study period.

4. The average non-performing loan ratio is highest for NBL (2.41 percent) and lowest for MBL (0.61 percent). It has been found that the average non-performing loan ratio has increased from 0.96 percent in 2014/15 to 2.25 percent in 2021/22 for the commercial banks during the study period.

5. The average liquidity ratio is highest for MBL (85.95 percent) and lowest for NBL (75.24percent). It has been found that the average liquidity ratio has increased from 71.55percent in 2014/15 to 84.66 percent in 2021/22 for the commercial banks during the study period.

6. The average capital adequacy ratio is highest for NBL (14.40 percent) and lowest for MBL (12.93 percent). It has been found that the average capital adequacy ratio has increased from 11.51 percent in 2014/15 to 14.12 percent in 2021/22 for the commercial banks during the study period.

7. The average debt to asset ratio is highest for MBL (87.15 percent) and lowest for NMB (73.04 percent). It has been found that the average debt to asset ratio has decreased from 91.88 percent in 2014/15 to 81.60 percent in 2021/22 for the commercial banks during the study period.

8. The average interest rate spread is highest for MBL (4.26 percent) and lowest for NMB (3.99 percent). It has been found that the average interest rate spread has decreased from 4.27 percent in 2014/15 to 3.70 percent in 2021/22 for the commercial banks during the study period.

9. The average cost to income ratio is highest for MBL (41.21 percent) and lowest for NMB (37.38 percent). It has been found that the average interest rate spread has decreased from 36.83 percent in 2014/15 to 34.53 percent in 2021/22 for the commercial banks during the study period.

10. The average bank size is highest for NBL (Rs.1644.60 Billions) and lowest for MBL (Rs.103.57 Billions). It has been found that the average bank size has been increased from Rs.68.68 Billions in 2014/15 to Rs.219.51 Billions in 2021/22 for the commercial banks during the study period.

11. The descriptive analysis shows that the average return on assets ratio is 1.56percent, average return on equity ratio is 17.30percent and average earnings per share is Rs.25.41per share for selected commercial banks.

12. The descriptive analysis indicates that the average non-performing loan ratio, liquidity ratio, capital adequacy ratio, debt to asset ratio, interest rate spread, cost to income ratio and bank size are 1.50 percent, 81.90 percent, 13.72 percent, 82.38 percent, 4.15

percent, 38.82 percent and Rs.135.58 Billionsrespectively for selected commercial banks

13. The correlation analysis shows that non-performing loan ratio is negatively related to the bank performance. This indicates that higher the non-performing loan ratio, lower would be bank performance.

14. The study shows that liquidity ratio is negatively related to the bank performance. This indicates that higher the liquidity ratio, lower would be bank performance.

15. The correlation analysis shows that capital adequacy ratio is negatively related to the bank performance. This indicates that higher the capital adequacy ratio, lower would be bank performance.

16. The study shows that debt to asset ratio is positively related to the bank performance. This indicates that higher the debt to asset ratio, higher would be bank performance.

17. The correlation analysis shows that interest rate spread is positively related to the bank performance. This indicates that higher the interest rate spread, higher would be bank performance.

18. The correlation analysis shows that cost to income ratio is negatively related to the bank performance. This indicates that higher the cost to income ratio, lower would be bank performance.

19. The correlation analysis shows that bank size is positively related to the bank performance. This indicates that larger the bank size, higher would be bank performance.

20. The beta coefficients are negative for non-performing loan ratio with bank performance. It indicates that the increase in non-performing loan ratio leads to decrease in bank performance and vice versa.

21. The beta coefficients are negative for liquidity ratio with bank performance. It indicates that the increase in liquidity ratio leads to decrease in bank performance and vice versa.

22. The beta coefficients are negative for capital adequacy ratio with bank performance. It indicates that the increase in capital adequacy ratio leads to decrease in bank performance and vice versa.

23. The beta coefficients are negative for cost to income ratio with bank performance. It indicates that the increase in cost to income ratio leads to decrease in bank performance and vice versa.

24. The beta coefficients are positive for debt to asset ratio with bank performance. It indicates that the increase in debt to asset ratio leads to increase in bank performance and vice versa for Nepalese commercial banks.

25. The beta coefficients are positive for interest rate spread with bank performance. It indicates that the increase in interest rate spread leads to increase in bank performance and vice versa for Nepalese commercial banks.

26. The beta coefficients are positive for bank size with bank performance. It indicates that the increase in bank size leads to increase in bank performance and vice versa for Nepalese commercial banks.

5.2 Conclusion

The major conclusion of this study is that liquidity ratio and cost to income ratio have negative and significant impact on bank performance indicating that higher the liquidity ratio and cost to income ratio, lower would be bank performance and vice versa. However, debt to asset ratio, interest rate spread and bank size have positive and significant impact on bank performance, indicating higher the debt to asset ratio, interest rate spread and bank size, higher would be the performance of Nepalese commercial banks.

