

**CREDIT RISK MANAGEMENT AND FINANCIAL PERFORMANCE OF
NEPALESES COMMERCIAL BANKS**

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fulfillment of the requirement for the Degree of Master of Business Studies

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Certification of Authorship

I hereby corroborate that I have submitted the final draft of the dissertation entitled "**Credit risk management and financial performance of Nepalese commercial banks**". The work of this dissertation has not been submitted previously for conferral of any degrees nor has it 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 have 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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Report of Research Committee

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Abbreviations

CAR: Capital Adequacy Ratio
CRR: Cash reserve ratio
CB: Commercial Bank
CDR: Credit to deposit ratio
LNSize: Log of total assets
LD: Loan and Advance
MPT: Modern Portfolio Theory
NI: Net Income
NPL: Non-Performing Loans
DR: Default risk Ratio
ROA: Return on Assets
ROE: Return on Equity
SPSS: Statistical Package for Social Science
VIF: Variance inflation factor

Abstracts

This study was to analyze the effect of credit risk management and financial performance of commercial banks in Nepal. The dependent variable is in the profitability of commercial banks which has been specified in terms of return on Assets and Return on Equity while the independent variable is Capital adequacy ratio, Non-performing loan ratio, loan loss provision, loan and advance ratio and liquidity ratio. To test the effect of credit risk management on financial performance regression models have been estimated, and the study has used trend analysis, descriptive data analysis, correlation, and regression analysis obtaining through using SPSS software. The study was mainly conducted with secondary data. The data were collected for the three commercial banks among the 20 commercial banks of Nepal which covers the 30 observations. The study found that the credit risk indicator non-performing loan, loan and advance, capital adequacy ratio and liquidity is negative and significant relationship between the ROE but liquidity is negative and insignificant with ROE where Loan loss provision and capital adequacy ratio is positive and significant with ROE. The study reveals that Capital adequacy ratio and liquidity ratio has positive and insignificant relationship between the ROA but loan loss provision is positive and significant in ROA. As non-performing loan and loan and advance ratio has positive and significant relationship with ROA.

Keywords: *Return on equity, Return on assets, Capital Adequacy ratio, Non-performing loan, loan and advance ratio, loan loss provision*

CHAPTER I

INTRODUCTION

1.1 Background of the Study

Credit risk is one of significant risks of banks by the nature of their activities. Through effective management of credit risk exposure banks not only support the viability and profitability of their own business but also contribute to systemic stability and to an efficient allocation of capital in the economy (Psillaki et al. 2010). (Drachmann et al. 2010) emphasized on the importance of credit risk, which is one of the most significant risks that are encountered by the banks. The authors assert profitability, and net worth of the banks are not only dependent upon the default risks, but also upon the overall quality of the credit, items of the off-balance sheet, liabilities and the reprising characteristics of its book. Banks face credit risk, which has evolved through several other types of risks including operational, legal, market and liquidity. Advancing credit is the primary source of income generation in the banking sector, resulting in the credit risks faced by the banks. Consequently, credit risk is an essential part of profitability enhancement which reduces the cost of credit risk (Li and Zou, 2014). Credit risk is one of significant risks of banks by the nature of their activities. Through effective management of credit risk exposure, banks not only support the viability and profitability of their own business but also contribute to systemic stability and to an efficient allocation of capital in the economy (Iwedi & Onuegbu, 2014). Lopez and Saidenberg (2000) asserted that credit risk is essentially demarcated as the level of fluctuations in the value of the derivatives and the liability instruments, due to the variability's in the credit quality of the debtors, as well as their counterparties.

Risk management issues in the banking sector do not only have greater impact on bank performance but also on national economic growth and general business development. The bank's motivation for risk management comes from those risks which can lead to underperformance (Adeusi et al., 2014). Financial institutions play a role as the main pillar in a nation's economic growth and development (Zaidanin, 2020). The banking sector has a role as an intermediary for surplus units to deficit units for economic growth and

development, which becomes such an essential financing source for the company majority in maximizing shareholder prosperity. So, Poor economic performance makes people mired in loans and defaults, which results in bank failures because credit is a significant component of financial health of a bank' (Munangi & Sibindi, 2020)

Credit risk management is one of the most essential functions of the bank in the modern banking system. The risk is inherent in all aspect of banking business operations. Credit business is a one of the major parts of the bank (Kattel, 2016).Credit risk is accessed through analysing the financial performance of commercial banks in an attempt to mitigate impacts arising from credit defaults. The financial health of the commercial banks depends on the possession of good credit risk management dynamics. Commercial banks may have a keen awareness of the need to identify, measure, monitor and control credit risk as well as to determine that they hold adequate capital against these risks and that they are adequately compensated for risks incurred (Bhattarai 2016).While financial institutions have faced difficulties over the years for a multitude of reasons, the major causes of serious banking problems continue to be directly related to lax credit standards for borrowers, poor risk management or lack of attention to changes in economic environment. The goal of credit risk management is to maximize a bank's risk-adjusted rate of return by maintaining credit risk exposure within acceptable parameters. Banks need to manage the credit risk inherent in the entire portfolio as well as the risk in individual credits or transactions. Banks should also consider the relationships between credit and other risks. The effective management of credit risk is a critical component of a comprehensive approach to risk management and essential to the long term success of any banking organization (Odawo et al. 2019).In banks, credit risk strategy is essential for advancement of turnover, financial performance and survival of firms. Credit risk management maximizes bank's risk adjusted rate of return by maintaining credit risk exposure within acceptable limit in order to provide framework for understanding the impact of credit risk management on banks' profitability (Kargi, 2011).The aim of credit risk management is to minimize bank's risk adjusted rate of return by maintaining credit risk exposure within acceptable boundary. Banks need to manage the credit risk inherent in the entire loan portfolio as well as the risk in individual credit or transaction (Catherine 2020).

Thus, credit risk measurement is a preventive approach to reducing the default rate in the overall credit exposure of the banks. Banks are exposed to different types of risks, which affect the performance and activity of these banks, since the primary goal of the banking management is to maximize the shareholders' wealth, so in achieving this goal banks' manager should assess the cash flows and the assumed risks as a result of directing its financial resources in different areas of utilization (Alshatti, 2015).

For assessing the risk, banks should plan certain estimates, conduct monitoring, and perform reviews of the performance of the bank. The bank should also do loan reviews and portfolio analysis in order to determine risk involved. The progress has to be made for analysing the credits and determining the probability of defaults and risks of losses. A typical credit risk management framework in a bank as per NRB risk management guidelines can be broadly categorized into four main components: Board and senior Management's Oversight, Organizational structure, Systems and procedures for identification, acceptance and measurement, and Monitoring and control risks.

Performance evaluation is the important approach for enterprises to give incentive and restraint to their operators and it is an important channel for enterprise stakeholders to get the performance information. The performance evaluation of a commercial bank is usually related to how well the bank can use its assets, shareholders' equities and liabilities, revenues and expenses. The performance evaluation of banks is important for all parties including depositors, investors, bank managers and regulators. Thus, this study is focused towards analyzing how much of impact does the non-performing loan, loan loss provision, loan and advances, adequate capital, liquidity and the management of credit risk holds in defining the performance of Nepalese commercial banking sectors. It is crucial to know whether this optimism is truly warranted. It is against this backdrop that the present study set out to empirically ascertain whether credit risk management and non-performing loan, loan loss provision, loan and advances, capital requirement have enhanced profitability of Nepalese commercial banks.

Profile of Sample Banks

Nabil Bank Limited

Nabil bank limited is the first foreign joint venture bank of Nepal established in 1984. It has 50 percent foreign ownership. General public of Nepal holds 30 percent ownership of the bank. Likewise, Nepalese institutions possess a 10 percent share of the bank and 10 percent share holds by others. Nabil was incorporated with the objective of extending international standard modern banking services to various sectors of the society. Pursuing its objectives, banks provides a full range of commercial banking services through its 118 points of representation. Vision of Nabil bank is to be a bank for all across all geopolitical zone and socioeconomic strait of the nation that can provide myriads of financial solutions and create values for all stakeholders, to stand in the community with banks economic and civic role. As a mission Nabil bank emphasis on work in partnership with banks stakeholders and the community at large. Bank focus on customer satisfaction and skills of HR force who serves the products and services to the customer. Nabil bank has set C.R.I.S.P. (Customer focused, Result oriented, Innovative, Synergistic and professional) as its values, which it lives by in day to day operation of the banks business.

Standard Chartered Bank Limited

Standard Chartered Bank Nepal Limited (SCB) came in to operation from 1987. It is a joint venture company promoted by Standard Chartered Group. Standard Chartered Bank Nepal is a joint venture bank with foreign ownership of 70.21 percent. Standard Chartered Grind lays Ltd, Australia, and Standard Chartered Bank, UK Possess 46.81 percent and 23.40 percent share of SCB Nepal. Likewise, the Nepalese citizens have ownership of 29.79 percent in the company. With 15 points of representation, 26 ATMs across the country and more than 531 local staff, Standard Chartered bank Nepal Limited is serving its clients and customers through an extensive domestic network. SCB Nepal offers a full range of banking products and services to a wide range of clients and customers including individuals, mid-market local corporates, multinationals, large public sector companies, government corporations, airlines, hotels as well as the development organization segment comprising of embassies, aide agencies, and bilateral entities, multilateral entities, non-government organizations and international government organizations. The bank has been

the pioneer in introducing client-focused products and services and aspires to continue its leadership. It is the first bank in Nepal to implement the Anti- money Laundering policy and to apply the ‘know Your Customer’ procedure on all the customer accounts.

Himalayan Bank Limited

Himalayan bank limited (HBL) was established in 1993 AD as an ‘A’ class commercial bank in Nepal. HBL was founded by renowned individuals of Nepal in partnership with the employee’s provident fund and Habib Bank Limited Pakistan. HBL is also the first commercial bank with most of its shares held by the private sector in Nepal. Habib Bank Limited holds a 20 percent share in the bank. The remaining 80 percent is possessed by Nepalese institutions and the public. Out of 80 percent of domestic ownership, institutions hold a 65 percent share of the company. Likewise, the general public has a 15 percent share in the bank. In addition to commercial banking services, the bank also offers agricultural, industrial and merchant banking service. HBL has ABBS, internet banking, SMS banking, millionaire deposit scheme, small and medium enterprises loan, pre-paid visa card, consumer finance through credit, International travel quota credit card, online fee payment banking products and services. HBL also has developed exclusive and proprietary online-money transfer software- Hima Remit TM. HBL is the largest inward remittance handling bank in Nepal

1.2 Problem Statement

Credit risk management plays an important role in banks as it is an integral part of the loan process. It maximizes bank risk, adjusted risk rate of return by maintaining credit risk exposure with view to shielding the bank from the adverse effects of credit risk. Ogboi, Charles, Unuafe and Kenneth (2013) showed that sound credit risk management strategies and enhanced capital requirement can promote banks profitability. The study also found that it is imperative to state that the strategy of making provision for loan loss or reducing non-performing loan has never been misleading which means there is a higher chance of profitability if bank manages provision of loan loss and non-performing loan appropriately. Non-Performing loan is one of the indicators of credit risk as higher non performing leads to create more risk which will lead in to decrease in the performance of banks and it is also found that NPL fairly affect profitability of some banks and this is a result of shifting cost

on loan default to other customers. Nair and Fissaha (2010) also discovered high levels of non-performing loans among commercial banks and indicated the danger that this possess to the industry. The findings of Felix and Claudine (2008) also showed that return on equity and return on asset all indicating profitability were negatively related to the ratio of non-performing loan to total loan (NPL/TL) of financial institutions therefore decreases profitability.

Iloska (2015) indicated that the strength and quality of capital influence bank profitability. Clearly, lower capital ratios imply higher leverage and risk leading to higher borrowing costs. Flamini et al. (2014) forwarded that capital is an important variable in determining bank profitability and a well-capitalized bank could provide a signal to the market that a better-than-average performance should be expected. Well-capitalized banks are less risky and generate lower profits as they are perceived to be safer. Thus, a negative association between capital and profits is generally expected.

Odunga et.al (2013) analyzed the credit risk ratios had a significant impact on operating efficiency of the banks, which implied that in a bid to minimize credit risk, banks should ensure that the agency problems between shareholders and management were minimized, at the same time, experience and superior management should be employed to manage credit risk affairs of banks. Whereas, the study also showed capital adequacy measures alone had no effect on operation efficiency. This implies that banks need not concentrate on capital adequacy as a way of improving their operating efficiency. From the study it was found that capital adequacy was the least important variable in explaining the variability in operating efficiency of banks among the two.

The increase in loan loss provision decreases the profitability whereas increase in total loan and advances increase profitability. The effect of credit risk on bank performance measured by the return on assets of banks is cross-sectional invariant. That is, nature and managerial pattern of individual firms do not determine the impact. Loan and advances ratio (LA) coefficient exerts most significant positive effect on the profitability across the banking firms (Kolapo et.al, 2012).

Credit risk is one of the factors that affect the health of an individual bank while asset quality analysis involves taking account of the likelihood of borrowers paying back loans.

The extent of the credit risk depends on the quality of assets held by an individual bank. The quality of assets held by a bank depends on exposure to specific risks, trends in non-performing loans, and the health and profitability of bank borrowers (Baral, 2005). Poor asset quality and low levels of liquidity are the two major causes of bank failures. Poor asset quality led to many bank failures in Kenya in the early 1980s (Olweny & Shipo, 2011).

Mostly the composition of assets, nonperforming loan to total loan ratio, net nonperforming loan to total loan ratio is used as the indicators of the quality of assets of the commercial banks (Baral, 2005). The maximum NPL allows for a healthy bank is 5 percent. Management quality plays a big role in determining the future of the bank. The management has an overview of a bank's operations, manages the quality of loans and has to ensure that the bank is profitable. The importance of Healthy loan portfolios remains a vital asset for banks due to their positive impact on bank performance. However, the unfortunate reality is that some of these loans usually do not perform and eventually result in bad debts which affect banks earnings on such loans. These bad loans become a cost to the institutions regarding their implications for the quality of their assets portfolio and profitability. Though there are above mentioned studies, still there are no such studies using more recent data are available in Nepal. This study therefore deals with the following issues in the context of Nepalese banks:

- i. What are the structure and pattern of return on assets return on equity, non-performing loan ratio, loans & advances ratio, capital adequacy ratio and liquidity ratio?
- ii. Is there any relationship between non-performing loan, loans & advances, capital adequacy and liquidity with performance of bank?
- iii. What are the major factors affecting the performance of commercial banks in Nepal?

