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RISK MANAGEMENT PRACTICES OF JOINT VENTURE BANKS OF NEPAL

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Abstract

During the last three decades the banking sector has experienced worldwide major transformations in its operating environment. Recently banking institutions are facing the environment that is changing rapidly and competition is increasing at local as well as international level. As a result the risk in banking sector is increasing day by day. So, banks need to analyse the risk and appropriate methods to mitigate the risks. The relationship between risk and many variables are studied extensively in different period of time. In regards to the relationship different results are found. Banks during the course of financial intermediation are confronted with various types of financial and non-financial risks. Banking is the business of risk (Al-Tamimi & Al-Mazrooei, 2007). Risks are uncertainties that could result in adverse variations of profitability or in losses (Bessis, 2011). Some risks cannot be eliminated or transferred due to the complexity and dynamism, so banks have to undertake the risks. In fact, banking business is the risky business so it dealt with risks and gets rewarded accordingly. The objective of financial institutions is to maximize profits and shareholder value by providing different financial services by managing risks (Ahmed et al., 2011).

Risk refers to possibility that the outcome of an action or event of bank, could bring up serious adverse impacts on bank's profitability and performance resulting either a direct loss of earnings or capital. Therefore, the risk is interchangeably with uncertainty to refer the variability of returns associated with a given asset. The objective of financial institutions is to maximize profits and shareholder value by providing different financial services by managing risks. Risk management is aimed at protecting the organization, its people, assets and profits, against consequences and more particularly to reduce the severity and variability of losses. In another words risk management is the identification, analysis and economic control of those risks which threaten the asset or earning capacity of the organization. The main purpose of this study is to analyse the risk management practices of joint venture banks of Nepal with respect to the bank specific variables

The results in the prior studies on risk management practice are mixed and unclear. Hence, this study has been conducted to get clear idea of the risk management approaches of Nepalese commercial banks especially of joint venture. For this, the sample of all 5 joint venture banks with data of 7 years from 2017/18 A.D to 2023/24 A.D has been taken. Data has been collected from various secondary sources like annual reports of sample banks and consolidated financial reports prepared by Nepal Rastra Bank. Descriptive statistics, portfolio analysis, correlation analysis, and regressions have been carried out to examine the secondary data.

The risk measures like credit risk (CR), liquidity risk (LR) and operational risk (OR) of the banks have been used as the dependent variable. Non -performing loan ratio, capital adequacy ratio, debt equity ratio, assets management and size have been considered as independent variables. Based on the results, capital adequacy ratio, non performing loan ratio, assets management, debt assets ratio and size in Nepal are important risk variable.

The recommendation put forward by this study is that banks are suggested to decrease the non performing loan to mitigate the credit risk and liquidity risk. On the other hand this study suggests that banks should maintain the capital adequacy ratio directed by NRB, because it reduce the risks avail in the future.

The major limitation of this study is that this study has excluded some bank macroeconomic variables that might have effect on risk of the commercial banks. The study remains enough ground for future researcher in the same topic. The future studies can be carried out by selecting other financial institutions like development banks, public banks and finance companies to grab the wider view of risk management practices.

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List of Abbreviations

ADBL	:	Agriculture Development Bank
ANOVA	:	Analysis of Variance
B.S	:	Bikram Sambat
CAR	:	Capital Adequacy Ratio
CBs	:	Commercial Banks
CR	:	Credit Risk
DAR	:	Debt Assets Ratio
DE	:	Debt Equity Ratio
EBL	:	Everest Bank Ltd
et al.	:	And others
HBL	:	Himalyan Bank Ltd
LR	:	Liquidity Risk
Ltd	:	Limited
NBL	:	Nabil Bank Ltd
NBL	:	Nepal Bank Ltd
NEPSE	:	Nepal Stock Exchange
NPL	:	Non-Performing Loans Ratio
NRB	:	Nepal Rastra Bank
NSBIL	:	Nepal SBI Bank Ltd
OR	:	Operating Risk
RBB	:	Rastriya Banijya Bank
ROA	:	Return on Assets
ROE	:	Return on Equity
SIZE	:	Size of Bank
SCBL	:	Standard Chartered Bank Nepal Ltd
SEBON	:	Security Exchange Board Nepal
SPSS	:	Statistical Packages for Social Sciences

Chapter-I

Introduction and Aim of the Study

1.1 Background of the Study

Financial sector is the backbone of economy of a country. It works as a facilitator for achieving sustained economic growth through efficient monetary inter-mediation. A strong financial system promotes investment by financing productive business opportunities, mobilizing savings, efficiently allocating resources and making it easy the trade of goods and services. Kusa(2013) reported that the efficacy of a financial system plays an important role in determining the rate of savings, investments, technological innovations and hence the rate of economic growth. Sangami (2010) stated that the sound financial health of a bank is the guarantee not only for its depositors but is equally significant for the shareholders, employees and whole economy as well. A profitable and sound banking sector is at a better point to endure adverse upsets and adds performance in the financial system (Athanasoglou et al., 2008).

Risk is a measure of the anticipated difference between exceptions and reality (Essinger & Rosen, 1991).Risk exists in the banking enterprises because the future is unknown. Risk is also the absence of certainty, where there may be uncertainty as to the outcomes of the events. In the banking industry, risk refers to possibility that the outcome of an action or event of bank, could bring up serious adverse impacts on bank's profitability and performance resulting either a direct loss of earnings or capital. Therefore, the risk is interchangeably with uncertainty to refer the variability of returns associated with a given asset (Gitman & Zutter, 1998).The banking industry is very competitive due to technological advancements and major changes in the financial and monetary environment of banks so to achieve success in the competitive situation, banks need to be aware of the risks associated to them (Spathis et al., 2002). Banks during the course of financial intermediation are confronted with various types of financial and non-financial risks. Banking is the business of risk (Al-Tamimi & Al-Mazrooei, 2007).Risks are uncertainties that could result in adverse variations of profitability

or in losses (Bessis, 2011). Some risks cannot be eliminated or transferred due to the complexity and dynamism, so banks have to undertake the risks. In fact, banking business is the risky business so it dealt with risks and gets rewarded accordingly. The objective of financial institutions is to maximize profits and shareholder value by providing different financial services by managing risks (Ahmed et al., 2011).

Risk management has long been associated with the use of insurance to protect individuals and company from various losses associated with accident (Harrington et al., 1999). Risk management is a set of operational or financial activities that maximize the value of the company or a portfolio by reducing the cost associated with cash flow volatility (Dionne, 2013).