The study also concludes that there is a negative relationship of non-performing loan ratio, liquidity ratio, capital adequacy ratio and cost to income ratio with the performance of Nepalese commercial banks. It indicates that increase in non-performing loan ratio, liquidity ratio, capital adequacy ratio and cost to income ratio leads to decrease in the performance of Nepalese commercial banks. Likewise, there is a positive relationship of debt to asset ratio, interest rate spread and bank size with the performance of Nepalese

commercial banks. It indicates that increase in debt to asset ratio, interest rate spread and bank size leads to increase in the performance of Nepalese commercial banks.

5.3 Implications

Based on the results and findings obtained from this study, following sets of recommendations are offered:

1. The study found the negative impact of non-performing loan ratio on financial performance of banks measured in terms of return on assets, return on equity and earnings per share. Hence, the banks are suggested to decrease non-performing loan ratio for better financial performance without affecting the day to day operations of the bank.
2. The study found the negative and significant impact of liquidity ratio of the commercial banks on the financial performance of banks measured by return on assets, return on equity and earnings per share. Hence, the commercial banks willing to increase financial performance should decrease liquidity ratio without affecting credit standing and day to day operations of the firm.
3. The study found the negative impact of capital adequacy ratio of the commercial banks on the financial performance of banks. Hence, the banks are suggested to decrease or manage well the capital adequacy ratio for better financial performance.
4. The study indicates the positive and significant relationship between debt to asset ratio and financial performance of banks measured in terms of return on assets, return on equity and earnings per share. Hence, banks are suggested to increase the use of debt to asset ratio for better financial performance.
5. The study indicates the positive and significant relationship between interest rate spread and financial performance of banks measured in terms of return on assets, return on equity and earnings per share. Hence, banks willing to increase financial performance should focus on to increase the interest rate spread.
6. The study indicates the negative and significant relationship between cost to income ratio and financial performance of banks measured in terms of return on assets, return on equity and earnings per share. Hence, banks willing to increase financial performance should focus on to decreased cost to income ratio.

7. The study indicates the positive and significant relationship between bank size and financial performance of banks measured in terms of return on assets, return on equity and earnings per share. Hence, banks willing to increase financial performance should focus on to increase the size.

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APPENDIX

Banks	Years	ROA%	ROE%	EPS	NPL %	LR%	CAR%	DA%	IRS%	CIR	BS (billion)
NBL	2014/15	2.06	22.73	57.24	1.82	62.83	11.57	91.82	3.97	28.49	115.98
	2015/16	2.32	36.39	59.27	1.14	69.01	11.73	90.89	3.74	24.08	127.29
	2016/17	2.78	25.86	38.77	3.30	79.17	16.41	83.04	4.80	51.88	130.22
	2017/18	2.41	35.25	39.98	2.96	75.68	11.27	72.79	4.99	41.51	133.46
	2018/19	1.51	25.86	26.99	2.64	78.14	17.01	69.01	4.45	41.04	171.51
	2019/20	1.22	22.66	22.66	2.47	72.25	16.80	74.70	3.70	48.12	191.16
	2020/21	1.33	24.26	24.26	1.91	82.76	15.05	76.13	4.34	46.28	222.64
	2021/22	1.22	22.67	22.67	3.11	82.12	15.43	87.78	3.69	21.61	224.61
MBL	2014/15	1.26	7.24	16.15	0.64	77.51	11.84	91.81	4.65	44.66	48.75
	2015/16	1.51	4.13	19.57	0.55	83.44	11.24	91.01	4.59	39.07	59.45
	2016/17	1.89	11.82	24.00	0.38	88.47	12.36	87.95	4.27	33.53	68.92
	2017/18	1.47	14.27	23.16	0.44	89.78	16.82	87.06	4.75	37.59	84.78
	2018/19	1.61	11.82	15.81	0.37	87.00	12.79	85.47	4.27	41.82	105.24
	2019/20	1.02	14.78	14.78	0.52	88.56	13.02	86.99	4.36	46.28	124.51
	2020/21	1.02	18.01	15.67	0.57	86.53	12.06	85.00	3.82	44.71	158.21
	2021/22	0.94	21.07	16.44	1.41	86.32	13.36	83.98	3.38	42.03	178.72
NMB	2014/15	1.21	10.15	20.5	0.42	74.31	11.13	92.02	4.19	37.35	41.33
	2015/16	1.49	12.17	25.05	1.81	81.84	10.98	90.80	4.31	36.49	74.61
	2016/17	1.89	15.75	27.78	1.68	85.50	13.61	82.45	3.89	36.71	88.81
	2017/18	1.96	13.54	26.88	0.88	88.30	15.75	75.71	4.14	36.90	111.62
	2018/19	1.83	13.32	18.79	0.82	87.71	15.45	72.72	4.26	35.01	135.47
	2019/20	1.09	8.94	16.73	2.68	86.39	15.08	75.12	4.05	37.98	179.45
	2020/21	1.32	12.08	16.73	1.49	86.51	15.08	71.89	3.09	38.70	231.55
	2021/22	1.35	12.95	20.15	2.24	85.55	13.59	73.04	4.05	39.97	255.20