1.3 Objectives of the Study

The major objective of this study is to analyse the effect of credit risk management and commercial banks performance in Nepal. The specific objectives are as follows:

- i. To examine the structure and pattern of return on assets, return on equity, non-performing loan ratio, loans & advances ratio, capital adequacy ratio and liquidity ratio of Nepalese commercial banks.
- ii. To analyze the relationship of non-performing loan ratio, loans & advances ratio, capital adequacy ratio and liquidity ratio with Nepalese commercial bank performance.
- iii. To examine the impact of non-performing loan ratio, loan & advance ratio, capital adequacy ratio and liquidity ratio on commercial banks performance.

1.4 Research Hypothesis

This section comprise the set of hypothesis. Hypothesis testing is one concrete way answering questions.

H₀₁: There exist statistically significant relationship between none- performing loan and banks performance.

H₀₂: There exist statistically significant relationship between loan loss provision and banks performance.

H₀₃: There exist statistically significant relationship between loan and advance and banks performance.

H₀₄: There exist statistically significant relationship between capital adequacy and banks performance.

H₀₅: There exist statistically significant relationship between cash liquidity and banks performance.

1.5 Rationale of the Study

Granting credit is one of the main source of income of commercial banks and also a source of credit risk. This study emphasize on credit risk management and performance of Nepalese commercial bank. In today's world the performance of commercial banks are affected by many factors. The health of the financial system has important role in the country as its failure can disrupt economic development of the country (Das and Ghosh, 2007). The study on credit risk management and bank performance of commercial banks in Nepal is significant for several reasons. The loan portfolios of the commercial banks are their major assets that contribute a significant proportion to their overall profits in the form of interest income. It means that loans play a critical role in determining the financial performance of the institution. Therefore, the healthier the loan portfolio of a bank, the better its financial performance. The findings of this study helpful for the sampled banks as well as all other banks to adopt workable strategies to control the problem of growing non-performing loan portfolios through better credit-risk management practices, which will also improve their financial performance in order to remain sustainable.

Generally, the study is expected to contribute to the existing credit risk management practices of commercial banks. It will also serve as a guiding document for experts, professionals, academia and the public. The outcome of this study is going to contribute to knowledge and literature in the subject under investigation. It will be useful as a source of reference for researchers, students, policymakers, bankers, economists and other stakeholders interested in the relationship between credit risk management and bank performance.

1.6 Limitations of the Study

For the completion of this study, some facts are to be considered as the limitations which are presented as below:

- The study is based on available secondary data. Therefore the consistency of findings based on reliability and validity of secondary data.
- The select only three commercial banks namely, Nabil bank limited, Standard chartered bank limited and Himalayan bank limited.

- Only selected financial and statistical tools are used.
- The study based on specific timeframe. The data of commercial banks carried out for the period of fiscal year 2013/14 to 2022/23.
- The study based on published journals, articles, past researches and internet. These sources have their own limitations and drawbacks.

CHAPTER II

LITERATURE REVIEW

2.1 Introduction

This chapter comprises the theoretical review and empirical review. Theoretical review provides the theoretical concept of the study and empirical review provides the empirical evidence regarding credit risk management and bank performance that have been carried out previously in context of both local and international level.

2.2 Types of Risk in Banking

Banks and banking activities have evolved significantly through time. With the introduction of money, financial services like deposit taking, lending money, currency exchange and money transfers became important. Because of the central role of money, banks had and still have an important role in the economy. Banks act as brokers between supply and demand of securities, and they transform short-term deposits into medium- and long-term credits. Specialized information on financial products is gathered by banks to improve investment decisions and to manage the risk. Like any other firm, banks are exposed to classical operational risks like infrastructure breakdown, supply problems, environmental risks, etc. More typical and important for a bank are the financial risks it takes by its transformation and brokerage function. A bank raises funds by attracting deposits, borrowing on the interbank market or issuing debt instruments on the financial market. Essentially, the bank's main activity is to buy and sell financial products with different profit and risk characteristics. This transformation from supply to demand side is not without risk. Banks are exposed to credit, market, and operational risk.

2.2.1 Credit Risks

Credit risk is the most obvious risk of a bank by the nature of its activity. In terms of potential losses, it is typically the largest type of risk. The default of a small number of customers may result in a very large loss for the bank. Coyle (2000) defines credit risk as losses from the refusal or inability of credit customers to pay what is owed in full and on time. It arises mainly from direct lending and certain off-balance sheet products such as

guarantees, letters of credits, foreign exchange, forward contracts & derivatives and also from the bank's holding of assets in the form of debt securities. It may take the form of delivery or settlement risk. It is critical to bank survival or failure because banks traditionally earn their huge profits from interest on their risk exposures. The management of credit risk is a critical component of a comprehensive approach to risk management and is essential to the long-term success of a commercial bank.

Coyle (2000) defines credit risk as losses from the refusal or inability of credit customers to pay what is owed in full and on time. The main sources of credit risk include, limited institutional capacity, inappropriate credit policies, volatile interest rates, poor management, inappropriate laws, low capital and liquidity levels, directed lending, massive licensing of banks, poor loan underwriting, reckless lending, poor credit assessment, non-executive directors, poor loan underwriting, laxity in credit assessment, poor lending practices, government interference and inadequate supervision by the central bank.

The credit function of banks enhances the ability of investors to exploit desired profitable ventures. Credit creation is the main income generating activity of banks (Kargi, 2011).

Credit risk consists of pre-settlement and settlement risk:

Pre- settlement Risk

Pre-settlement risk is the potential loss due to the counterpart's default during the life of the transaction (loan, bond, derivative product). Pre-settlement risk can exist over long periods, often years, starting from the time it is contracted until settlement. In addition to the counterpart default risk, there is also a risk that the counterpart is prohibited to pay when its country of domiciliation defaults and blocks all foreign payments. This risk is called sovereign transfer risk.

Settlement Risk

One is exposed to settlement risk because the payment or the exchange of cash flows is not made directly to the counterpart, but via one or multiple banks that may also default at the moment of the exchange. The risk is present as soon as an institution makes the required payment until the offsetting payment is received. The longer the time between the two

payments, the higher the risk. Large payments and payments in different time zones and in different currencies have a higher settlement risk.

Credit risk is typically represented by means of three factors: default risk, loss risk and exposure risk:

Default Risk (PD)

Default risk is the risk that a lender takes on in the chance that a borrower will be unable to make the required payments on their debt obligation. The default risk is the probability that a default event occurs. This probability is called the probability of default. The default risk depends on many factors. Counterparts with a weak financial situation, high debt burden, low and unstable income have a higher default probability. A higher level of default risk leads to a higher required return, and in turn a higher interest rate.

Loss Risk (LGD)

The loss risk determines the loss as a fraction of the exposure in the case of default. In the Basel II terminology, this parameter is known as the loss given default. The loss given default or recovery rate are not fixed parameters. These values fluctuate from one defaulted product to another. Some counterparts may cure from default and repay all the debt and delayed payments. For others, an agreement between the defaulted debtor and all the creditors may result in a distressed exchange agreement where all involved parties carry part of the loss. In the worst case, the default results in a bankruptcy procedure with high losses and the end of the bank–customer relation. The type of default may have a big impact on the actual loss, but may not be known at the moment of default and certainly not at the moment of the investment.

Exposure Risk (EAD)

The exposure at the time of default may not be known beforehand. For some products like a bond or a straight loan, the amount is a fixed amount. For credit cards or overdraft facilities, the amount varies with the liquidity needs of the borrower. The counterpart can take cash up to a negotiated credit limit. The credit limit bounds the commitment of the bank. Other products have no explicit limit, but each additional drawing needs approval of

the bank. The uncertainty on the exact amount at risk at the very moment of a future default is exposure risk.

The Basel II Capital Accord has provided a first step towards a uniform default definition and provides guidelines for LGD and EAD as well: the bank's capital requirements will depend on internally estimated risk levels defined by the Basel II rules.

2.2.2 Market Risk

Market risk is the possibility of an investor experiencing losses due to factors that affect the overall performance of financial markets. Banks take positions on the market for investments or to hedge their positions partially to reduce risk. The market positions via cash or derivative products make the bank vulnerable to large and unexpected adverse market movements.

Kupper (1999) in an article titled risk management in banking defined market risk as "the risk to earnings arising from changes in underlying economic factors such as interest rates or exchange rates, or fluctuations in bond, equity, or commodity prices."

Every bank is subject to market risk in both the management of their balance sheet and in trading operation. Generally, market risk is the risk value of a portfolio, either a trading portfolio or an instrument portfolio will decrease due to the change in the value of the market risk factors. (Boateng, 2020)

Equity Risk

Equity risk that one's investment will depreciate due to stock market dynamics causing one to lose money. Stock prices are volatile and can exhibit significant fluctuations overtime. The equity risk on the portfolio denotes the possible downward price movement of the equity in the portfolio.

Currency Risk

This risk arise when change in foreign exchange rate. In other words currency risk arises from price changes of one currency against another. It occurs when making investments in different currencies, especially when making cross-border investments.

Interest rate Risk

An Interest rate risk is a negative impact on the bank's financial dealings and earnings because of adverse movement in interest rates. Interest rate risk refers to the possible impact on net interest income. In other words, it is the difference between interest paid on deposits and the interest earned on loans. The price of some investments depends on the interest rate. Interest rates are expressed as levels or as the difference with respect to a chosen benchmark or reference rate. The difference can be due to credit quality, liquidity or the maturity. Stable interest rates are desirable because there are costs that must be borne by both lenders and borrowers when interest rate vary. Loanable fund theory, commonly used to explain interest rate movements. Suggests that the market interest rate is determined by factors controlling the supply of and demand for loanable funds.

2.2.3 Liquidity Risk

Liquidity risk is the risk that a bank will not be able to efficiently meet both expected and unexpected current and future cash flows and collateral needs without affecting daily operations or the financial condition of the firm. Liquidity problems arise when there are differences at future dates between assets and liabilities in the balance sheet. It also arises when the bank's credit rating falls since it leads to unexpected cash outflow or in some instances it results to counterparties cutting trading ties or lending to the firm. Market and funding liquidity risk have a reciprocal effect on each other as it becomes difficult to sell when investors are also facing funding problem. Again if a trading organization has a position in an illiquid asset, it is limited in its ability to liquidate that position at short notice, which compounds its market risk.

2.2.4 Operational Risk

Operational risk in banking is the risk of loss that stems from inadequate or failed internal systems, internal controls, procedures, or policies due to employee errors, breaches, fraud, or any external event that disrupts a financial institutions processes.

The Basel accord (2006) defined operational risk as "the risk of direct or indirect loss resulting from the inadequate or failed internal process, people and systems or external events".

Operational risk, therefore, appears at different levels such as human errors, fraud, process, internal workplace environment, external event and technology.

Funding risk: This type of risk arise as lack of fund to invest in projects or probability of higher funding cost.

Legal and regulatory risk: Legal risk is the risk that potential lawsuits from a disgruntled employee, customer, negligent conduct, improper documentation, workplace regulations or environmental contamination will massively disrupt the company's operations.

Strategic risk: Strategic risk is arise from failure of strategic plan and procedures. Strategic risk is the results of weak management, poor decision making, and inadequate resource allocation, lack of trained, skilled and motivational employees and change resistance characteristics of management.

2.2.5 Credit Risk Management

Commercial bank operations are exposed to risk because loans and many of their investment in debt securities are subject to the risk of default by borrowers. Commercial banks primary motive is provide loan to earn profit. In this process banks ready to bear risk and want to maximise the profit. Kalapodas, and Thompson (2006) defined credit risk management as reducing, or eradicating and managing risks to avoid inevitable catastrophes such as financial losses in organisations. Credit management for a loan deal does not stop until the full and last instalment has been recovered (Moti *et al.*, 2012). The business dictionary defines risk management as the identification, analysis, assessment, control, and avoidance, minimisation, or elimination of unacceptable risks. In an attempt to manage risk, an organisation may use risk assumption, risk avoidance, risk retention, risk transfer or any other strategy or combination of strategies in proper management of future events.

Credit risk management is very important to banks as it is an integral part of the loan process. It maximizes bank risk, adjusted risk rate of return by maintaining credit risk exposure with view to shielding the bank from the adverse effects of credit risk. Bank is investing a lot of funds in credit risk management modelling (poudel, 2012).

The credit risk management needs to foster a climate for good banking where prices are in line with the risks taken. A strong strategic credit risk management avoids important pitfalls like credit concentrations, lack of credit discipline, aggressive underwriting to high-risk counterparts and products at inadequate prices.

Value Driven: The value-driven strategy adheres to long-term and consistent performance and requires a strong credit organization defined by the long term profit plan.

Immediate performance Driven: The immediate-performance-driven strategy defines current earnings to sustain a high stock price as the main priority. Profit generation is defined by the annual profit plan.

Product Driven: For this strategy, market share and volume growth are the highest priority, which is motivated by the ambition to become or to remain a large player on the market. Front office lenders are demanded to produce new loans and may experience difficulties with credit risk loan approvers, because of low credit quality and non-adequate pricing. Loan approvers see their influence limited because of the conflicting interests of value and asset quality. Success depends on the strength of the credit risk management to control the approval process and to keep sufficient asset quality in the growing portfolio.

The effectiveness of the credit risk management is verified by internal risk control and audit that monitor credit discipline, loan policies, approval policies, facility risk exposure (PD, LGD, and EAD) and portfolio level risk. The credit culture is supported by the top management and by a strong credit risk management.

2.2.6 The CAMELS Model Approach of Risk Management

The Federal Financial Institutions Examinations Council (FFIEC) of the United States of America initially adopted this Uniform Financial Institutions Rating System (UFIRS) CAMEL on the 13th of November 1979. The Federal Deposit Insurance Corporation (FDIC) revised to include a sixth measure (sensitivity) to the UFIRS in 1997 to classify a bank's overall condition (soundness). The term CAMELS is an acronym, which is made up of the following components: Capital adequacy, Assets quality, Management Efficiency, Earnings ability, Liquidity (Asset –liability management), Sensitivity (sensitivity to market risk especially interest rate risk).

Capital Adequacy

This component of the CAMELS model is a measurement that determines the solvency of a bank. Adequate capital reserve helps banks to expand, and increase the confidence of depositors and regulators. The capital adequacy reflects the institution's ability to maintain capital commensurate with the nature and extent of all types of risk, and the ability of management to identify, measure, monitor and control the risks.