While understanding the term-risk management, risk cannot be eliminated clearly, but it can be managed properly. Similarly, risk management is the combination of procedures, system and persons, used to control the potential losses of a financial institution. It also entails an activity to deal with changing environment that affects a bank's business (Green, 1992). Essinger and Rosen (1991) observed risk management as an effective method for minimizing the adverse effects of risk and maximizing the benefits of incurring risks.

Valsamakis et al. (2010) revealed that risk management is aimed at protecting the organization, its people, assets and profits, against consequences and more particularly to reduce the severity and variability of losses. Risk management is the identification, analysis and economic control of those risks which threaten the asset or earning capacity of the organization. It is regarded as a cornerstone of banking enterprises. Banking in modern economies is all about risk management because the economic fluctuation bank failure, so it effects on the entire financial system of the country (Thiagarajan et al., 2011). Risk management is not important only for fulfilling regulatory requirements but also to improve financial and operational performance of the banks. Efficient risk management is essential for balancing risk against return. It helps to reduce risks to an appropriate level and prepare for future. Bank's overall financial soundness can be measured only by adopting a strong risk management process and communicating concise risk management standards to all concerned

officials through adequate policies, directives, operating procedures and training programs (Alam & Musukujjaman, 2011).

Risk management is the cornerstone for the banking enterprises. In the present context, all banks exist in the volatile environment so they have to face a risks suchas credit risk, liquidity risk, foreign exchange risk, market risk and interest rate risk, among other risks which may threaten a bank's survival and success. Carey & Mark(2001)revealed that risk management is more important in the financial sector than in other parts of the economy. The objective of financial institutions is to maximize profits and shareholder value added by providing different financial services mainly by managing risks (Khan & Ahmed, 2001). Therefore, a sound and reliable banking system dishes up as a significant feed for accomplishing economic growth all the way through the mobilization of monetary resources, placing them, to dynamic use and transforming various risk(Ahmed et al.,2011). Risk management can be defined as the combination of the profitability of an event and its consequences. Risk management can be carried out at an individual level or at a business level and refers to an array of activities ranging from identification, reporting, and treatment and monitoring.

In the context of Nepal, Poudel (2012) observed that credit risk management is an important predictor of bank financial performance thus success of bank performance depends on risk management. Among the risk management, default rate management is the single most important predictor of the bank performance. Bhattrai (2014) revealed that credit risk is by far the most significant risk faced by banks and the success of their business depends on accurate measurement and efficient management of this risk to a greater extent than any other risk. It is a risk of financial loss if a borrower or counter party fails to honor commitments under an agreement and any such failure has an adverse effect on the financial performance of the bank.

Baral (2005) revealed that the risk is one of the factors that affect the health of an individual bank. Poor assets quality and low levels of liquidity are the two major causes of bank failures. Bhatta (2004) observed that risk plays major in banking business so, bankers and regulators try to make their own model to increase quality. Among various risks in the bank, credit risk is the primary cause of bank failure. Shrestha (2003) revealed that capital must be sufficient to

protect a bank's depositors and counter parties from the risks like credit risk, liquidity risk and market risk.

According to the Bhattrai (2014), non-performing loan ratio has negative effect on bank performance whereas cost per loan assets has positive effect on bank performance. In addition to credit risk indicators, bank size has positive effect on bank performance. capital adequacy ratio and cash reserve are not considered as the influencing variables on bank performance. Paudel (2012) has observed that credit is one of the most important indicator for the financial performance of the commercial banks. The study revealed that non- performing loan ratio increases the credit risk so it is the most influencing predictor of bank performance.

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

1.2 Statement of the Problem

Risk management involves identification, measurement, monitoring and controlling risks to ensure that the individuals who take or manage risks clearly understand it. Akhtar et al. (2011) found a significantly positive relationship between the assets, return and liquidity. Peter & Peter (2006) revealed that credit risks are the major risk that banks are exposed during the normal course of lending and credit underwriting. For most banks, loans are the largest and most obvious source of credit risk.

Allen and Bali (2007) revealed significant effect of business cyclical factors in measuring operational risk. Operational risk is one of the major risk in the banking enterprises so, operational risk management should be followed by the banking enterprises. Kim and Santomero (1988) observed the responsibility of bank capital regulation in controlling liquidity and credit risk. The study revealed that the regulatory restrictions, debt ratio, volatility of risky assets, size of liquidation costs and spread between deposit rate and riskless interest rate are the significant constraints that compel bank's hedging decisions.

Adeusi et al., (2013) observed that there is a significant relationship between bank performance and risk management. Better risk management in terms of managed fund, reduction in cost of bad and doubt loans and debt equity ratio results in better bank performance. Thus, it is of crucial importance that banks practice prudent risk management and safeguarding the assets of the banks and protect the investors' interests.Studies dealing with bank specific variables employ variables such as size, capital adequacy, non-performing loan, debt equity, and assets management. These variables have direct or indirect impact on the overall risk of the commercial banks. Risk management methodology can be different in different countries according to its need. Risk management practices are now more challenging than before due to the dynamism and complexity(Mishkin, 2007).

Banks which better implement the risk management may have some advantages, it is in line with obedience function toward the rule, it increases their reputation and opportunity to attract more wide customers in building their portfolio of fund resources, it increases their efficiency and profitability. The banks which have advanced in risk management have greater credit availability, rather than reduced risk in the banking system. The greater credit availability leads to the opportunity to increase the productive assets and bank's profit (Cebenoyan & Strahan, 2004).

Risk management regarding credit risk, operational risk, interest rate risk, market risk, liquidity risk, economic risk and others have effect on the banking enterprises. These risks are sometimes uncontrollable by banks (Anderson & Fraser, 2000).The implementation of capital adequacy requirement reduces risk taking at commercial banks, and the declined franchise value increases the bank risk (Konishi & Yasuda, 2004).

According to Lindblom and Willesson (2011),there is a strong relationship between the size and choice of regulatory approach for measuring operational risk and discrepancy between the regulator's intention towards risk management and bank's risk management in practice. Operational risk management is very much limited but it has crucial impact on the performance of the banks (Veitch, 2005).

Goyal (2010) observed that risk is an opportunity as well as a threat and has different meanings for different users. The banking industry is exposed to different risks such as forex volatility, risk, variable interest rate risk, market play risk, operational risks, credit risk etc. which can adversely affect its profitability and financial health.

Kumah (2013) revealed that there is a significant difference among commercial banks in the practice of risk identification, understanding risk and in risk monitoring and control except risk assessment and analysis.The results show that the sampled banks are somewhat efficient in managing risk, and risk monitoring and control is the most influencing variable in risk management practices.

Stephen (2013) observed that there is an inverse relationship between financial performance of banks and doubt loans, and capital asset ratio was found to be positive and significant. Similarly, the study observes that higher the managed funds by banks the higher the performance. The study concludes a significant relationship between banks performance and risk management.

According to Ahmed (2011), stated that size is positive and statistically significant relationship with financial risks (credit and liquidity risk), whereas its relation with operational risk is found to be negative and insignificant. The asset management establishes a positive and significant relationship with liquidity and operational risk. The debt equity ratio and NPLs ratio have a negative and significant relationship with liquidity and operational risk. In addition, capital adequacy has negative and significant relationship with credit and operational risk, whereas it is found to be positive and with liquidity risk.

In the context of Nepal, Poudel(2012) observed that credit risk management is an important predictor of bank financial performance. Among the risk management, credit risk management is the single most important predictor of the bank performance. Malla (2007) revealed that the major risk in the commercial banks arises due to the political activities like bandha and strikes, which were the burning issue and the problems for the banking as well as the other sector of the economy. Karki (2011) argued that if the banks have good ability to mitigate credit risks then the financial performance of the banks will be better. Adhikary et al

(2007) stated that Nepal bank limited and RBBL nearly collapsed due to the large portion of non-performing loan i.e. over fifty percent.

Nepal is also facing banking crisis and some of the bank and financial institutions have already failed during last few years and are in the process of liquidation (Sapkota, 2011). Studies show that the failure of banks in Nepal is the result of the high non-performing assets, the result of lending without differentiating markets, products and borrowers' credit worthiness, and excessive loan exposure to real estate (Sapkota, 2011).

Empirical studies that analysed the risk management practices are few in banking sectors, especially in the case of Nepal, limiting the generalization of the results. Nepal is also lacking the studies, which encompasses the relevance of risk management practices using more recent data. Therefore, this study has been conducted to examine the risk management practices of joint venture banks and its role in the banking sector of Nepal. More specifically, this study deals with the following issues:

- What is the structure and pattern on credit risk, liquidity risk and operational risk? How have they changed over a period of time?
- To what extent, if any, bank specific variables such as size and capital adequacy ratio affect credit risk?
- Do bank specific variables such as size and capital adequacy ratios affect liquidity risk?
- Is there significant relationship of bank specific variables such as size, capital adequacy ratio with operational risk?
- Do bank specific variables such as non-performing loan, assets management and debt equity ratio affect credit risk?
- To what extent, if any, bank specific variables such as non-performing loan, assets management and debt equity ratio affect liquidity risk?
- Is there any significant relationship between bank specific variables such as non-performing loan, assets management and debt equity ratio and operational risk?

1.3 Research Objective/Aim

The main objective of this study is to analyse the risk management practices of the joint venture banks of Nepal with respect to the bank specific variables.

1.3.1 Specific objectives of the study are as follows:

i) To analyse structure and pattern of credit risk, operational risk, liquidity risk, size, capital adequacy ratio and debt equity ratio.

ii) To examine the relationship of debt equity ratio, non-performing loan ratio, capital adequacy ratio, total assets as a size of bank and assets management with credit risk analysis.

iii) To find out the relationship of debt equity ratio, non-performing loan ratio, capital adequacy ratio, total assets as a size of bank and assets management with liquidity risk and operation risk.

iv) To determine the major factors affecting risk management practices in Nepalese commercial banks.

1.4 Research Questions

In examining the risks associated with the banking industry, this study has addressed the following issues:

v) What is the relationship of credit risk with their specific variables (Non-performing loans, Capital Adequacy, Debt equity, Assets Management, and size of bank)?

vi) What is the relationship of liquidity risk with their specific variables (Non-performing loans, Capital Adequacy, Debt equity, Assets Management, and size of bank)?

vii) What is the relationship of operational risk with their specific variables (Non-performing loans, Capital Adequacy, Debt equity, Assets Management, and size of bank)?

1.5 Significance of the Study

A large stock of literature shows that there is significant amount of studies on risk management practices of banks in the case of developed economies. However, such studies are lacking in under developed countries like Nepal. Thus, this study acts as the basis for further investigation in the area of bank risk management analysis. This study attempts to analyse the risk management practices of the banking enterprises. The study is helpful for the investors to overlook how and which banks are under the high risks, upcoming followers, as well as the commercial banks. It also provides proper guidelines for making choice of credit risk management, liquidity risk management and operational risk management policies on the basis of the different variables.

The study comprises of bank specific variables such as size, capital adequacy ratio, non-performing loan ratio, debt equity ratio, and assets management to examine the credit risk, liquidity risk, and operational risk. Hence, this study is of importance for Nepalese commercial banks because once the relation among these bank specific variables and risk is identified, banks can react in the same way to reduce associated risks. For example, if the relationship between credit risk and non-performing loan ratio is negative. The policy implication of this finding would be helpful for the banks to reduce the non-performing loan.

The empirical study of risk management practices of the banks is highly significant for the shareholders, promoters, management, regulators, depositors and other stakeholder of banks. In addition, this study not only benefits the banking sector but it is of equal significance for other non-financial corporate sector of Nepal.

1.6 Scope of the Study

The study focuses on joint venture banks operating in Nepal.

- Nabil Bank Ltd.
- Nepal SBI Bank Ltd.
- Standard Chartered Bank Nepal Ltd.
- Himalayan Bank Ltd.
- Everest Bank Ltd.

The research will examine their risk management frameworks, policies, and implementation practices as per the guidelines of the Nepal Rastra Bank (NRB) and international standards such as Basel III. The study encompasses the major types of risks faced by joint venture banks, including:

- Credit Risk – risk of borrower default.
- Liquidity Risk – risk of not meeting short-term obligations.
- Operational Risk – losses due to internal process failures, human error, or fraud.

The operational definitions of the variables used in this study have been discussed in this section. Based on the purpose of the thesis study different hypothesis has been developed to study risk and its associated variables. Numerous attempts to explain the risk management practices have yielded inconclusive results.

Akhtar et al., (2011) observed a significantly negative relationship between the assets, return and liquidity so, it helps to reduce the liquidity risk. All the three dependent variable (credit risk, liquidity risk and operational risk) have its specific variables to show the relationship. The different variables used in this study are defined as follows:

Credit Risk

Credit risk arises whenever a lender is exposed to loss from a borrower, counter party, or an obligatory who fails to honor their debt obligation as they have contracted. The probability that some of a bank's assets, especially its loans will decline in value and perhaps become worthless is known as a credit risk (Unified Directives, 2012). Credit risk is measured on the basis of total debt divided by total assets.