The Basel Accords

The Basel Accords (Basel I and Basel II), issued by the Basel Committee on Banking Supervision (BCBS), refer to the banking supervision Accords recommended on banking laws and regulations. Basel I was first published in 1988 and enforced by law in 1992 by the G10 countries. Basel II, issued by BCBS in June 2004, is the new Basel Accord. The purpose of the Basel Accords is to establish an international standard in order to promote the safety and soundness of the financial system, to ensure adequate level of capital in international banking system, to enhance the competitive equality among the banks, and to guard against the financial and operational risks that banks face. The Basel I Agreement explicitly incorporated the different credit risks of assets (both on and off the balance sheet) into capital adequacy measures. This was followed with a revision in 1998 in which market risk was incorporated into risk based capital in the form of an "add-on" to the 8 percent of ratio for credit risk exposure. Basel II consists of three mutually reinforcing pillars, which together contribute to the safety and soundness of the financial system. . Pillar I covers regulatory capital requirements for credit, market and operational risk. Pillar II covers supervisory review and Pillar III covers market discipline.

Bank's capital is divided into Tier I and Tier II. Tier I capital is primary or core capital; Tier II capital is supplementary capital. The total capital that the bank holds is defined as the sum of Tier I capital and Tier II capital less deductions.

According to Nepal Rastra Bank (NRB) Directive No.1 (chapter 1) the 'A' class licensed institutions(commercial Bank) should maintain minimum capital fund on the basis of their risk weighted assets, Core capital is 6 percent and Capital fund is 11 percent.

Asset Quality

This ratio is a measure of the degree of the financial strength of a bank. Measurement of asset quality is very significant since it depicts the profitability of the bank. Assessment of asset quality involves rating investment risk factors that the bank may face and compare them to the company's capital earnings (Baidoo *et al.*, 2014). Asset quality reflects the amount of existing credit risk associated with the loan and investment portfolio, as well as off –balance sheet activities. The principal purpose to measure the assets quality is to determine the composition of non-performing assets (NPAs) as a percentage of the total assets. The quality of credit portfolio expresses the profitability of banks.

Management Quality

It is another critical measure as it guarantees the growth and survival of a bank. Management category reflects the adequacy of the board of directors and senior management systems and procedures to identify, measure, monitor, and control risks. Regulators emphasized the existence and use of policies and processes to manage risks with in target.

According to Grier (2007) management is considered to be the single most important element in the CAMEL rating system because it plays a substantial role in a bank's success; however, it is subject to measure as the asset quality examination.

Earnings

This rating reflects not only the quantity and trend in earning, but also the factors that may affect the sustainability or quality of earnings. In accordance with Grier (2007)'s opinion, a consistent profit not only builds the public confidence in the bank but absorbs loan losses and provides sufficient provisions. It is also necessary for a balanced financial structure and helps provide shareholder reward.

Liquidity

Liquidity reflects the adequacy of the institution's current and prospective source of liquidity and funds management practices. Liquidity also means a bank's available fund to meet its credit demands and cash flow requirements. Banks with a larger volume of liquid

assets are perceived safe since these banks can live up to the call of unexpected withdrawals. However, the adverse effect of keeping a larger volume of liquidity is that it reduces management's ability to commit credibly to an investment strategy that protects investors' interest. Banks can maintain an adequate liquidity position by either increasing current liability or quickly converting their assets into cash (Aspal & Dhawan, 2016).

Rudolf (2009) emphasizes that "the liquidity expresses the degree to which a bank is capable of fulfilling its respective obligations". Banks makes money by mobilizing short-term deposits at lower interest rate, and lending or investing these funds in long-term at higher rates, so it is hazardous for banks mismatching their lending interest rate.

Sensitivity

Sensitivity to market risk reflects the degree to which changes in interest rates, foreign exchange rates, commodity prices and adversely affect earnings and hence, the bank capital.

2.2.7 Measuring Bank Performance

Analysis of selected accounting ratios allows a bank manager to evaluate the bank's current performance, the changes in its performance over time (time series ratios analysis of ratios over a period of time), and its performance relative to that of competitor banks (cross-sectional analysis of ratios across a group of firms). Performance evaluation involves the analysis of the level of financial and economic performance using both qualitative and quantitative data from the firm. The information from the financial statements namely balance sheet, income statements, and the cash flow statements are the source of data for the computation of the financial ratios. In order to ascertain whether the performance is within industry standards, to comparing the ratios with other firms in the same industry is appropriate.

Analysing ratios trends over a time, along with absolute ratio levels, gives managers, analysts and investors information about whether a firm's financial condition is improving or deteriorating.

Profitability

Profit is usually a measure in monetary terms whereas; profitability is the measure of the generated profit on an ongoing basis. Condition of bank's asset and liability, its operations, determine the bank's ultimate profitability. Profitability, which is in ratios, shows a firm's overall efficiency and performance. For any stakeholder to access the performance of the firm, the first measure will be the profitability.

Profitability Ratios

Profitability ratios are a class of financial metrics that are used to assess a business's ability to generate earnings relative to its revenue, operating costs, balance sheet assets, or shareholders equity. Profitability ratios shows the combined effects of liquidity, asset management and debt management on operating results. Profit margin (PM), the net interest margin (NIM), the spread, the return on asset (ROA), and return on equity (ROE) are profitability ratio that are widely used. Profitability ratios show how efficiently a company generates profit and value for shareholders.

Return on Assets (ROA)

Return on Assets is the ratio of net income and total assets of any institutions. ROA determines the net income produce per rupees of assets. It measures the efficiency of the banks management in generating profits out of its scarce resources. The more the amount of ROA the better the efficiency of the bank management, (Gizaw *et al*, 2015). ROA which express the risk taking behaviour of bank management in obtaining the satisfied level of profit per unit of total resources. Return on assets ratio is important profitability ratio because it measures the efficiency with which the company is managing its investment in asset and using them to generate profit (Harelimana, 2017). For banks with similar business risk profiles, ROA is a useful statistic for comparing the profitability of banks because it avoids distortions that are introduced by differences in financial leverage.

Return on Equity (ROE)

ROE as an important indicator to measure the profitability of the banks has been discussed extensively in the prior studies. ROE measures how much earnings a bank can get on the

equity capital. Management's objective is to generate the maximum return on shareholders' investment in the firm. Return on equity therefore the best measure of the company's success in fulfilling its goal. The ROE, or return on net worth, measures the profitability of equity funds invested in the firm. Because shareholders' wealth maximisation is the primary objective of every firm, ROE is the essential measure of performance in an accounting sense (Prasanna Chandra, 2011).

2.3 Theoretical Reviews

The theoretical review helps to make logical sense of the relationship of the variables and factors that have been deemed relevant to the problem. It provides definitions of relationships between all the variables so that the theorized relationship between them can be understood. The theoretical framework will therefore guide the research determining what factors will be measured, what statistical relationship the research will look for.

2.3.1 The Portfolio Theory

The portfolio theory is an investment approach in which the investor balances risk against expected return to maximize earnings from an entire portfolio (Illo, 2012). Portfolios are an effective way of increasing returns while decreasing risk in investment. The modern portfolio theory introduces approximate „mean-variance“ analysis to simplify the portfolio selection problem. Markowitz (1959) attempted to quantify risk and quantitatively demonstrate why and how portfolio diversification works to reduce risk for 19 investors. The „risk“ of a portfolio is quantified as a standard deviation of return from period to period, and the portfolio selection problem is reduced to computing an efficient portfolio, that is, one that minimizes the risk for a fixed level of return in a single period. According to the portfolio theory, the larger the expected return the better the investment, and the smaller the standard deviation of the return the more attractive the investment. Furthermore, the theory shows that one can reduce the standard deviation of the return or risk by combining anti-covariant securities. However, each asset class generally has different levels of return and risk and behaves uniquely so that one asset may be increasing in value as another is decreasing or at least not increasing as much and vice versa. This theory, however, has a shortcoming; it cannot allow both more and less risk averse

investors to find their optimal portfolio, a problem surmounted by the capital asset pricing model (CAPM) (Sharpe, 1964).

2.3.2 Market-power Hypotheses

A very important contribution to the structure-performance studies is the efficient structure hypothesis proposed by Demsetz (1973) and Peltzman (1977). The efficient structure paradigm suggests that market structure is determined by the efficiency of the operating firms. In explaining a profit-structure relationship, market-power (MP) hypotheses state that market power is the main variable that causes profitability to change. Concentrated markets often entail market imperfections that may result from collusion, facilitated by high concentration, or by (legislative) entry and exit barriers²⁰ which are often presents in aviation industry because of strict regulation. Because of these imperfections, firms operate in a market that deviates from perfect competition, which enables them to exert influence on prices charged or paid. These firms achieve higher profits at the expense of their customers through their price setting. The researchers who defend the efficient structure model criticize the traditional market power model since the relationship between market share, concentration and efficiency is excluded. In this alternative model, important profits are generated by large firms since concentration is the product of efficiency.

These profits are considered as an economic return and not as a return on monopoly (Seelanatha, 2010). Which market structure variable is the best proxy for market power and thus for market imperfections determines the difference between two main types of market-power hypotheses in this category: the structure conduct-performance hypothesis and the relative-market power hypothesis (Katib, 2004). The structure conduct-performance (SCP) hypothesis assumes that market concentration is the best proxy for market power because more concentrated markets show larger market imperfections enabling all firms to set prices at levels less favorable to customers. Through market-wide price setting, each individual firm can improve its profitability (Samad, 2008). The relative market-power (RMP) hypothesis asserts that only firms with large market shares and well-differentiated products have the power to set prices for their products and thus to earn supernormal profits. In this case there is no market wide price setting, but only price setting by dominant firms. Firms with smaller market shares are forced to operate as if under

perfect competition and unable to earn the same supernormal profits. This implies that the firm-specific market share is the better proxy for market power and market imperfections. A third hypothesis, mainly used to explain the possible absence of a profit-structure relationship, is the so-termed quiet life (QL) hypothesis. This special case of the market hypothesis argues that as firms have more market power, either through market share or concentration, the management becomes less focused on efficiency, since setting prices at more favorable levels can increase revenues. The quiet life hypothesis states that firms do increase revenues because of increased market power but because of higher inefficiencies, do not show superior profitability.

2.4 Empirical Reviews

Credit risk plays an important role on banks profitability since a large chunk of banks revenue accrues from loans from which interest is derived. However, credit risk may be a serious threat to the performance of banks. Credit risk management and its implications on banking sector performance have been fraught with difficulties and challenges that ultimately results to poor banking performance that incubate tendency and leading to unfavorable banking performance with unclear balance sheet, bank failure and crisis in the financial sector leading to a systemic risk and thus have a negative functional ramification on economic growth. This study aims to analyse the credit risk management and performance of the commercial banks in Nepal. Various researchers have examined the impact of credit risk on banks in varying dimensions. Among some of the recent studies on credit-risk, management and bank performance are as reviewed below.

Shukla (2016) had conducted a study on "Effect of Credit Management on Performance of Commercial Banks in Rwanda (A Case Study of Equity Bank Rwanda Ltd). The study sought to determine the effect of credit management on the financial performance of commercial banks in Rwanda. The study adopted a descriptive survey design. The target population of study consisted of 57 employees of Equity bank in credit department. Entire population was used as the sample giving a sample size of size of 57 employees. Purposive sampling technique was used in sampling where the entire population was included in the study. Primary data was collected using questionnaires which were administered to the respondents by the researcher. Descriptive and inferential statistics were used to analyze

data. The study found that client appraisal; credit risk control and collection policy had effect on financial performance of Equity bank. The study established that there was strong relationship between financial performance of Equity bank and client appraisal, credit risk control and collection policy. The study established that client appraisal, credit risk control and collection policy significantly influence financial performance of Equity bank. Collection policy was found to have a higher effect on financial performance and that a stringent policy is more effective in debt recovery than a lenient policy.

Na Luo and Yang (2016) had conducted a study on "The Risk Management of Commercial Banks Credit-Risk Assessment of Enterprises". Based on the relevant researches about commercial banks' credit risk management, the paper carries out a deep analysis on the factors that may affect the credit risk assessment and then establishes a relatively comprehensive credit risk assessment system. Based on the relevant researches about commercial banks' credit risk management, the paper carries out a deep analysis on the factors that may affect the credit risk assessment and then establishes a relatively comprehensive credit risk assessment system. Establishing a risk assessment model on the basis of GRNN neural network model, the paper applies the model to empirical analyses with selected samples and obtains comparably accurate results of judgments. In this paper, we apply our risk assessment model, which is established on the basis of GRNN neural network model, to make an empirical analysis with the selected sample data.

Gowda (2017) had conducted a study on "Credit Risk Management in Commercial Banks". The main aim of the study was to analyze and evaluate the Credit Risk associated with Private Banks. All Fifteen old private banks were selected for the study. In order to analyze the data one-way ANOVA, correlation coefficient and regression analysis, were used. Credit risk management is a challenge in today's deregulated market. Banks must develop a competitive Early Warning System (EWS), which combines strategic planning, competitive intelligence and management action.

Shrestha (2018) had conducted a study on "Credit Risk Management and Profitability of Joint Venture Commercial Banks in Nepal". The study is focused on credit risk management and profitability of joint venture commercial bank of Nepal. Descriptive and explanatory research design was used. The chosen design was appropriate in developing

the cause and effect relationships between credit risk management and profitability within the joint-venture banks in Nepal. The paper confirms that there is positive relationship between credit risk and profitability in such way that profits of banks are affected due to credit facilities.

Ogunlade (2018) had conducted a study on "Credit Management Practices and Bank Performance: Evidence from First Bank". The study examined the influence of credit management practices on financial performance of Nigerian banks with specific reference to First bank Plc. Data was collected using Purposive sampling technique from thirty (30) respondents as a sample size used to collect data from the respondents. Both descriptive and inferential statistics were used to analyze data, such as frequency, percentage, weighted mean score, and multiple regressions. The result revealed that credit management practices have a significant positive influence on the financial performance of First bank. The result concluded that client appraisal, credit risk control, and collection policy are major predictors of financial performance of First bank. Subsequently, the study recommended that management of other banks should learn from First bank by enhancing their client appraisal techniques, credit risk control and adopting a more stringent policy to improve their financial performance. The study examined the influence of credit management practices on financial performance of Nigerian banks with specific reference to first bank Plc.

Alice (2019) on his study "Effect of Credit Management on Performance of Commercial Bank". Credit management is one of the most important activities in any company and cannot be overlooked by any economic enterprise engaged in credit irrespective of its business nature. Sound credit management is a prerequisite for a financial institution's stability and continuing profitability, while deteriorating credit quality is the most frequent cause of poor financial performance and condition. As with any financial institution, the biggest risk in bank is lending money and not getting it back. The study sought to determine the effect of credit management on the financial performance of commercial banks in Rwanda. Primary data was collected using questionnaires which were administered to the respondents by the researcher. The study established that there was strong relationship between financial performance of Equity bank and client appraisal, credit risk control and

collection policy. The study established that client appraisal, credit risk control and collection policy significantly influence financial performance of Equity bank. Collection policy was found to have a higher effect on financial performance and that a stringent policy is more effective in debt recovery than a lenient policy. The study recommends that Equity bank should enhance their collection policy by adapting a more stringent policy to a lenient policy for effective debt recovery.