According to Owojori (2011) examined the credit risk is the major that banks are exposed during the normal course of lending and credit underwriting. In a bank’s portfolio, losses arises from outright default due to inability or unwillingness of a customer or counter party to meet commitments in relation to lending, trading, settlement and other financial transactions. In every financial institution, risk management activities broadly take place at strategic level, macro level and micro level, according to standard economic theory, managers of value maximizing firms ought to maximize expected profit without regard to the variability around its expected value (Haneef et al., 2012).

Brock and Rojas-Suarez (2000) and Ho and Saunders (1981) showed positive and statistically significant relation between credit risk and interest margin but for the other countries the coefficient is negative (statistically significant for Argentina and Peru) and these findings as

“a result of inadequate provisioning for loan losses: higher non-performing loans would reduce banks’ income, thereby lowering the spread in the absence of adequate loan loss reserves” The result for Argentina is striking given the opposite findings reported by Catao (1998).

Liquidity Risk

The liquidity risk is the adverse situation of having insufficient cash to meet a bank's obligations when due. Liquidity is very important for any organization dealing with money. For a bank, liquidity is a crucial aspect that represents its ability to meet its financial obligations. Liquidity risk is the risk that a financial institution may not be able to pay back its liabilities in a timely manner because of an unexpectedly large amount of claims. The role of banks in the maturity transformation of short-term deposits into long-term loans makes banks inherently vulnerable to liquidity risk.

Tabar, Ahmadi, & Emami(2013) stated that the variables of bank's size, bank's asset, gross domestic product and inflation will cause to improve the performance of banks liquidity risk will cause to weaken the performance of bank. Salman(2004) conceded that maturity mismatch is not the only source of liquidity risk. The risk of this kind can arrive from many directions and its pinch depends on various factors. The banks which have sound liquidity position, it must have to robust liquidity risk management policies, a responsive asset and liability committee, effective information and internal control systems, and methods for managing deposits to reduce on demand liquidity (Ismal, 2010).

According to Shen et al.,(2009) observed a study to analyze the relationship between liquidity risk and financial performance of Moroccan banks and to define the determinants of bank’s performance in Morocco. The liquidity risk shows negatively in the bank’s profitability because the liquidity risk might lower the bank’s profitability (return on average assets and return on average equities) because of higher cost of fund, but increase the net interest margin due to higher investment. The result showed that the liquidity risk was negatively related to bank performance in the market based financial system and no effect on the bank performance in the bank based financial system. Kim and Santomero (1988) revealed the responsibility of bank capital regulation in controlling solvency risk.

According to Siddiqui (2008) observed that banks were more liable towards considering projects with long-term financing and better performance in terms of assets and return established improved risk management with keeping safe liquidity. Akhtar et al., (2011) revealed that better performance in elements of assets and return which recognized that banks had improved liquidity risk management than Islamic banks in Pakistan.In this study, capital to total assets ratio used as an indicator of liquidity risk. Based on it, this study develops the following hypotheis:

Operational Risk

According to Al-Tamimi et al., (2007) observed the operational risks are more severely than other types of risk. Operational risk is the risk of loss resulting from inadequate internal process, people and system or from external events.

Ray and Cashman (1999) revealed that operational risk influence decision making in numerous ways. The study also observed that due to the operational risk it effect on the decision making on the banking enterprises. Blacker (2000) observed how mitigation of operational risk is being detained by British retail banks and found responsibility for operation risk lies with business unit management. Allen and Bali (2007) revealed significant effect of business cyclical factors in measuring operational risk, while studying the effect of operational risk management on profitability of banks through risk adjusted return on capital.

According to Chapelle et al. (2008) found that far-reaching funds can be conquered through energetic risk management techniques. The inclusion of innovative products in the financial businesses found to have huge cross-correlation with increasing operational risk (Philippas & Siriopoulos, 2009). There is strong relationship between size and choice of regulatory approach for measuring operational risk (Lindbolm & Willesson, 2011).

Size of Banks

The size of the banks is determined by the total assets associated on the banks. Total assets show the strength and its growth potential of the banks. According to Demirguc and Huizingua (1999), there is a negative relationship between the size of the banking sector and liquidity risk so it helps to increase profitability of the banks. Firm size has a positive

relationship with short-term debt ratio (Abor, 2008). According to Penrose (1959), larger firms enjoys economies of scale and economies of scope and this has the tendency to impact its profitability, larger firms can also increase their market power and this will have an impact on its profitability and performance. Larger firms can take on more debt or increase leverage since their profits are high enough to service their debt so it reduces the liquidity shortage (Shepherd, 1989). Kinsman and Newman (1998) and Mesquita & Lara (2003) found positive impact of size on bank performance. Large companies tend to be more competitive, with access to capital, better credit rating, and more customers, which will enhance their profitability (Dickens, Michael et al., 2002). Based on it, following hypothesis has been developed.

H1: There is a positive relationship between bank size and risk.

Capital Adequacy Ratio

Capital adequacy ratio is the ratio of bank's capital with the risks. It is a measure of a bank's capital. It is expressed as a percentage of a bank's risk weighted credit exposures. This ratio is used to protect depositors and promote the stability and efficiency of financial systems around the world.

According to Unified Directives, commercial banks must keep 10 percent as the minimum capital fund to be maintained based on the risk weighted assets. A lower CAR not only comprises the solvency of banks in the case of emergencies, but also constraints the capacity to float loans. According to Altunbas et al (2007), capital adequacy plays a more prominent role in the banking regulatory process. In this sense due to both regulatory and market pressures, most commercial banks have to boost their capitalization. Based on it, following hypothesis has been developed.

H2: There is a negative relationship between capital adequacy ratio and risk.

Debt Equity Ratio

Debt equity ratio is a measure of a company's financial leverage calculated by dividing its total liabilities by stockholders' equity. It indicates what proportion of equity and debt the

company is using to finance its assets. A high debt/equity ratio generally means that a company has been aggressive in financing its growth with debt. This can result in volatile earnings as a result of the additional interest expense. At the time of the examining the company, it is crucial to pay attention to the debt/equity ratio. If a lot of debt is used to finance increased operations (high debt to equity), the company could potentially generate more earnings than it would have without this outside financing. If this were to increase earnings by a greater amount than the debt cost (interest), then the shareholders benefit as more earnings are being spread among the same amount of shareholders. However, the cost of this debt financing may outweigh the return that the company generates on the debt through investment and business activities and become too much for the company to handle. Based on it, following hypothesis has been developed.

H3: There is a positive relationship between debt equity ratio and risk.

Non-Performing Loan Ratio

According to international monetary fund (2015), a nonperforming loan is any loan in which interest and principal payments are more than 90 days overdue; or more than 90 days' worth of interest has been refinance, capitalized or delayed by agreement; or payments are less than 90 days overdue but are no longer anticipated. The non- performing loans (NPL) represent credits which the banks perceive as possible loss of funds due to loan defaults. It is either in default or close to being in default. They are further classified into substandard, doubtful or loss. Bank credit in lost category hinders bank from achieving their set targets. Loans are the major outputs provided by the bank, but the loan is a risk-output. There is always an ex-ante risk for a loan to eventually become non-performing. Non-performing loans can be considered as an undesirable outputs or costs to the bank that does the loaning, which increases the bank risk (Yang, 2003). Due to increasing spate of non-performing loans (NPL) and its attendant consequences, the central bank authorities entered into agreement in December 1987 known as Basel I and II accord, both accords emphasized on the importance of capital adequacy for mitigating credit risk. Based on it, following hypothesis has been developed.

H4: There is a positive relationship between non-performing loan ratio and risk.

Assets Management Ratio

Asset management means finding ways to maximize a company's value by managing fixed and intangible assets to be more reliable, efficient, or cheaper. Asset Management ratios attempt to measure the firm's success in managing its assets to generate the targeted earnings. Assets management ratio is measured as assets utilization ratio. Assets management ratio can be measured as proxy of total operating income divided by total assets. Based on it, following hypothesis has been developed.

H5: There is a negative relationship between assets management ratio and risk.

1.7 Organization of the Study

The study is organized into a total of five chapters. Chapter one contains general background of the study including statement of the problem, objectives of the study, research questions, significance of the study, scope of the study and organization of the study. The chapter two consists of review of literature's related to studies in global context as well as the review of studies in Nepalese context and conceptual framework. Besides, this chapter ends up with concluding remarks associated with the findings and major ideas of the studies. The chapter three covers the research design, nature and sources of data, selection of enterprises, models used for data analysis and conclusion along with the limitations of the study. The chapter four focuses on the systematic presentation and analysis of data. This chapter is further divided into two sections, namely, analysis of secondary data and concluding remarks associated with the major findings of the study. It is the most important part of the research where the effect of risk management practices by descriptive statistics and using regression analysis, correlation analysis is established. The chapter five provides a summary of overview on all works carried out in chapter one through four including major conclusions derived from the study. This chapter also includes a separate section for recommendations and scope for future research based on major findings of the study.

Chapter II

Literature Review

This chapter provides the conceptual framework of the study and deals with the review of empirical studies associated with the risk management. It is divided into three sections. First section consists of an in-depth review of related studies in the context of both developed and emerging countries around the globe. Second section deals with the theoretical framework of the study. Finally, the third section presents remarks on the conceptual framework and empirical review along with the concluding remarks.

2.1 Review of Literature

In this study, the literature review has been undertaken as below:

- Review of literature on credit risk
- Review of literature on operational risk
- Review of literature on liquidity risk
- Review of Nepalese studies

2.1.1 Review of Literature on Credit Risk

The review of literature on credit risk on is summarized as provided in the Table 2.1.

Ahmed et al (2011) examined firm level factors which significantly influencing the risk management practices in Islamic banks of Pakistan for the period 2006-2009. The study used credit risk as the dependent variable and size, debt equity ratio, NPLs ratio, capital adequacy and asset management as explanatory variables. The study using Pearson correlation analysis. The results indicate that size of the banks has positive and significant relationship with credit risk.

Table 2.1: Review of major literature on credit risk

Study	Major Findings
Ahmed et al (2011)	Found that size of the banks has positive and significant relationship with credit risk.
Wenner et al (2007)	Regulated institutions are more leveraged, maintain better asset quality and generate higher returns on equity (ROE).
Bektas (2014)	The results suggest a positive relationship between credit risk and net interest margin.
Ebnother et al., (2007)	Found that strong relationship between credit risk and macro-economic variables.
Lu & Lee (2009)	The result suggests a positive relationship between the unsecured debt and the credit risk
Kithinji, (2010)	The results stated that non-performing loan has positive relationship between the credit risks.
Avadanei, (2011)	The study reflected the negative effects as a mixture of weaknesses, disruptions, unsolved issues and fragility with credit risk.
Al-Tamimi (2002)	Found that the size of the firm is positive lyrelated to the credit risk.
Indiael & Pastory(2013)	There is negative relationship between the credit risk and the bank's performance. Increase in credit risk tends to lower firm performance and vice versa.
Arif et al (2012)	Found that relationship between capital adequacy ratio and credit risk is likely negative.

Wenner et al (2007) investigated credit risk in rural financing institutions in Latin America using Pearson correlation test on 42 institutions during 2007. The study observed that few of the institutions were transferring credit risk to third parties and this was a major challenge.

Wenner et al., (2007) observed that the most common instrument used to transfer credit risk was public funded loan guarantee funds. Regulated institutions are more leveraged, maintain better asset quality and generate higher returns on equity (ROE). As can be expected, regulated entities have significantly more capital and assets since they can mobilize deposits from the public.

Ebnöther & Paolo(2007) revealed that there is strong autocorrelation between economic cycles demands and analyse credit portfolio risk in a multi-period setup. The standard one-factor model is used to observe the economic variables. Ebnöther & Paolo(2007) observed single-period risk measures cannot capture the cumulative effects of systematic shocks over several periods, and define an alternative risk measure, which call the time-conditional expected shortfall (TES), to quantify credit portfolio risk over a multi-period horizon.

Lu & Lee(2009) examined credit risk of bank loans using two different Markov chain models, the discrete-and continuous-time models in Taiwan using data from of Quarter 1 1997 to Quarter 4, 2005 for 28 banks of Taiwan. The study observed that there was unsecured loans which make bank riskier claims on the debt. One of the good strength of the research is about that it helps to explore the measurement and comparison of credit risk. Further, the study found positive relationship between the unsecured debt and the credit risk (Lu & Lee, 2009).

Al-Tamimi H (2002) examined the degree to which the UAE banks use risk management techniques in dealing with different types of risk. The study was based on responses of 386 respondents including senior risk management and credit officers. The study found that the UAE commercial banks were facing mainly credit risk. The study used GDP growth rate, firms, family indebtedness, rapid past credit or branch expansion, inefficiency, portfolio composition, size, net interest margin, capital ratio and market power as variables that explain credit risk. The study raised important bank supervisory policy issues: the use of bank-level variables as early warning indicators, the advantages of mergers of banks from different regions, and the role of banking competition and ownership in determining credit risk.