Nyamrigo, Felix and Makena (2019) researched on Credit Management Practices and Financial Performance of Microfinance Institutions. The study sought to establish the effect of credit management practices on financial performance of microfinance institutions in Nairobi County, Kenya. The study concludes that client appraisal significantly influenced the financial performance of microfinance institutions in Nairobi County, Kenya. There was a positive relationship between client appraisal and financial performance of microfinance institutions in Nairobi County, Kenya. Credit risk control significantly influences financial performance of microfinance institutions in Nairobi County, Kenya. There is a positive relationship between credit risk control and financial performance of microfinance institutions in Nairobi County, Kenya. There is a positive relationship between collection policy and financial performance of microfinance institutions in Nairobi County, Kenya. Terms of credit were found to significantly influence financial performance of microfinance institutions in Nairobi County, Kenya. The study also found that terms of credit had a positive relationship with financial performance of microfinance institutions in Nairobi County, Kenya.

Nsengiyera, Musabyemariya, and Muhimpundu (2020) conducted a research on the Assessment of Credit Risk Management on Financial Performance of Banking Institutions in Rwanda Case Study. This study examines the effect of credit management on the performance of banking institutions basing on the factors of credit management, challenges faced in loan management, and the level of the financial performance of BK. The study found that there was a significant relationship between credit management and performance of Bank of Kigali Ltd. We may conclude that a credit is the act of giving money, property, or other material goods to another party in exchange for future repayment of the principal amount along with interest or other financial concerns. A loan might be for

a precise, one-time amount or can be obtained as open-ended credit up to a specified ceiling amount. This brings performance to the banks. Performance refers to the potential of a venture to be financially successful.

Jeremia (2021) conducted a research on "The Effectiveness of Risk Management Programs in Commercial Banks in Tanzania: A Case Study of Commercial Banks in Arusha" The main aim of this research is the assessment of financial risks management on commercial Banks due to the facts that financial factors are major asset in any commercial bank. Judgmental sampling design was employed to obtain the respondents for this study. The study used both qualitative and quantitative techniques in data analysis to answer several research questions.. The findings have indicated that EXIM Bank Ltd as a local leading profitable retail Bank, Lending procedures practiced by the Bank are general complied. Moreover, Management Information System (MIS) were found to be reasonably adequate and sufficient even though some shortfalls within the EXIM management were observed, such as Loan supervision, monitoring and follow-up was not well managed.

Pradhan and Shah (2022) conducted a research on Credit Risk Management of Commercial Banks in Nepal. The major conclusion of the study is that credit risk mitigation measures and credit risk management practices are positively associated with loan repayment in the banks, while obstacles have no relation with the loan repayment. Based on a descriptive research approach the study has used survey-based primary data and performed a correlation analysis on them. The main focus of the study is to analyze the relationship of credit risk management practices, credit risk mitigation measures and obstacles faced by banks with loan repayment behaviour of clients. This study can provide helpful information on policies and practices related to credit risk management being followed by commercial banks of Nepal.

Table 1

Meta-analysis table

| S. No. | Date | Article | Writers | Objectives | Methodology | Findings |
|--------|------|---|-----------------|---|--|---|
| 1 | 2015 | Analysis of Financial Performance of Banks in India | Nagarkar | To analyze performance of banks | 15 banks, secondary data, 11 components, 11 years data, | The overall deposits of commercial banks have gone down. The credit growth has slowed down. This is not reflected in the banks analyzed for the study. |
| 2 | 2016 | Effect of Credit Management on Performance of Commercial Banks | Shukla | To determine the effect of credit appraisal on financial performance. | Descriptive design, total population sampling technique. | Client appraisal, credit risk and credit policy had effect on financial performance of equity bank. The study established strong relationship between financial performance of equity bank and client appraisal, credit risk control and collective policy. |
| 3 | 2016 | The Risk Management of Commercial Banks Credit-Risk Assessment of Enterprises | Na Luo and Yang | Based on the relevant researches about commercial banks' credit risk management, the paper carries out a deep analysis on the factors that may affect the credit risk assessment and then establishes a relatively comprehensive credit risk assessment system. | In this paper, we apply our risk assessment model, which is established on the basis of GRNN neural network model, to make an empirical analysis with the selected sample data. | Based on the relevant researches about commercial banks' credit risk management, the paper carries out a deep analysis on the factors that may affect the credit risk assessment and then establishes a relatively comprehensive credit risk assessment system. Establishing a risk assessment model on the basis of GRNN neural network model, the paper applies the model to empirical analyses with selected samples and obtains comparably accurate results of judgments. |
| 4 | 2017 | Credit Risk Management in Commercial Banks | Gowda | The main aim of the study was to analyze and evaluate the Credit Risk associated with Private Banks | All Fifteen old private banks were selected for the study. In order to analyse the data one-way ANOVA, correlation coefficient and regression analysis, were used. | Credit risk management is a challenge in today's deregulated market. Banks must develop a competitive Early Warning System (EWS), which combines strategic planning, competitive intelligence and management action. |
| 5 | 2018 | Credit Risk Management and Profitability of Joint Venture Commercial Banks in Nepal | Shrestha | The study is focused on credit risk management and profitability of joint venture commercial bank of Nepal. | Descriptive and explanatory research design was used. The chosen design was appropriate in developing the cause and effect relationships between credit risk management and profitability within | The paper confirms that there is positive relationship between credit risk and profitability in such way that profits of banks are affected due to credit facilities. |

| | | | | | | |
|----|------|---|---|---|--|---|
| 6 | 2018 | Credit Management and Bank Performance | Ogunlade | To establish the effect of credit management on the financial performance. | the joint-venture banks in Nepal. Descriptive research design, purposive sampling and data analysis. | The result revealed that credit management practices have a significant positive influence on financial performance. |
| 7 | 2019 | Effect of Credit Management on Performance of Commercial Bank" | Alice | To determine the effect of credit management on the financial performance of commercial banks | Primary data was collected using questionnaires which were administered to the respondents by the researcher. | The study was strong relationship between financial performance of Equity bank and client appraisal, credit risk control and collection policy. |
| 8 | 2019 | Credit Management Practices and Financial Performance of Microfinance Institutions | Nyamrigo, Felix and Makena | The effect of credit management practices on financial performance of microfinance institutions in Nairobi County, Kenya | Descriptive research design, purposive sampling and data analysis. | There is a positive relationship between collection policy and financial performance of microfinance institutions in Nairobi County, Kenya. Terms of credit were found to significantly influence financial performance of microfinance institutions in Nairobi County, Kenya |
| 9 | 2021 | Credit Risk Management on Financial Performance of Banking Institutions in Rwanda Case Study | Nsengiyera, Musabyemariya, and Muhimpundu | This study examines the effect of loan management on the performance of banking institutions basing on the factors of loan management | Secondary data was collected using the respondents. | The study found that there was a significant relationship between credit management and performance of Bank of Kigali Ltd. |
| 10 | 2022 | The Effectiveness of Risk Management Programs in Commercial Banks In Tanzania: A Case Study Of Commercial Banks In Arusha | Jeremia | The main aim of this research is the assessment of financial risks management on commercial Banks due to the facts that financial factors are major asset in any commercial bank. | Judgmental sampling design was employed to obtain the respondents for this study. The study used both qualitative and quantitative techniques in data analysis to answer several research questions. | The findings have indicated that EXIM Bank Ltd as a local leading profitable retail Bank, Lending procedures practiced by the Bank are general complied. Moreover, Management Information System (MIS) were found to be reasonably adequate and sufficient even though some shortfalls within the EXIM management were observed, such as Loan supervision, monitoring and follow-up was not well managed. |

Anggraini and Suputra (2021), analyzed the effect of capital adequacy, credit risk, and liquidity on company profitability. The research population is all banking companies listed on the Indonesia Stock Exchange (BEI). The sampling technique used purposive sampling method, namely the method of determining the sample with certain considerations. The sample criteria are the banking sector that is listed continuously on the Indonesian Stock

Exchange as many as 38 banking companies listed on the IDX continuously during the 2015 - 2019 period. The results show that capital adequacy and liquidity have a positive effect on profitability and credit risk have a negative effect on profitability. This study illustrates that capital adequacy, liquidity, and credit risks can predict the level of profitability that can be used by investors and stakeholders in taking decisions.

(Yeasin, 2022) focused on the impact of credit risk management on the financial performance of commercial banks in Bangladesh. Given the significant effect of credit risk on the banking industry in Bangladesh, the study aims to investigate the relationship between credit risk and financial performance. The research design adopted for the study is deductive, and six commercial banks in Bangladesh were selected as the target sample for the study. The study utilized secondary data spanning a ten-year period (2010-2019) and employed panel regression analysis. Four factors were identified and analyzed as affecting the financial performance of commercial banks in Bangladesh. Return on assets (ROA) was used as a tool to measure bank performance, while non-performing loan (NPL), capital adequacy ratio (CAR), and loan to deposit ratio (LDR) were used as credit risk indicators. The findings revealed that non-performing loan (NPL) and capital adequacy ratio (CAR) had a negative and statistically significant impact on the financial performance of commercial banks, while loan to deposit ratio (LDR) had a positive and statistically significant impact on financial performance. Therefore, credit risk management has a negative effect on the financial performance of commercial banks in Bangladesh.

(Kumar & Meena, 2022) found that NIFTY50 index, which is composed of 50 companies across 13 diverse sectors, is considered the primary benchmark for the Indian stock market. Given that five of the largest commercial banks in the country are included in this index, their performance is indicative of the overall market performance. The objective of this investigation was to analyze the relationship between credit risk and the financial performance of these banks that are included in the NIFTY50 index. To accomplish this, the study utilized secondary data from the banks' annual reports spanning a decade (2012-2021) and applied panel data regression analysis. Return on equity and return on asset were used as measures of financial performance, while the capital adequacy ratio, net non-performing assets (NNPAs), and cost to income (CI) were used as measures of credit risk.

The findings revealed that there was a significant correlation between credit risk and financial performance, but the capital adequacy ratio did not have a significant impact. As a result, the study suggests that commercial banks that are part of the NIFTY50 index should develop strategies to reduce their NNPA's and CI to enhance their financial performance.

(Butola, Dube & Jain, 2022) analyzed primary objective of this research is to investigate the statistical relationship between credit risk management (CRM) and profitability in Indian banks. The study collected secondary data from 38 scheduled commercial banks in India, covering the time period from 2005 to 2019, and employed panel data regression analysis. Return on assets (ROA) was used as the dependent variable and a measure of profitability, while credit to deposit ratio (CDR), net interest margin (NIM), operating profits to total assets (OPA), capital adequacy ratio (CAR), provision coverage ratio (PCR), and net non-performing assets to net advances (NNPA) were considered as independent variables and determinants of CRM. The statistical analysis showed that CDR, OPA, and CAR were all positively associated with the profitability rate (ROA), while NIM, NNPA, and PCR were negatively associated with the profitability rate (ROA). The results were statistically significant, except for PCR.

(Nurfitria *et al.*, 2023), investigated how credit risk management affects the financial performance of Indonesian banks between 2017 and 2021. The study employed several ratios, including CAR, NPLR, LDR, NIM, and Bank Size, to measure credit risk, and ROA and ROE to assess financial performance. The study utilized a quantitative descriptive research technique and secondary data from financial reports of 33 Indonesian banks listed on the Indonesia Stock Exchange that met the sampling criteria. The study found that credit risk management, as measured by CAR, did not have a direct impact on financial performance as assessed by ROA and ROE. However, NPLR had a significant negative influence on financial performance, while LDR and NIM had no impact. Finally, Bank Size had a significant positive impact on financial performance, as measured by ROA and ROE.

(Kulsum, 2023) focused on Bank BNI Syariah in Indonesia and aimed to determine the relationship between Capital Adequacy Ratio (CAR), Non-Performing Financing (NPF), Financing to Deposit Ratio (FDR), and Profitability Return on Asset (ROA). The researchers utilized quantitative data, specifically secondary data sourced from Bank BNI Syariah's Financial Statements from 2011 to 2020. The study employed the Causal Associative method and multiple regression analysis to test the impact of CAR, NPF, and FDR on ROA. Additionally, classical assumption tests, including normality, autocorrelation, multicollinearity, and heteroscedasticity tests, were conducted. The hypothesis was tested using the F-test for simultaneous.

2.5 Research Gap

Earlier researcher conducted by many researchers in the similar topic "credit risk and financial performance of Nepalese commercial banks" is very useful and appreciated banks, shareholders and the general public. Those dissertations in a great extent have been successful in analyzing the risk analysis of concerned banks. But the suggestions and recommendation given by proceeding researchers to improve and strengthen managerial decision of commercial banks. This study covers the more recent financial data and analysis is done within the latest guidelines and curriculum of Nepal Rastra Bank. Focuses the Comparative Study on Risk Management of Commercial Banks in Nepal. Financial tools and statistical tools are used in this study for various ratio analysis, correlation coefficient and regression analysis. This study is concerned with providing the real condition of risk management and profitability of sample banks with the help of various financial and statistical tools. This study has been conducted considering the data of ten year from 2013/14 to 2022/23. This study is different in the sense that the selected banks are not included together in the previous studies. This study covers latest financial data and analysis based on the Nepalese commercial banks particularly of the Nabil, HBL and SCBL this study uses regression to decide whether the value of correlation coefficient(r) is significant or not.

CHAPTER III

RESEARCH METHODOLOGY

Research methodology is a systematic way to solve a problem. It is a science of studying how research is to be carried out. Essentially, the procedures by which researchers go about their work of describing, explaining and predicting phenomena are called research methodology. It is also defined as the study of methods by which knowledge is gained. Its aim is to give the work plan of research. Research methodology mainly describes the technique, method and process applied in the entire process of a scientific research. This chapter therefore explains the methodology employed in this study. So, in this chapter the study has introduced how to get started to do this study from collecting data, retrieving necessary information, building the frame of variables to researching philosophy or approaching method. This chapter has focused on the research design, population and sample of the study, nature and sources of data, instrument of data collection, methods of analysis and finally, research framework and definition of variables.

3.1 Research Design

This study has employed descriptive research design and causal comparative research design to deal with issues associated with the credit risk, and bank performance in the context of Nepal. The descriptive research design has been employed to describe, measure, compare, and classify the financial situations of Nepalese commercial banks. The study also applied causal comparative research design to analyse the performance of Nepalese commercial banks. The basic purpose of employing causal comparative research design in this study is to understand and examine whether it is possible to predict bank performance measured by ROA and ROE on the basis of information about credit risk variables. More specifically, the study analyses the relationship between capital adequacy ratios, liquidity ratio, loan and advance ratio non-performing loan ratio and return on assets and return on equity of the Nepalese commercial banks during the time period of 2013/14 to 2022/23.

3.3 Population and Sample, Sampling Design

Nepal Rastra Bank (NRB) regulates all the bank and financial institutions of Nepal. According to Nepal Rastra bank latest report of mid-July 2023 there are currently 20 ‘A’ class commercial banks in Nepal. The population for this study comprises all the commercial banks. Out of 20 commercial banks three commercial banks namely Nabil Bank Ltd, Standard Chartered Bank Ltd and Himalayan Bank Ltd selected for study purpose as sample for fiscal period of 2013/14 to 2022/23. Random sampling method applied while selecting banks from population.

Table 2

Sample of Commercial Bank of Nepal

| Name of Bank | Study Period | Observation |
|---------------------------------------|----------------------|-------------|
| Nabil Bank Limited | 2013/14 to 2022/2023 | 10 |
| Standard Chartered Bank Nepal Limited | 2013/14 to 2022/2023 | 10 |
| Himalayan Bank limited | 2013/14 to 2022/2023 | 10 |

Note. www.nrb.org.com

3.4 Nature and Sources of Data and Instrument of Data Collection

This study is based on secondary sources of data in order to meet its affirmed objectives and respond the research questions which are obtained from selected three commercial banks for the period of 2013/14 to 2022/23. The secondary sources of data for the study are obtained from following sources:

- Directives of NRB
- Statistics and Bank Supervision report published by Nepal Rastra Bank.
- Annual Report of the Banks
- Internet, homepage and related link visit
- Different authors published articles, journals, reports, pervious study, research paper regarding topic.

3.5 Data Collection Technique

The data collected from secondary source of data from selected banks annual report, NRB directives, published journals, papers, articles, previous reports regarding topic. We use quantitative research technique to ascertain the relationship between theory and research. Quantitative analysis is measured in terms of numbers. In the quantitative research method, the emphasis is on the quantification of the collected data.

3.6 Data Analysis Tools

This section deals with financial and statistical models used for the purpose of analysis of secondary data. This involves the process of analysing the data that has been collected. Data analysis tools help to make sense of the data collected. It enables to report results and make interpretations.

Arithmetic Mean (A.M.)

The mean is the figure we get the total of all the values in a distribution is divided by the number of values in a distribution is divided by the number of values in the distribution. The arithmetic mean is also known as average. It should, however, be remembered that the mean can only be calculated for numerical data. The mean is an appropriate term than saying average. The mean of data is biased toward extreme values. The mean is suitable when the scores are distributed symmetrically about the center of the distribution.

$$AM (\bar{X}) = \frac{\text{Sum of total numbers } (\Sigma x)}{\text{Number of samples } (n)}$$

Standard Deviation (S.D.)

The measurement of the scatterings of the mass of figure in a series about an average is known as dispersion. The standard deviation measures the absolute dispersion. The greater amount of dispersion, greater the standard deviation. A small standard deviation means a high degree of uniformity of the observation as well as homogeneity of a series and vice-versa.

$$SD = \frac{\sqrt{\Sigma(x - \bar{x})^2}}{n}$$

Coefficient of variation (CV)

The coefficient of variance is the relative measure of dispersion, comparable across distribution, which is defined as the ratio of the standard deviation to the mean expressed in percentage.

$$CV = \frac{\sigma}{\bar{X}}$$

Karl Pearson's Correlation Coefficient (r)

If two quantities vary in such a way that movements in the one are accompanied by movement in other, these quantities are correlated. The degree of relationship between the variables under consideration is measure through the correlation analysis. Correlation analysis only helps in determining the extent to which the two variables are correlated but it does not tell us about cause and effect relationship.

$$r = \frac{\Sigma(X - \bar{x})(Y - \bar{Y})}{\sqrt{\Sigma(X - \bar{x})^2} \sqrt{\Sigma(Y - \bar{Y})^2}}$$

T-Statistics (t)

To test the validity of our assumption, if the sample size is less than 30, t-test is used. For applying t-test in context of small sample the t-value is calculated first and compared with t-value on table at certain level of significance for given degree of freedom. If calculated value of 't' exceeds the tabulated value (say 0.05) we can say that difference is significant at 5% level and vice-versa.

$$t = \frac{\bar{X} - \mu_0}{s/\sqrt{n}}$$

Regression Analysis

Regression is the statistical tool, with the help of which we can identify the unknown value of one variable from the known value of any other variable. Assuming that the two variables are closely related, we can estimate the value of one variable from the value of another. The variable, whose value is given is known as independent variables and the variable whose value is to be predicted is known as dependent variable. So, the regression

analysis determines the average probable change in one variable based on a certain amount of change in another. It is a statistical tool for determining relationship between the variables by the establishment of an approximate functional relationship between them. It is used to determine the dependent variable is influenced by the given independent variable or not

Model Specification

Regression analysis is a set of statistical processes for estimating the relationships between a dependent variable (often called the 'outcome variable') and one or more independent variables (often called 'predictors', 'covariates', or 'features'). The most common form of regression analysis is linear regression, in which a researcher finds the line (or a more complex linear function) that most closely fits the data according to a specific mathematical criterion. In this study, following multiple regression equation is analyzed. So, this model is used by Buchadadi et al. (2020) , Bhattarai (2019), Gujarati et al. (2012), Gizaw et al. (2015) etc.

$$ROA_{it} = \beta_0 + \beta_1 CAR + \beta_2 NPLR + \beta_3 LAR + \beta_4 LLPR + \beta_5 LR + \varepsilon \quad \dots\dots\dots (I)$$

$$ROE_{it} = \beta_0 + \beta_1 CAR + \beta_2 NPLR + \beta_3 LAR + \beta_4 LLPR + \beta_5 LR + \varepsilon \dots\dots\dots (II)$$

Where:

ROA = Return on assets (ratio of earnings after taxes to total assets)

ROE = Return on Equity (ratio of earnings after taxes to total Equity Fund)

NPLR = Non-performing loan ratio

LAR = Loan and advance ratio

CAR= Capital adequacy ratio

LR= Liquidity ratio

α = constant term,

e = error term,

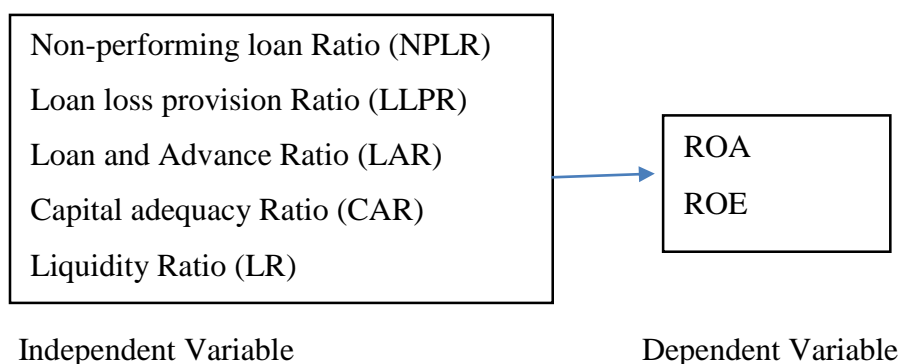
$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ = Beta coefficient of variables

3.7 Research Framework and Definition of Variables

The conceptual framework is developed from the review of literature discussed above and presented in the following diagram.

Figure 1

The Research framework of the study



Note: (Bhattarai, 2016 & Yeasin, 2022)

3.7.1 Capital Adequacy Ratio

Capital adequacy ratio (CAR) is a measurement of a bank's available capital expressed as a percentage of a bank's risk-weighted credit exposures. The capital adequacy ratio, also known as capital-to-risk weighted assets ratio (CRAR), is used to protect depositors and promote the stability and efficiency of financial systems around the world. Two types of capital are measured: tier-1 capital also known as Core Capital, The key element of capital on which the main emphasis should be placed is Tier 1 (core) capital, which is comprised of equity capital and disclosed reserves, which can absorb losses without a bank being required to cease trading, and tier-2 capital Supplementary Capital, . The Supplementary (Tier 2).

$$\text{Capital adequacy ratio (CAR)} = \frac{(\text{Tier 1 capital} + \text{Tier 2 capital})}{\text{Risk weighted Assets}}$$

3.7.2 Non-performing Loan Ratio

The ratio of nonperforming loans (NPL) to total gross loans is a measure of the health of the banking system. A bank loan can be classified as nonperforming when payments of principal and interest are 90 days or more past due, or when future payments are not expected to be received in full.

$$\text{Non-performing loans ratio (NPLR)} = \frac{\text{Total Non-performing loans}}{\text{Loan \& Advances}}$$

NPLR reflects the bank's credit quality and is considered as an indicator of credit risk management. NPLR, in particular, indicates how banks manage their credit risk because it defines the proportion of loan losses amount in relation to total loan amount.

3.7.3 Loan Loss Provision Ratio (LLPR)

A loan loss provision is an expense that is reserved for defaulted loans or credits. It is an amount set aside in the event that the loan defaults. Generally, banks conduct their business by taking deposits and making loans using those deposits. It is a bit more complicated however; this is the basic banking model. Banks must balance their loan receivables with the demand for deposits in any group of loans, banks expect there to be some loans that do not perform as expected. These loans may be delinquent on their repayments or in default of the loan entirely, creating a loss for the bank on expected income. Therefore, banks set aside a portion of the expected loan repayments from all loans in its portfolio to cover all, or a portion, of the loss.

$$\text{Loan loss provision ratio} = \frac{\text{Total Loan Losses Provision}}{\text{Total Loan and advances}} \times 100\%$$

3.7.4 Liquidity Ratio

This ratio measures the liquidity position and short term solvency of the firm indicating the firm's ability to meet short term obligations. Liquidity ratio measures the banks' ability to meet current obligations. Bank does not provide all its deposits at loans and advances, but

certain percentage is kept as a liquidity in the bank itself or elsewhere. Basically bank measures liquidity through three methods. They are as follows:

Cash Reserve Ratio (CRR): Cash reserve ratio refers to a certain percentage of total deposits the commercial banks are required to maintain in the form of cash reserve with the central bank. The objective of maintaining the cash reserve is to prevent the shortage of funds in meeting the demand by the depositors.

$$\text{Cash Reserve Ratio} = \frac{\text{Cash Reserve in NRB}}{\text{Local currency deposit - Margin Deposit}}$$

Cash and Bank balance ratio (CBR): The ratio measures the bank ability to meet immediate obligation.

Mathematically,

$$\text{Cash and bank balance ratio} = \frac{\text{Cash and Bank balance}}{\text{Total Deposit}}$$

3.7.5 Loans and Advance ratio (LAR)

Loans and advances are explained in terms of the commercial banks' lending part of their deposits in the form of a number of credit schemes. Loans and advance section of bank is very important because the success of this department helps to increase the business. Under this head sum of the outstanding amount of all loans and advances extended to the customers as well as a bills purchased and discounted less the amount of loan loss provisioning shall be exhibited. Funds borrowed by an entity from another entity, repayable after a specific period carrying interest rate are known as loan and funds provided by the bank to an entity for a specific purpose, to be repayable after a short duration is known as advances.

$$\text{Loan and Advance ratio} = \frac{\text{Total Loan and Advances}}{\text{Total Deposit}} \times 100\%$$

3.7.6 Return on Asset

Return on assets ratio is the proportion of the sum of net income after taxes and interest to the total asset (total investment). It is the rate of return earned by the firm including loan and the total investment. Higher return on total asset ratio possesses higher earning of the business enterprise interns of its total asset. Lower ratio indicates relatively poor financial position based on the rate of return of an enterprise.

$$\text{Return on Assets (ROA)} = \frac{\text{Net profit after tax}}{\text{Total Assets}} \times 100\%$$

3.7.7 Return on Equity

Return on equity is the ratio of net income and common equity. It measures the rate of common stockholder's investment. It sees over the utilization of the funds that are supplied by the shareholders.

$$\text{Return on Equity (ROE)} = \frac{\text{Net profit after tax}}{\text{Equity Capital}} \times 100\%$$

CHAPTER IV

RESULT AND DISCUSSION

In this chapter, raw form of data which are collected from various sources are processed and changed into an understandable presentation using financial as well as statistical tools as mentioned in the previous chapter. Similarly, the process of transforming of data is called analysis for the examination and interpretation of the data to draw conclusion. Therefore, the purpose of the study Eleven years data from fiscal year 2013/2014 to 2022/2023 of all sample banks have been taken into consideration. In this chapter descriptive analysis, correlation analysis and regression analysis of secondary data is performed.

4.1 Capital adequacy and Credit Risk Indicators

4.1.1 Capital Adequacy Ratio in Study Period

The capital adequacy ratio (CAR) is a measure of a bank's capital. It is expressed as a percentage of a bank's risk weighted credit exposures. Capital is one of the bank specific factors that influence the level of bank profitability. Capital is the amount of own fund available to support the bank's business and act as a buffer in case of adverse situation. A bank's capital base (or total capital) is the sum of its Tier 1 and Tier 2 capital less any deductions. At least 50 per cent of a bank's capital base must be Tier 1 capital.

Table 3

Pattern analysis of Capital adequacy ratio

| Year | Nabil | SCBL | HBL |
|--------------------|--------|--------|--------|
| 2014 | 11.24 | 12.27 | 11.23 |
| 2015 | 11.57 | 13.1 | 11.14 |
| 2016 | 11.73 | 16.38 | 10.84 |
| 2017 | 12.9 | 21.08 | 12.15 |
| 2018 | 13 | 22.99 | 12.46 |
| 2019 | 12.5 | 19.69 | 12.6 |
| 2020 | 13.07 | 18.51 | 14.89 |
| 2021 | 12.77 | 17.17 | 13.89 |
| 2022 | 13.09 | 15.95 | 11.75 |
| 2023 | 12.54 | 17.09 | 12.31 |
| Average | 12.441 | 17.423 | 12.326 |
| Standard deviation | 0.681 | 3.323 | 1.260 |

From the above table 2 indicates capital adequacy ratio from 2014 to 2023 of Nabil, SCBL, and HBL exhibited distinct performance trends. Nabil demonstrated steady growth with an average value of 12.441 and the least volatility, reflected in its standard deviation of 0.681. SCBL, with the highest average value of 17.423, showed significant growth but also the highest volatility, as indicated by its standard deviation of 3.323, suggesting higher risk and reward. HBL maintained moderate growth, with an average of 12.326 and a standard deviation of 1.260, offering a balance between stability and growth. Thus, Nabil is the most stable, SCBL the most volatile and high-growth, and HBL a moderate option in terms of both risk and return.