Arif et al (2012) examined Pakistani banking system using panel data to analyse the relationship between the selected variables like return on assets, return on equity, total assets to total equity ratio, loan loss provision to total loan ratio, and market return on shares on credit risk. The data were collected for study through year 2004 to 2009 from 20 Pakistani banks. The data was related from return on assets, return on equity, total assets to total equity ratio, loan loss provision to total loan ratio, and market return on shares of Pakistani banks. The results of this study exposed a minimal role of credit risk in value creation process in banking system of Pakistan. The study revealed that the banks with higher advances in their portfolio were successful in getting the confidence of shareholders. The study also revealed that credit risk does not have a significant relationship with the shareholders' value in Pakistani banking system. The results explained that banks relying heavily on interest income that might face a reduction in banks' ROE but ROE might experience an increase. The strength of the study was exploring the relationship among the credit risk and shareholders in the Pakistani bank. Study also revealed that investors were giving preference to the banks having large advances in their portfolio (Arif et al., 2012).

Kithiniji (2010) revealed that credit risk management and profitability of the commercial banks which aimed to find out the relationship between the credit risk management and the profitability of commercial banks of Kenya for the period of 2004-2008.The study reveal that the level of credit was high in the early years of the implementation of Basle II but decreased significantly in 2007 and 2008, probably when the Basle II was implemented by commercial banks.The study observed that the level of credit and profits were relatively low and stable, the amount of credit was high and relatively volatile. The study revealed that there is no relationship between profits, amount of credit and the level of non performing loans. The study recommended that commercial banks who were keen on making high profits should concentrate on other factors other than focusing more on amount of credit and non-performing loans.

Indiael & Pastory (2013) studied the relationship between the credit risk and bank performance as measured by return on asset. Regression model was used to develop the

relationship between the indicators of credit risk and bank performance, the credit risk indicators have produced negative correlation which indicate the higher the credit risk the lower the bank performance. Regression model was statistically fit producing R square and adjusted R square of 70% and 64% respectively. The study recommended that the bank understudy to increase the capital reserve to protect the bank for the future losses and to increase bank credit risk management techniques.

Avadanei (2011) studied credit risk in the Romanian banking system following the accelerated dynamics of credit activity before the financial crisis and the effects versus solutions proposed and implemented during the surveyed years. The monthly data were used from 2004 to 2011. The study used consumer credit for household, credit risk ratio, medium exchange rate, and the number of employees in the economy. The consumer lending was influenced by medium exchange rate, credit risk ratio, and the number of employees in the economy.

2.1.2 Review of literature on Operational Risk

The review of literature on credit risk on is summarized as provided the Table 2.2

Akhtar (2011) studied the firm level factors which significantly influencing the risk management practices in Islamic banks of Pakistan for the period 2006-2009.The study used operational risk as the dependent variables and size, debt equity ratio, NPLs ratio, capital adequacy and asset management as explanatory variable for the period of four years from 2006 to 2009 using Pearson correlation analysis. The results indicated that debt equity ratio and NPL ratio has negative and significant relationship with operational risk.

Lindbolm & Willesson(2011) studied bank's operational risk measurement in practice of Swedish banks with reference to adaptation of Basel II accord. The new Basel accord seems to have a major impact on the risk management of banks in general, and on their assessment of exposures to operational risk in particular. The study was based on the bank's quarterly data during 2007 and 2008 of 103 banks by using capital adequacy data for the eight quarters covering about one and a half years of good economic conditions and half a year of recession.

The study revealed that there was a strong relationship between size and choice of regulatory approach for measuring operational risk. The study concluded that there was a discrepancy between the regulator's intention towards the risk management and banks' risk management in practices, the reporting to the regulatory primarily was made in order to comply with the regulatory framework rather than providing valuable information to the business units of the banks.

Daniel (2011) investigated the operational risk and its relationship with institution size in the Hungarian banking sector. The study examined using pooled cross section data of Hungarian banks through year 2007 to 2011. The regression and trend analysis were employed to analyse the data in the study. The study revealed that the losses of the Hungarian banking sector stemming from operational risks (risks associated with people, systems, processes and external events). The study also found a significant relationship between institution size as defined by gross income and total operational risk. The correlation with institution size and the frequency parameter was stronger, and was much more so than the correlation with size of individual loss.

Courtney(2005) examined operational risk management in Trinidad, Barbados and Jamaica, assessed the importance relative to the other risks and reviewed the practices for managing operational risk by the financial institution. The study used qualitative methodology interviewing senior management in 16 financial institutions in Trinidad, Barbados and Jamaica during year 2004. The questionnaires were distributed to managers within the head offices of the financial institutions. The study analysed based on the assessment of compliance with regard to Basel Core Principles for operational risk management. The study revealed number of findings, the development of an appropriate risk management environment, principles, the implementation of an effective system of risk management to identify, assess, monitor and mitigate risks, principles, the role of supervisors/regulators is low in operational risk management, the management of operational risk was basically limited to implementing and testing internal control, operational profile was not reviewed and adjusted based on specific strategies, the process and procedure of operational risk management were not implemented properly, best practice with regard to operational risk were not finalized or circulated, operational risk management methodologies were not being disclosed by banks.

Table 2.2: Review of major literature on operational risk

Study	Major Findings
Akhtar (2011)	Found that debt equity ratio and NPL ratio has negative and significant relationship with operational risk.
Lindbolm & Willesson (2011)	Found that assets management is negatively correlated to operational risk.
Courtney (2005)	The study observed that role of supervisor/regulator is negatively correlated to the operational risk.
Ahmed et al (2011)	Found that capital adequacy ratio has negative and significant relationship operational risk
Daniel(2011)	Found that profit margin is negatively related to operational.
Homolya (2011)	Found that operational risk is positively related risks associated with people, systems, processes and external events.

Homolya (2011) investigated the operational risk and its relationship with institution size in the Hungarian banking sector. The study examined using pooled cross section data of Hungarian banks through year 2007 to 2011. The regression and trend analysis were employed to analyse the data in the study. The study revealed that the losses of the Hungarian banking sector stemming from operational risks (risks associated with people, systems, processes and external events). The study also found a significant relationship between institution size as defined by gross income and total operational risk. The correlation with institution size and the frequency parameter was stronger, and was much more so than the correlation with size of individual loss.

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2.1.3 Review of Literature on Liquidity Risk

The review of literature on liquidity risk is summarized as provided in the table 2.3.

Akhtar (2011) studied the firm level factors which significantly influencing the risk management practices in Islamic banks of Pakistan for the period 2006-2009.The study used liquidity as the dependent variables and size, debt equity ratio, NPLs ratio, capital adequacy and asset management as explanatory variable for the period of four years from 2006 to 2009 using Pearson correlation analysis. The results indicate that debt equity ratio and NPL ratio has negative and significant relationship with liquidity risk.