4.1.2 Non performing Loan on the Study Period

NPL indicator of credit risk management. NPL, in particular, indicates how bank manage their credit risk because it defines the proportion of loan losses amount in relation to total loan amount. NPL has been used as the default rate on total loan and advances. It is the

major indicator of commercial banks credit risk. It is expected that negative relationship could be expected between non-performing loan ratio and profitability of commercial.

Table 4

Pattern analysis of non-performing loan

| Year | Nabil | SCBL | HBL |
|--------------------|-------|-------|-------|
| 2014 | 2.23 | 0.48 | 1.96 |
| 2015 | 1.82 | 0.34 | 3.22 |
| 2016 | 1.14 | 0.32 | 1.23 |
| 2017 | 0.8 | 0.19 | 0.85 |
| 2018 | 0.55 | 0.18 | 1.4 |
| 2019 | 0.74 | 0.15 | 1.12 |
| 2020 | 0.98 | 0.44 | 1.01 |
| 2021 | 0.84 | 0.96 | 0.48 |
| 2022 | 1.62 | 0.59 | 1.59 |
| 2023 | 3.39 | 1.18 | 4.93 |
| Average | 1.411 | 0.483 | 1.779 |
| Standard deviation | 0.879 | 0.344 | 1.337 |

Table no 4 shows that Nabil, SCBL, and HBL display distinct characteristics in terms of growth and volatility. Nabil's values, ranging from 0.55 to 3.39, indicate moderate growth with an average of 1.411 and a standard deviation of 0.879, reflecting moderate volatility. SCBL consistently shows the lowest values, from 0.15 to 1.18, with an average of 0.483 and the lowest standard deviation of 0.344, indicating high stability and low growth. HBL, on the other hand, exhibits the highest growth variability, with values ranging from 0.48 to 4.93, an average of 1.779, and the highest standard deviation of 1.337, suggesting higher risk and potential returns. Consequently, SCBL offers the most stability, HBL presents the highest risk and growth potential, and Nabil stands as a moderate option with balanced growth and volatility.

4.1.3 Loss and Loan Provision Ratio for Study Period

The loss and loan provision ratio (LLPR) is a financial metric that indicates the proportion of a bank's loan portfolio that has been set aside as a provision to cover potential loan losses. This ratio helps in assessing the bank's ability to absorb losses from defaulted loans, reflecting its financial health and risk management practices.

Table 5

Pattern of loan loss provision

| Year | Nabil | SCBL | HBL |
|--------------------|-------|-------|-------|
| 2014 | 2.24 | 1.45 | 4.25 |
| 2015 | 2.94 | 1.35 | 2.79 |
| 2016 | 2.68 | 1.56 | 3.25 |
| 2017 | 2.69 | 1.52 | 2.43 |
| 2018 | 2.47 | 1.3 | 3.52 |
| 2019 | 2.09 | 1.4 | 1.96 |
| 2020 | 1.76 | 1.47 | 1.6 |
| 2021 | 1.57 | 1.31 | 2.19 |
| 2022 | 1.64 | 1.29 | 2.06 |
| 2023 | 1.93 | 1.86 | 2.17 |
| Average | 2.201 | 1.451 | 2.44 |
| Standard deviation | 0.481 | 0.172 | 0.629 |

From the above table indicates the loan loss provisions (LLPs) for Nabil, SCBL, and HBL highlight distinct risk management strategies. SCBL consistently has the lowest and most stable LLPs, averaging 1.451 with a standard deviation of 0.172, indicating high stability and a conservative approach to credit risk. Nabil shows moderate LLPs with an average of 2.201 and a standard deviation of 0.481, reflecting a balanced risk management strategy. HBL has the highest and most variable LLPs, averaging 2.441111 with a standard deviation of 0.629, suggesting a higher exposure to risky loans or more aggressive lending, requiring greater provisioning to cover potential losses. This differentiation points to SCBL's conservative lending, Nabil's balanced approach, and HBL's higher risk exposure.

4.1.4 Liquidity Ratio in Study Period

LQ is the ability to pay off its debt as and when they become due. It told analyze that how quick a company can convert the current assets into cash if it experiences financial difficulties or bankruptcy. So that it can pay off its liability on a timely basis. The credit to deposit ratio (CDR) is a major tool to examine the CRR of a bank and measures the ratio of fund that a bank has utilized in credit out of the deposit total collected.

Table 6

Pattern analysis of liquidity ratio

| Year | Nabil | SCBL | HBL |
|--------------------|-------|--------|--------|
| 2014 | 11.32 | 21.18 | 37.52 |
| 2015 | 14.15 | 24.03 | 30.32 |
| 2016 | 6.77 | 7.98 | 28.74 |
| 2017 | 10.02 | 19.71 | 26.64 |
| 2018 | 10.05 | 18.91 | 23.05 |
| 2019 | 4.78 | 7.52 | 26.25 |
| 2020 | 11.2 | 14.49 | 31.39 |
| 2021 | 3.66 | 7.53 | 26.51 |
| 2022 | 4.13 | 4.44 | 23.48 |
| 2023 | 6.89 | 4.73 | 27.38 |
| Average | 8.297 | 13.052 | 28.128 |
| Standard deviation | 3.550 | 7.435 | 4.221 |

Table 6 shows the liquidity ratios of Nabil, SCBL, and HBL demonstrate varying levels of liquidity management. Nabil has an average liquidity ratio of 8.297 with a standard deviation of 3.550, indicating moderate liquidity and relatively stable management. SCBL exhibits an average of 13.052 and a higher standard deviation of 7.435, reflecting greater variability and potentially more aggressive liquidity management practices. HBL has the highest average liquidity ratio of 28.128 and a standard deviation of 4.221, showing consistently high liquidity but with some fluctuations. These differences suggest that HBL maintains the highest liquidity, possibly to cover a larger volume of short-term obligations

or as a conservative buffer, while SCBL and Nabil balance liquidity differently, with SCBL having more variability in its liquidity management compared to the more stable approach of Nabil.

4.1.5 Loan and Advance for Study Period

Loans and advances are explained in terms of the commercial banks' lending part of their deposits in the form of a number of credit schemes. Loans and advance section of bank is very important because the success of this department helps to increase the business. Under this head sum of the outstanding amount of all loans and advances extended to the customers as well as a bills purchased and discounted less the amount of loan loss provisioning shall be exhibited. Funds borrowed by an entity from another entity, repayable after a specific period carrying interest rate are known as loan and funds provided by the bank to an entity for a specific purpose, to be repayable after a short duration is known as advances.

Table 7

Pattern analysis of loan and advance ratio

| Year | Nabil | SCBL | HBL |
|--------------------|-------|--------|--------|
| 2014 | 78.28 | 49.11 | 80.56 |
| 2015 | 77.91 | 55.13 | 75.35 |
| 2016 | 74.9 | 58.63 | 77.36 |
| 2017 | 74.55 | 56.87 | 71.82 |
| 2018 | 64.43 | 48.92 | 75.37 |
| 2019 | 70.49 | 56.88 | 79.12 |
| 2020 | 76.95 | 62.2 | 83.59 |
| 2021 | 83.56 | 69.29 | 87.04 |
| 2022 | 81.28 | 72.97 | 89.1 |
| 2023 | 80.65 | 1.18 | 80.94 |
| Average | 76.3 | 53.118 | 80.025 |
| Standard deviation | 5.608 | 19.810 | 5.418 |

Loan and advance ratios for Nabil, SCBL, and HBL reveal insights into their lending practices and risk management. Nabil maintains a high and relatively stable average loan and advance ratio of 76.3 with a standard deviation of 5.608, indicating consistent lending practices. SCBL shows more volatility, with an average ratio of 53.118 and a high standard deviation of 19.810, reflecting significant fluctuations and potentially varying lending strategies or adjustments in response to market conditions. HBL consistently has the highest average ratio of 80.025 with a standard deviation of 5.418, demonstrating a strong focus on lending and advancing loans with stable management. These figures suggest that while Nabil and HBL have stable and high lending ratios, SCBL's more variable ratio indicates a less consistent approach to loan and advance management.

4.2 Financial Performance for the Study Period

Financial performance is very important for the various stakeholders to show the profitability, solvency, and return. Furthermore, the term is used to refer to how well a firm utilizes its resources to give returns to its investors. It is indicative of a bank's status and the extent of its ability to achieve the desired objectives. Hence, it can also be said that financial performance is the level of performance of a business over a specified period, and is expressed in terms of overall profits and losses during that time (Pradhan, 1986).

4.2.1 Return on Assets for the Study Period

Return on assets ratio is the proportion of the sum of net income after taxes and interest to the total asset (total investment). It is the rate of return earned by the firm including loan and the total investment. Higher return on total asset ratio possesses higher earning of the business enterprise interns of its total asset. Lower ratio indicates relatively poor financial position based on the rate of return of an enterprise

Table 8

Pattern analysis of Return on assets

| Year | Nabil | SCBL | HBL |
|--------------------|-------|-------|-------|
| 2014 | 2.89 | 2.51 | 1.3 |
| 2015 | 2.06 | 1.99 | 1.34 |
| 2016 | 2.32 | 1.98 | 1.93 |
| 2017 | 2.69 | 1.98 | 2.11 |
| 2018 | 2.61 | 2.64 | 1.61 |
| 2019 | 2.11 | 2.61 | 2.08 |
| 2020 | 1.58 | 1.71 | 1.66 |
| 2021 | 1.71 | 1.22 | 1.68 |
| 2022 | 1.2 | 1.83 | 1.09 |
| 2023 | 1.42 | 2.29 | 0.47 |
| Average | 2.059 | 2.076 | 1.527 |
| Standard deviation | 0.574 | 0.446 | 0.500 |

From the above table 8 shows the Return on Assets (ROA) ratios for Nabil, SCBL, and HBL illustrate different levels of profitability and efficiency in using their assets. Nabil has an average ROA of 2.059 with a standard deviation of 0.574, indicating relatively consistent profitability with moderate variability. SCBL shows a similar average ROA of 2.076 but with a lower standard deviation of 0.446, reflecting slightly higher consistency in generating returns from its assets. HBL, however, has the lowest average ROA of 1.527 and a standard deviation of 0.500, suggesting lower profitability and moderate variability compared to Nabil and SCBL. These figures highlight that while Nabil and SCBL have similar average returns on their assets, SCBL achieves this with slightly more stability, whereas HBL consistently generates lower returns from its assets with moderate fluctuations.

4.2.2 Return on Equity for the Study Period

Return on equity is the ratio of net income and common equity. It measures the rate of common stockholder's investment. It sees over the utilization of the funds that are supplied

by the shareholders. ROE is especially used for comparing the performance of companies in the same industry. As with return on capital, a ROE is a measure of management's ability to generate income from the equity available to it.

Table 9

Pattern analysis of Return on equity

| Year | Nabil | SCBL | HBL |
|--------------------|-------|-------|--------|
| 2014 | 27.91 | 26.27 | 15.77 |
| 2015 | 22.73 | 21.69 | 15.98 |
| 2016 | 25.61 | 17.18 | 20.77 |
| 2017 | 22.41 | 13.06 | 18.51 |
| 2018 | 20.94 | 15.73 | 13.27 |
| 2019 | 17.76 | 19.49 | 17.28 |
| 2020 | 13.61 | 15.15 | 14.71 |
| 2021 | 15.19 | 9.44 | 14.89 |
| 2022 | 9.78 | 14.21 | 10.76 |
| 2023 | 11.66 | 20.78 | 4.65 |
| Average | 18.76 | 17.3 | 14.659 |
| Standard deviation | 6.108 | 4.865 | 4.465 |

From 2014 to 2023, the Return on Equity (ROE) ratios for Nabil, SCBL, and HBL provide insights into their profitability and how effectively they use shareholders' equity. Nabil has an average ROE of 18.76 with a standard deviation of 6.108, indicating relatively strong profitability with moderate variability over the years. SCBL shows a slightly lower average ROE of 17.3 and a standard deviation of 4.865, reflecting somewhat consistent returns with less variability compared to Nabil. HBL has the lowest average ROE of 14.659 and a standard deviation of 4.465, suggesting lower profitability and more stable performance relative to its peers. These figures imply that while Nabil and SCBL both generate substantial returns on equity, Nabil experiences more fluctuations, whereas SCBL manages to maintain relatively consistent returns. HBL, although more stable, generates the lowest returns on shareholders' equity.

4.3 Descriptive Statistics

Descriptive analysis is a statistical method used to summarize, organize and present data in a meaningful way. It is used to describe the characteristics of a given dataset, such as the distribution, central tendency, and dispersion of the data. Descriptive analysis can be used to identify patterns, trends, and relationships in the data, and can provide insights that can be used to make informed decisions. The data in the current study for the period is 2014 to 2023 are presented.

Table 10

Descriptive statistics

| | Minimum | Maximum | Mean | Std. Deviation |
|------------------------|---------|---------|---------|----------------|
| Non-performing loan | .15 | 4.93 | 1.2243 | 1.06716 |
| loss provision ratio | 1.29 | 3.52 | 2.0080 | .60851 |
| loan and advance ratio | 48.92 | 89.10 | 71.7723 | 11.14533 |
| capital adequacy ratio | 10.84 | 22.99 | 14.0633 | 3.14696 |
| liquidity ratio | 3.66 | 37.52 | 16.4923 | 10.02612 |
| Return in assets | .47 | 2.89 | 1.8873 | .55556 |
| Return on equity | 4.65 | 27.91 | 16.9063 | 5.30014 |

Note: Descriptive analysis using SPSS

Table 10 highlighting the banking sector's performance and risk management practices. The mean non-performing loan ratio (NPL) is 1.2243%, with a standard deviation of 1.06716, indicating that on average, 1.22% of loans are non-performing, but there is considerable variability across banks. The loss provision ratio (LLPR) averages at 2.0080%, with a standard deviation of 0.60851, showing that banks are setting aside around 2% of their loan portfolio to cover potential losses, with moderate variability. The loan and advance ratio has a mean of 71.7723% and a high standard deviation of 11.14533, suggesting a significant portion of assets are given as loans, but this ratio varies widely among banks. The capital adequacy ratio (CAR) averages at 14.0633%, with a standard deviation of 3.14696, indicating banks are generally well-capitalized beyond the regulatory minimum, though with some differences among institutions. The liquidity ratio, with a

mean of 16.4923% and a high standard deviation of 10.02612, shows that banks maintain a decent level of liquid assets, but there is significant variability. Return on assets (ROA) averages at 1.8873%, with a standard deviation of 0.55556, indicating banks generate nearly 1.89% profit on total assets, showing moderate variability. Lastly, the return on equity (ROE) has a mean of 16.9063%, with a standard deviation of 5.30014, reflecting a healthy return on shareholders' equity but with significant differences in profitability among banks. These statistics highlight that while banks generally maintain adequate capital and liquidity and generate reasonable returns, there is substantial variability in performance and risk management practices across the sector.