Shen et al (2009) studied the relationship between liquidity risk and financial performance of Moroccan banks using unbalanced panel dataset of 12 advanced economies commercial banks (Australia, Canada, France, Germany, Italy, Japan, Luxembourg, Netherlands, Switzerland, Taiwan, United Kingdom and United States) over the period 1994–2006. The study showed that liquidity risk is the endogenous determinant of bank performance measured by return on assets, return on equity and net interest margins and that liquidity risk is negatively related to return on assets ROA and return on equity ROE and positively related to net interest margins NIM.The study revealed that liquid banks are more efficient than illiquid banks. Large banks and banks with a low share of own bank's capital of the bank's total assets is more efficient while banks depending on external funding are less efficient. The study conceded that the liquidity risk was the endogenous determinant of bank performance.

Table 2.3: Review of major literature on liquidity risk

Study	**Major Findings**
Shen et al., (2009)	The liquidity risk was negatively related to bank performance in market based financial system and there is no effect in the bank based financial system.
Usman (2011)	Found that size of the banks has positive and significant relationship with liquidity risk.

Sanya S. et al., (2012)	Found that debt to equity is positively related to liquidity risk.
Tabar et al., (2013)	Found that size is positively related to liquidity risk.
Bordeleau et al., (2010)	There was non-linear relationship between profitability and liquid assets holdings.
Akhtar (2011)	Found that debt equity ratio and NPL ratio has negative and significant relationship with liquidity risk.

Sanya et al (2012) studied the liquidity management framework, in particular the quantitative indicators employed by the central bank of Rwanda in response to the domestic liquidity crisis in 2008/09. The study revealed that quick gains to be made from augmenting the liquidity risk indicators with more dynamic liquidity stress tests so that compliance will be achieved through lengthening the maturities of both assets and liabilities on the balance sheet as opposed to simply holding more liquid assets. The study also recommended that policy emphasis shifts toward reforms that strengthen systemic liquidity risk assessment, monetary policy implementation as well as improve the efficiency of Rwanda's financial system. The study also found that the maturity gap analysis is the weakest instrument for managing liquidity risk.

Bordeleau & Graham (2010) investigated the relationship between liquid assets and profitability depends on the bank's business model and the risk of funding market difficulties using the data through 1997 to 2009. Those data were used for the estimation of quarterly observation for 55 U.S bank and 10 Canadian banks. The study found that level of liquidity assets required to maximize profits was lower for banks in Canada than in the U.S. The study showed that there was non linear relationship between profitability and liquid assets holdings.

Tabaret al (2013) examined the effect of liquidity risk on the performance of commercial banks using panel data for 7 years from 2003 to 2010 in the context of Iran. The study used two groups of bank-specific variables and macroeconomic variables. The variables of bank's size, bank's asset, gross domestic product and inflation will cause to improve the performance

of banks while credit risk and liquidity risk will cause to weaken the performance of bank on the basis of the study. The study showed that liquidity risk caused to decrease in the performance of bank.

2.1.4 Review of Nepalese Studies

In the context of other developed financial markets, the study based on the risk analysis and the risk management in Nepal is quite few empirical results. This sub section provides review of empirical works associated risk and risk analysis in context of Nepalese financial market. A brief overview on some of the related studies with their major findings is provides in the Table 2.4

Table 2.4: Review Nepalese studies

Study	**Major Findings**
Pradhan, (1996)	Found that lack of knowledge to deposits on the banks is positively related to liquidity risk.
Shrestha, (2003),	The study observed that capital adequacy ratio is negatively related to liquidity risk.
Manandar, (2004)	Found that assets management is negatively related to liquidity risk.
Malla, (2007)	Political instability is the main obstacle of the deposits mobilization in the Nepalese financial market. It directly influences in the liquidity management of the banks.
Poudel(2012)	Credit risk management is an important predictor of bank financial performance thus success of bank performance depends on risk management.

Pradhan (1996) examined deposit mobilization and problem and prospect associated with liquidity risk in Nepalese commercial banks. The study reported that deposit is the life-blood of every financial institution for commercial banks, finance company, cooperative or non-government organization. The study revealed that most of the Nepalese people do not go for saving in institutional manner, due to lack of knowledge, however they were user of saving in the form of cashier ornament. The study also revealed that consumers' relevance deal with institutional system and governed by the lower level of understanding about financial organization process in withdrawing system, availability of depositing facilities, and unavailability of the institutional service in rural area of Nepalese commercial banks.

Shrestha (2003) investigated the study on impact and implementation of NRB guidelines and directives with reference to Nabil Bank Limited and Nepal SBI Bank Limited. The primary and secondary data were taken in the study for two years. Study revealed that both banks have been following and implementing guidelines and directives. Capital adequacy ratio of Nabil and SBI were 13.04% and 12.86% respectively. The study observed that Nabil and SBI banks have to increase supplementary capital adequacy ratio. Study recommended that the bank should increase their primary reserves to maintain the liquidity risk due to scrap of the secondary reserves (Shrestha, 2003).

Manandar (2004) studied prospects of banking sector in Nepal. The study stated that deposit collection of bank was expanded. The study also revealed that the increasing rate of investment was higher than loan and advances. Cash reserve ratio of Nepal Bank Limited and Rastriya Banijya Bank was high, but CRR of non-government banks were low. The study showed that the liquidity positions of all banks were very high and that effected in the investment on short term loans and securities. Banks were more concentrated in liquidity and interested in less risky investments. Further, the study revealed that Nepalese financial sector was not able to fulfil the requirement of long-term funds.

Poudel (2012) Studied various parameters pertinent to credit risk management of 31 banks for eleven years from (2001 to 2011) in the context of Nepalese commercial banks comparing the

profitability ratio to default rate, cost of per loan assets and capital adequacy ratio which was presented in descriptive, correlation and regression was used to analyse the data. The study revealed that all these parameters have an inverse impact on banks' financial performance; however, the default rate is the most predictor of bank financial performance. The study, further, stated that banks should design and formulate strategies that will not only minimize the exposure of the banks to credit risk but will enhance profitability.

Malla (2007) investigated the problem and prospects of commercial banking sectors in relation to deposit mobilization in Nepalese Commercial Banks. The study revealed that the major problems in deposit mobilization in banking and financial sector were political intervention and influences. By the political situation, the government only makes the policy but they could not implement in any financial sectors. The political activities like strikes were the burning issue and the problems for the banking as well as the other sector of the economy. The banks were unable to open new branches and some were merged with other branches. There was problem in collection and utilization of deposit of commercial banks, which were so unsatisfactory.