4.4 Association between ROA with Capital Adequacy and Credit Risk Variables

The correlation coefficient is a statistical measure of the strength of the relationship between the relative movements of two variables. The values range between -1.0 and 1.0. A correlation of -1.0 shows a perfect negative correlation, while a correlation of 1.0 shows a perfect positive correlation.

Table 11

Associated between ROA with independent variable

| | | Correlations | | | | | |
|------------------------------|------------------------------------|---------------------|-----------------------------|-----------------------------|------------------------------|-------------------------------|---------------------|
| | | Return in assets | Non- perform ing loan | loss provisio n ratio | loan and advance ratio | capital adequac y ratio | liquidit y ratio |
| Return in assets | Pearson | 1 | | | | | |
| | Correlation Sig. (2- tailed) | | | | | | |
| Non- performing loan | Pearson | -.581** | 1 | | | | |
| | Correlation Sig. (2- tailed) | .001 | | | | | |
| loss provision ratio | Pearson | .033 | .342 | 1 | | | |
| | Correlation Sig. (2- tailed) | .863 | .065 | | | | |
| loan and advance ratio | Pearson | -.533** | .516** | .406* | 1 | | |
| | Correlation Sig. (2- tailed) | .002 | .003 | .026 | | | |
| capital adequacy ratio | Pearson | .223 | -.493** | -.596** | -.636** | 1 | |
| | Correlation Sig. (2- tailed) | .236 | .006 | .001 | .000 | | |
| liquidity ratio | Pearson | -.298 | .234 | .239 | .188 | -.241 | 1 |
| | Correlation Sig. (2- tailed) | .110 | .213 | .203 | .319 | .199 | |

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

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

Note. Correlation calculation using SPSS

The table 11 shows the correlation analysis reveals significant relationships between various financial ratios in the banking sector, providing insights into how these ratios interact and impact bank performance. Return on assets (ROA) has a significant negative

correlation with the non-performing loan (NPL) ratio (-0.581) and the loan and advance ratio (-0.533), indicating that higher levels of non-performing loans and a greater proportion of assets allocated to loans negatively affect bank profitability. This suggests that increased loan defaults and higher risk lending practices can decrease a bank's return on assets. The NPL ratio is significantly positively correlated with the loan and advance ratio (0.516) and significantly negatively correlated with the capital adequacy ratio (CAR) (-0.493), implying that banks with higher loan allocations tend to have more non-performing loans and lower capital adequacy. Additionally, the loss provision ratio (LLPR) shows a positive correlation with the loan and advance ratio (0.406) and a significant negative correlation with CAR (-0.596), indicating that banks with higher loan provisions typically have lower capital adequacy. These findings highlight the trade-offs banks face between profitability, risk management, and maintaining financial stability, emphasizing the importance of balancing these factors to ensure robust financial health.

4.5 Analysis of Capital adequacy and Credit risk Variables in Predicting ROA.

To know the relationship between the return on assets and independent variables was investigating using multiple linear regression. Multiple linear regression analysis is essentially similar to the simple linear model, with the exception that multiple independent variables are used in the model.

Model Summary

Table 12

Model summary of ROA

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|------|----------|-------------------|----------------------------|
| 1 | .761 | .579 | .491 | .39618 |

a. Predictors: (Constant), liquidity ratio, loan and advance ratio, loss provision ratio, Non performing loan, capital adequacy ratio

Note. Calculate using spss

Table 12 indicate the performance and significance of a regression model. The R Square value of .579 suggests that approximately 57.9% of the variance in the dependent variable

is explained by the independent variables included in the model. This indicates a moderately strong relationship between the predictors and the outcome variable. The Adjusted R Square value of .491 takes into account the number of predictors in the model, providing a more conservative estimate of the model's goodness of fit. The F Change statistic of 6.605 tests the overall significance of the regression model, with a p-value of .001, indicating that the model as a whole is statistically significant. This suggests that the predictors collectively contribute to predicting the outcome variable. Overall, these results suggest that the regression model has predictive power and provides valuable insights into the relationship between the predictors and the outcome variable under study.

Anova Test

Table 13

Anova result of ROA

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|-------|------------|----------------|----|-------------|-------|------|
| 1 | Regression | 5.184 | 5 | 1.037 | 6.605 | .001 |
| | Residual | 3.767 | 24 | .157 | | |
| | Total | 8.951 | 29 | | | |

a. Dependent Variable: Return in assets

b. Predictors: (Constant), liquidity ratio, loan and advance ratio, loss provision ratio, Non performing loan, capital adequacy ratio

Note. Calculating using spss

From the table 13 shows the F-statistic of 6.605 tests the overall significance of the regression model, indicating whether the predictors collectively contribute significantly to explaining the variance in the dependent variable. The associated p-value (Sig.) of .001 is less than .05, indicating that the regression model is statistically significant. The "Residual" row displays the sum of squares, degrees of freedom, and mean square for the residual variation, which represents the unexplained variance in the dependent variable after accounting for the predictors. The residual sum of squares is 3.767, with 24 degrees of freedom, indicating the variability not accounted for by the model. The mean square represents the average unexplained variance. Finally, the "Total" row provides the total

sum of squares and degrees of freedom, representing the total variability in the dependent variable. In this case, the total sum of squares is 8.951, with 29 degrees of freedom.

Table 14

Analysis of the credit risk variables in predicting ROA

| Model | Unstandardized | | Standardized | t | Sig. |
|-----------------------------|----------------|------------|--------------|--------|------|
| | Coefficients | | Coefficients | | |
| | B | Std. Error | Beta | | |
| (Constant) | 3.970 | 1.080 | | 3.676 | .001 |
| Non-performing loan | -.248 | .084 | -.477 | -2.960 | .007 |
| loss provision ratio | .315 | .152 | .345 | 2.075 | .049 |
| 1 loan and advance ratio | -.025 | .009 | -.497 | -2.763 | .011 |
| capital adequacy ratio | -.031 | .035 | -.175 | -.875 | .390 |
| liquidity ratio | -.012 | .008 | -.217 | -1.566 | .131 |

Note. Calculation using SPSS

From the given table 14 shows "Non-performing loan" has an unstandardized coefficient of -0.248 and a standardized coefficient (Beta) of -0.477. The negative standardized coefficient suggests that as the non-performing loan ratio increases, the return in assets tends to decrease. The t-value of -2.960 is statistically significant at the 0.01 level ($p = .007$), indicating that this predictor significantly influences the return in assets. Similarly, "loss provision ratio" has a positive unstandardized coefficient of 0.315 and a standardized coefficient of 0.345. The positive standardized coefficient indicates that as the loss provision ratio increases, the return in assets tends to increase. The t-value of 2.075 is statistically significant at the 0.05 level ($p = .049$), suggesting a significant impact on return in assets.

"Loan and advance ratio" also has a negative unstandardized coefficient (-0.025) and a negative standardized coefficient (-0.497). The negative standardized coefficient indicates that an increase in the loan and advance ratio is associated with a decrease in return in

assets. The t-value of -2.763 is statistically significant at the 0.01 level ($p = .011$), indicating its significant impact.

"Capital adequacy ratio" and "liquidity ratio" have unstandardized coefficients of -0.031 and -0.012 respectively, but their standardized coefficients are relatively small, indicating stronger relationships with the dependent variable. Neither of their t-values reaches statistical significance ($p > .05$), suggesting that these predictors may not significantly influence return in assets.

4.6 Association between ROE with Credit risk variables

Table 15

Association between ROE with independent variables

| | | Non performing loan | loss provision ratio | loan and advance ratio | capital adequacy ratio | liquidity ratio | Return on equity |
|------------------------|---------------------|---------------------|----------------------|------------------------|------------------------|-----------------|------------------|
| Non performing loan | Pearson Correlation | 1 | .342 | .516** | -.493** | .234 | -.354 |
| | Sig. (2-tailed) | | .065 | .003 | .006 | .213 | .055 |
| loss provision ratio | Pearson Correlation | | 1 | .406* | -.596** | .239 | .236 |
| | Sig. (2-tailed) | | | .026 | .001 | .203 | .210 |
| loan and advance ratio | Pearson Correlation | | | 1 | -.636** | .188 | -.335 |
| | Sig. (2-tailed) | | | | .000 | .319 | .071 |
| capital adequacy ratio | Pearson Correlation | | | | 1 | -.241 | -.198 |
| | Sig. (2-tailed) | | | | | .199 | .295 |
| liquidity ratio | Pearson Correlation | | | | | 1 | -.113 |
| | Sig. (2-tailed) | | | | | | .550 |
| Return on equity | Pearson Correlation | | | | | | 1 |

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

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

Note. Calculation using spss

From the given table 15 shows the "Non-performing loan" ratio, it shows a moderate positive correlation with the "loan and advance ratio" ($r = 0.516$, $p = 0.003$) and a moderate negative correlation with "capital adequacy ratio" ($r = -0.493$, $p = 0.006$). These correlations suggest that as the non-performing loan ratio increases, the loan and advance ratio tends to increase, while the capital adequacy ratio tends to decrease. Additionally, there's a weak positive correlation between non-performing loans and return on equity ($r = -0.354$, $p = 0.055$), albeit not statistically significant at the 0.05 level.

Moving to the "Loss provision ratio," it exhibits a moderate positive correlation with the "loan and advance ratio" ($r = 0.406$, $p = 0.026$) and a strong negative correlation with "capital adequacy ratio" ($r = -0.596$, $p = 0.001$). These correlations suggest that as the loss provision ratio increases, the loan and advance ratio tends to increase, while the capital adequacy ratio tends to decrease.

The "Loan and advance ratio" demonstrates a moderate negative correlation with "capital adequacy ratio" ($r = -0.636$, $p < 0.001$), indicating that as the loan and advance ratio increases, the capital adequacy ratio tends to decrease.

4.7 Association between ROE with Capital Adequacy and Credit Risk Variables

Model Summary

Table 16

Model summary of ROE

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|------|----------|-------------------|----------------------------|
| 2 | .757 | .573 | .484 | 3.80837 |

a. Predictors: (Constant), liquidity ratio, loan and advance ratio, loss provision ratio, Non-performing loan, capital adequacy ratio

Note. Calculation using SPSS

As per table 16 the R Square value of .573 indicates that approximately 57.3% of the variance in the dependent variable (return on equity) is explained by the independent variables (liquidity ratio, loan and advance ratio, loss provision ratio, non-performing loan,

and capital adequacy ratio) included in the model. This suggests a moderately strong relationship between the predictors and the outcome variable.

The Adjusted R Square value of .484 adjusts for the number of predictors in the model, providing a more conservative estimate of the model's goodness of fit. It indicates that approximately 48.4% of the variance in the dependent variable is explained by the predictors after considering the model's complexity. The Standard Error of the Estimate, 3.80837, represents the average distance that the observed values fall from the regression line, providing a measure of the model's accuracy in predicting the dependent variable.

The Change Statistics section presents information about the change in R Square and the associated F Change statistic. The R Square Change value of .573 indicates the change in R Square when the predictors are added to the model. The F Change statistic of 6.434 tests the overall significance of this change, with associated degrees of freedom ($df_1 = 5$, $df_2 = 24$) and a significance level (Sig. F Change) of .001, indicating that the addition of the predictors significantly improves the model's fit.

Anova

Table 17

ANOVA with ROE

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|-------|------------|----------------|----|-------------|-------|------|
| | Regression | 466.563 | 5 | 93.313 | 6.434 | .001 |
| 2 | Residual | 348.089 | 24 | 14.504 | | |
| | Total | 814.652 | 29 | | | |

a. Dependent Variable: Return on equity

b. Predictors: (Constant), liquidity ratio, loan and advance ratio, loss provision ratio, Non performing loan, capital adequacy ratio

Note. Calculation using spss

From the table 17 model accounts for a sum of squares of 466.563 with 5 degrees of freedom, resulting in a mean square of 93.313. The F-statistic is 6.434, and the associated p-value (Sig.) is .001, indicating that the regression model is statistically significant.

In the "Residual" row, the table presents the sum of squares, degrees of freedom, and mean square for the residual (unexplained) variation after accounting for the predictors in the model. The residual sum of squares is 348.089 with 24 degrees of freedom, resulting in a mean square of 14.504.

The "Total" row provides the total sum of squares and degrees of freedom, representing the total variability in the dependent variable (return on equity). In this case, the total sum of squares is 814.652 with 29 degrees of freedom.

Table 18

Analysis of the credit risk variables in predicting ROE

| Model | Unstandardized | | Standardized t | Sig. |
|----------------------|----------------|------------|----------------|-------------|
| | Coefficients | | | |
| | B | Std. Error | Beta | |
| (Constant) | 53.846 | 10.380 | | 5.188 .000 |
| Non-performing loan | -2.113 | .807 | -.425 | -2.620 .015 |
| loss provision ratio | 2.251 | 1.461 | .258 | 1.541 .136 |
| loan and advance | -.301 | .086 | -.632 | -3.487 .002 |
| ratio | | | | |
| capital adequacy | -1.154 | .339 | -.685 | -3.405 .002 |
| ratio | | | | |
| liquidity ratio | -.064 | .074 | -.122 | -.873 .392 |

Note. Calculation using SPSS

From the given table 18 which shows the "Non-performing loan" has an unstandardized coefficient of -2.113 and a standardized coefficient (Beta) of -0.425. The negative standardized coefficient suggests that as the non-performing loan ratio increases, the return on equity tends to decrease. The t-value of -2.620 is statistically significant at $p = .015$, indicating a significant impact on return on equity.

"Loss provision ratio" has an unstandardized coefficient of 2.251 and a standardized coefficient of 0.258. The positive standardized coefficient indicates that as the loss

provision ratio increases, the return on equity tends to increase, although this relationship is not statistically significant at $p = .136$.

"Loan and advance ratio" has a negative unstandardized coefficient of -0.301 and a negative standardized coefficient of -0.632. The negative standardized coefficient suggests that as the loan and advance ratio increases, the return on equity tends to decrease. The t-value of -3.487 is statistically significant at $p = .002$, indicating a significant impact on return on equity.

"Capital adequacy ratio" has a negative unstandardized coefficient of -1.154 and a positive standardized coefficient 0.685. The positive standardized coefficient suggests that as the capital adequacy ratio increases, the return on equity tends to increase. The t-value of 3.405 is statistically significant at $p = .002$, indicating a significant impact on return on equity.

"Liquidity ratio" has a small negative unstandardized coefficient (-0.064) and a small negative standardized coefficient (-0.122). The t-value of -0.873 is not statistically significant at $p = .392$, suggesting that liquidity ratio may not significantly influence return on equity in this model.

4.8 Discussion

Capital adequacy ratio has no statistically effect on the financial performance measured by ROA, where CAR p-value is 0.390 at 5% of insignificant and the regression coefficient is -0.031. It means that there 1% decrease in CAR causes the lowest percentage of increase of 0.390 in ROA but statistically insignificant. The result consists with, (Kargi (2011), Oladejo and Oladipupo (2011)) concluded that capital adequacy ratio did not significant affect bank's performance (ROA). However, this study contradicts with the finding of (Elshaday et al., 2018; Juliana, 2017) have the positive and strong impact but contradicts with (Musyoka, 2017; Rajkumar & Hanitha, 2015) similarity that there is negative and significant impact on USA banks. It concluded that probability there will be negative and positively impact on the bank's performance.

Further, the result indicated the relationship between LR is statistically significant negative impact on the ROA of commercial bank at 5% of significant level where the p-value is 0.131 and the regression coefficient is 0.012. This result shows the significant and weak

negative relationship with ROA, the result indicates the 1% change in the LR would increase the return on assets. Where the finding is with contradicted (Malik et al., 2016; Oluwafemi et al., 2014) who found the LR has statically negative and matching with (Anggraini & Suputra, 2023) who found that there is significant relationship.

Non-Performing loan of the commercial banks in Nepal statistically has strong negative impact on ROA at 5% level of significant with p-value of 0.007 and regression coefficient value of -0.248. This indicate that a decrease in NPLR cause increase in the return on assets. This means increase in 1% NPL increase the ROA by 0.248 which means that the more the NPL, the less the profitability of commercial banks in Nepal. The finding is matching with (Juliana, 2017; Alshatti, 2020) found that NPLR significantly and positively influence the bank's profitability. It is different than (Li & Zou, 2014; Serwadda, 2018) is significantly negative effect of financial performances.

The loan and loss provision has statistically significant effect on the Commercial banks in Nepal statistically has a positive relationship with 5 % of significant level with p- value 0.049 and regression coefficient is 0.315. The finding is matching with Idowu andAwoyemi (2014) found there is negative and significant relationship where the study has been done on 14 commercial banks of Nepal from the period of 2010 to 2014 and it is different from (Bhattarai, 2016)who analysis there is positive and statically significant.

Loan and advance has statistically effect on the commercial banks financial performace meausred by ROA, where LAR p-value is 0.011 at 5% of significant and the regression coefficient is -0.025. It means that 1% increase in LAR cause the high percentage of decrease in ROA but statistically insignificant. The result is consists with Hamza (2017).

Capital adequacy ratio has statistically effect on the commercial banks performance measured by ROE, where CAR p-value is -1.154 at 5% of significant and the regression coefficient is 0.002. It means that there 1% increase in CAR causes the high percentage of decrease in 1.154 in ROE but statistically insignificant. The result consists with (Elshaday et al., 2018). concluded that capital adequacy ratio did not significant affect bank's financial performance (ROE). However, this study contradicts with the finding of (Al Zaidanin and Al Zaidanin, 2021).

Further, the result indicated the relationship between LR is statistically significant negative impact on the ROE of commercial bank at 5% of significant level where the p-value is 0.392 and the regression coefficient is -0.064. This result shows the insignificant and weak negative relationship with ROE, the result indicates the 1% change in the LRR would decrease the return on equity. Where the finding is matching with (Elshaday et al., 2018) who found the LR has statically positively and contradicted with (Rajkumar & Hanitha 2015).

Non-Performing loan of the commercial banks in Nepal statistically significant and has positive impact on ROE at 5% level of significant with p-value of 0.015 and regression coefficient value of -2.113. This indicate that a decrease in NPL cause increase in the return on Equity. This means increase in 1% NPL increase the ROE by 2.113. The finding is matching with (Alshatti, 2020) found that NPL significantly and positively influence the bank's performance. It is different than (Serwadda, 2018).

The loan and loss provision ratio has statistically insignificant effect on the Commercial banks in Nepal statistically has a strong positive relationship with 5 % of significant level with p- value 0.136 and regression coefficient is 2.251. The finding is difference with Kolapo et al (2012), found there is negative and insignificant relationship and it matching from (Jha & Hui, 2012) who analysis there is positively and statically insignificant.

However, loan and advance has statistically effect on the commercial banks profitability measured by ROE, where LAR p-value is 0.002 at 5% of significant and the regression coefficient is -0.301. It means that 1% increase in LAR cause the high percentage of decrease in ROE but statistically significant. The result is consists with Liyugi (2007) and different than the result of Kolapo et al (2012) who found positive and statistically significant.

CHAPTER V

SUMMARY AND CONCLUSION

5.1 Summary

The profitability of the commercial banks are different with the flow of time. Investor always make a decision to invest on the different companies, where the main purpose of this study is to explain the effect of capital adequacy and credit risk on profitability of commercial banks in Nepal. Where return on assets and return on Equity determinant of profitability and capital adequacy ratio, non-performing loan ratio, cost per loan assets, cash reserve ratio, and bank size as a capital adequacy and credit risk indicators. Whereas it shows the line graph, descriptive statistics, correlation and regression model analysis.

The first objective of the study indicated that the trend of Return on Assets and Return on Equity of the commercial bank was fluctuating in a study time. Whereas the capital adequacy ratio, cash reserve ratio, non-performing loan ratio and bank size also is in increasing and decreasing trend. Whereas the commercial banks are found that there was a situation of the bankruptcy in the beginning period of time. Not only those commercial banks are not managing the default risk and CRR which makes the management team failure in the managing the assets or liquid assets against the liabilities.

Another objective of the study i.e. to examine the effect of capital adequacy ratio on the profitability of the commercial bank in Nepal resulted positive but statistically insignificant. This implies that an increase in capital adequacy ratio is associated with the poor performance of the commercial bank in Nepal. The test of null hypothesis i.e., there is no statically significant relationship between capital adequacy ratio and financial performance of the commercial bank in Nepal was accepted concluding the capital adequacy ratio influences in the profitability of the commercial bank. But return on equity has a negative and statistically significant with capital adequacy ratio. The test of null hypothesis i.e., there is no statistically significant relationship between capital adequacy ratio and profitability of commercial bank in Nepal was rejected concluding the CAR influence the profitability.

Another objective of the study i.e., to examine the effect of Cash reserve ratio on the profitability of commercial bank in Nepal resulted negative but statistically significant. This implies that an increase in cash reserve ratio is associated the good relationship with CRR and profitability. The test of null hypothesis i.e., there is statistically significant impact with profitability of commercial bank was rejected concluding that CRR influences the profitability of commercial banks. Return on equity has statistically negative and significant relationship with CRR and profitability. The test of null hypothesis i.e., there is statically significant relationship between CRR and Profitability of the commercial bank in Nepal was rejected concluding the CRR influences in the Profitability of the commercial bank.

Another objective of the study i.e.to examine the effect of bank size on the Profitability of the commercial bank in Nepal resulted negative but statistically insignificant. This implies that an increase in bank size is associated with the poor performance of the commercial bank in Nepal. The test of null hypothesis i.e., there is statically significant relationship between bank size and financial performance of the commercial bank in Nepal was accepted concluding the bank size influences in the Profitability of the commercial bank. Bank size on Profitability of commercial bank has negative and statistically significant. So, the test of null hypothesis i.e., there is statically insignificant relationship between bank size and Profitability of the commercial bank in Nepal was rejected concluding the bank size influences in the Profitability of the commercial bank.

Another objective of the study i.e.to examine the effect of Non-performing loan on the profitability of the commercial bank in Nepal resulted positive but statistically significant. This implies that an increase in non-performing loan is associated with the good performance of the commercial bank in Nepal. The test of null hypothesis i.e., there is statically significant relationship between default risk and Profitability of the commercial bank in Nepal was rejected concluding the interest influences in the Profitability of the commercial bank. Non-performing loan has a positive and statistically significant relationship with return on equity. So, the test of null hypothesis i.e., there is statically insignificant relationship between NPL and profitability of the commercial bank in Nepal was rejected concluding the NPL influences in the profitability of the commercial bank.

Another objective of the study i.e. to examine the effect of loan cost per loan on the profitability of the commercial bank in Nepal resulted negative but statistically insignificant. This implies that an increase in cost per loan is associated with the good performance of the commercial bank in Nepal. The test of null hypothesis i.e., there is statically significant relationship between cost per loan and profitability of the commercial bank in Nepal was accepted concluding the interest influences in the profitability of the commercial bank. Cost per loan has a negative and statistically insignificant relationship with return on equity. So, the test of null hypothesis i.e., there is statically insignificant relationship between cost per loan and profitability of the commercial bank in Nepal was accepted concluding the Cost per loan influences in the profitability of the commercial bank.

5.2 Conclusion

The current study investigates the impact of capital adequacy and credit risk on profitability of commercial banks in Nepal. The capital adequacy ratio, cash reserve ratio, default risk, bank size and loan and advance are issued the capital adequacy and credit risk measures and return on assets and return on equity as a profitability. It found that there is a CAR (Positive), Bank Size (Negative) and CPL (Negative) and insignificant relationship between the return on assets. But CAR (Negative) and NPL (Positive) has significant relationship between the return on assets.

However, CRR (Negative), CPL (Positive), Bank Size (Negative) and significant relationship between return on equity but loan and advance has negative and insignificant relationship with return on equity. From the above evidence provided in this study based in the empirical finding, shows that sound credit risk management strategies and enhanced capital requirement can promote banks profitability.

From the finding of study, it is concluded the result of regression model shows that the independent variables chosen for the study are not well suited for regression analysis with dependent variable ROA. Whereas, independent variables chosen for the model are best suited for regression analysis with dependent variable ROE.

5.3 Implications

Based on the findings, following recommendations are made:

The result in this study suggests that banks should maintain adequate capital. This will increase their profitability. Therefore, Nepalese commercial banks should have to maintain capital adequacy ratio at least 10% which was set by directives of Nepal Rasta Bank. It suggests the need for strong credit risk and loan service process management must be adopted to keep the level of default ratio as low as possible which will enable to maintain the high performance (profitability) of commercial banks in Nepal.

Credit information team would bridge the information gap that exists when the lender requested the loan, in commercial and consumer finance, by tracking the financial behavior of the individuals over a period of time and capital adequacy capital adequacy is great predictors of banks profitability. This becomes due to that small bank have a poor capitalized they cannot offer the categories which commercial banks provide the credit facilities.

Further, this study is also hoped to be useful to academicians as a source of knowledge for further research. The study is concentrated only on few factors and thus, further study should be carried out on the topic to point out the other factors that enhance mitigation of credit risk to improve performance of Nepalese commercial banks.

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Appendix I

| Year | Bank | NPLR | LLPR | LAR | CAR | LR | ROA | ROE |
|-------------|-------------|-------------|-------------|------------|------------|-----------|------------|------------|
| 2014 | Nabil | 2.23 | 2.24 | 78.28 | 11.24 | 11.32 | 2.89 | 27.91 |
| 2015 | Nabil | 1.82 | 2.94 | 77.91 | 11.57 | 14.15 | 2.06 | 22.73 |
| 2016 | Nabil | 1.14 | 2.68 | 74.9 | 11.73 | 6.77 | 2.32 | 25.61 |
| 2017 | Nabil | 0.8 | 2.69 | 74.55 | 12.9 | 10.02 | 2.69 | 22.41 |
| 2018 | Nabil | 0.55 | 2.47 | 64.43 | 13 | 10.05 | 2.61 | 20.94 |
| 2019 | Nabil | 0.74 | 2.09 | 70.49 | 12.5 | 4.78 | 2.11 | 17.76 |
| 2020 | Nabil | 0.98 | 1.76 | 76.95 | 13.07 | 11.2 | 1.58 | 13.61 |
| 2021 | Nabil | 0.84 | 1.57 | 83.56 | 12.77 | 3.66 | 1.71 | 15.19 |
| 2022 | Nabil | 1.62 | 1.64 | 81.28 | 13.09 | 4.13 | 1.2 | 9.78 |
| 2023 | Nabil | 3.39 | 1.93 | 80.65 | 12.54 | 6.89 | 1.42 | 11.66 |
| 2014 | SCBL | 0.48 | 1.45 | 49.11 | 12.27 | 21.18 | 2.51 | 26.27 |
| 2015 | SCBL | 0.34 | 1.35 | 55.13 | 13.1 | 24.03 | 1.99 | 21.69 |
| 2016 | SCBL | 0.32 | 1.56 | 58.63 | 16.38 | 7.98 | 1.98 | 17.18 |
| 2017 | SCBL | 0.19 | 1.52 | 56.87 | 21.08 | 19.71 | 1.98 | 13.06 |
| 2018 | SCBL | 0.18 | 1.3 | 48.92 | 22.99 | 18.91 | 2.64 | 15.73 |
| 2019 | SCBL | 0.15 | 1.4 | 56.88 | 19.69 | 7.52 | 2.61 | 19.49 |
| 2020 | SCBL | 0.44 | 1.47 | 62.2 | 18.51 | 14.49 | 1.71 | 15.15 |
| 2021 | SCBL | 0.96 | 1.31 | 69.29 | 17.17 | 7.53 | 1.22 | 9.44 |
| 2022 | SCBL | 0.59 | 1.29 | 72.97 | 15.95 | 4.44 | 1.83 | 14.21 |
| 2023 | SCBL | 1.18 | 1.86 | 59.92 | 17.09 | 4.73 | 2.29 | 20.78 |
| 2014 | HBL | 1.96 | 4,25 | 80.56 | 11.23 | 37.52 | 1.3 | 15.77 |
| 2015 | HBL | 3.22 | 2.79 | 75.35 | 11.14 | 30.32 | 1.34 | 15.98 |
| 2016 | HBL | 1.23 | 3.25 | 77.36 | 10.84 | 28.74 | 1.93 | 20.77 |
| 2017 | HBL | 0.85 | 2.43 | 71.82 | 12.15 | 26.64 | 2.11 | 18.51 |
| 2018 | HBL | 1.4 | 3.52 | 75.37 | 12.46 | 23.05 | 1.61 | 13.27 |
| 2019 | HBL | 1.12 | 1.96 | 79.12 | 12.6 | 26.25 | 2.08 | 17.28 |
| 2020 | HBL | 1.01 | 1.6 | 83.59 | 14.89 | 31.39 | 1.66 | 14.71 |
| 2021 | HBL | 0.48 | 2.19 | 87.04 | 13.89 | 26.51 | 1.68 | 14.89 |
| 2022 | HBL | 1.59 | 2.06 | 89.1 | 11.75 | 23.48 | 1.09 | 10.76 |
| 2023 | HBL | 4.93 | 2.17 | 80.94 | 12.31 | 27.38 | 0.47 | 4.65 |

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