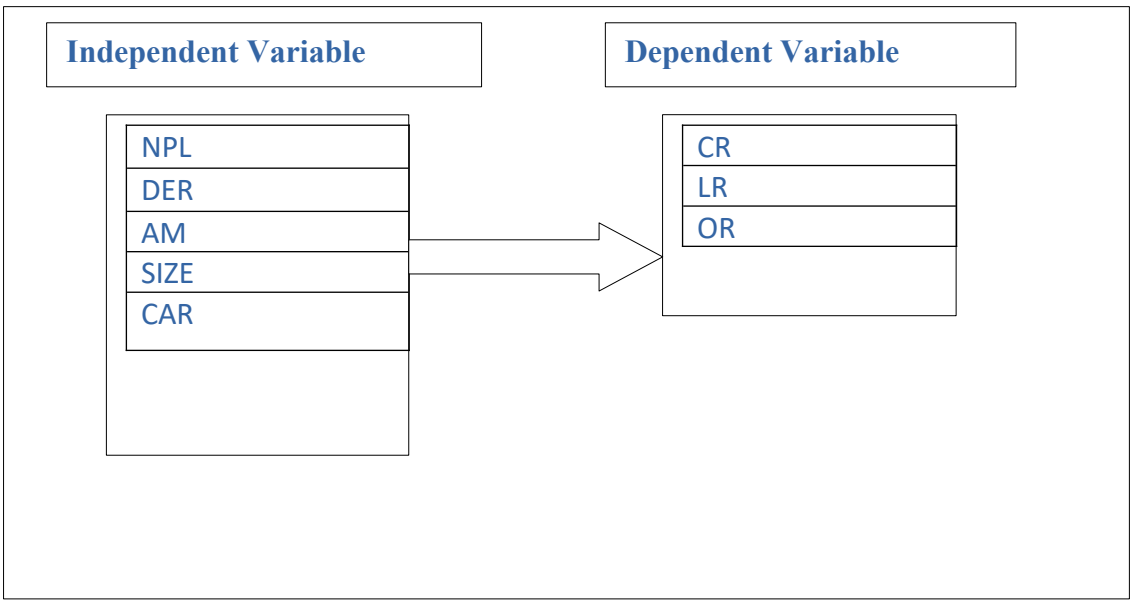
2.2 Conceptual Framework

Risk is an exposure to a transaction with loss, which occurs with some probability and which can be expected, measured and minimized. In financial institutions risk result from variations and fluctuations in assets or liability or both in incomes from assets or payments and on liabilities or in outflows and inflows of cash(Goyal & Agrawal, 2010). Risks are the uncertainties resulting in adverse outcome, adverse in relation to planned objective or expectation. Similarly, financial risks are uncertainties resulting in adverse variation of profitability or outright losses. The adverse impact can be broken down into expected or unexpected losses. Expected losses are the losses which a bank can reasonably anticipate, for example, loan losses. Unexpected losses on the other hand are those losses that are not in any way foreseen, for example the volcano, tsunami etc.

Risk is a major concern for all financial institutions including banks given that the risk accompanies their normal business. Although banks are in the business of taking risk, banking institutions need not engage in business in a manner that unnecessarily imposes risk upon it nor should it absorb risk that can be transferred to other participants. Risk is measure of the anticipated difference between exceptions and reality (Essinger & Rosen, 1991). This difference exists because the future is unknown, thus making it all the more important to manage risk. Risk is also the absence of certainty, where there may be uncertainty as to the outcomes of the events (Gitman & Zutter, 1998). In the banking industry, risk refers to possibility that the outcome of an action or event of bank, could bring up serious adverse impacts on bank's profitability and performance resulting either a direct loss of earnings or capital. Therefore, the risk is interchangeably with uncertainty to refer the variability of returns associated with a given asset. The conceptual framework that describes the dependent and independent variables used in the study are shown in the figure 2.1

Fig 2.1:Schematic diagram of risks and its associated variables.

(This figure shows the theoretical framework of the study. non-performing loan, capital adequacy ratio, debt equity ratio, assets management and size are dependent variables. Independent variables are total Credit risk (debt to total equity ratio), liquidity risk (capital to total assets) and operational risk (return on total assets)



The above figure shows the risk (credit risk, liquidity risk and operational risk) as the dependent variables and five independent variables as capital adequacy ratio (CAR), non-performing loan ratio (NPL), debt equity ratio (DER), assets management (AM) and size (SIZE). The five variables are used as independent variable. Risks associated to the Joint Venture Banks are measured through the different variables. Risk measured as three dependent variables as credit risk (CR), liquidity risk (LR) and operational risk (OR). The major variables under this study are discussed below:

Dependent variables

Credit Risk

Credit risk is defined as the possibility of losses associated with decrease in the credit quality of the borrower or the counter parties. In the bank's portfolio, losses stem from outside default due to inability or unwillingness of the customer or the counter party to meet the commitments, losses may also result from reduction in the portfolio value arising from actual or perceived deterioration in credit quality (Goyal & Agrawal, 2010).Wilson et al (2000) stated that the inclusion of non-financial data and prototype of payment behavior in business failure can improve the certainty to manage credit in more appropriate manner. According to Fabozzi (2010) the risk that the obligatory of a financial instrument held by a financial institution fails to fulfill obligations on the due date or any time thereafter. The risk a customer or counter party will be unable or unwilling to meet commitments that it has entered in to and that the pledged security does not cover the customer's liabilities in the event of a default is credit risk. Credit risk can be firm specific or systematic. The former is the risk of default of the borrowing firm associated with the specific type of projects entered into by the bank. On the other hand, systematic credit risk relates to default associated with general economic or macro-economic factors affecting all borrowers (Saunders & Cornett, 2006).Banks should classify loans on the basis of the credit risk. A bank's policies should appropriately address validation of any internal credit risk assessment models. The bank

should adopt and document a sound loan loss methodology that can addresses risk assessment policies, procedures and controls, for assessing credit risk, identifying problem loans and determining loan provisions in a timely manner. The assessment of the loan provisions should be adequate to absorb estimated credit losses in the loan portfolio. The assessment process for loans should have the necessary tools, procedure and the observable data to use for credit risk assessment purposes, account for impairment of loans and the determination of regulatory capital requirements.

The banking supervisors should periodically evaluate the effectiveness of a bank's credit risk policies and practices for assessing loan quality. Banking supervisors should consider the credit risk assessment and valuation practices when assessing a bank's capital adequacy.

Liquidity Risk

Santomero (1997) stated that liquidity risk can be described as the risk of a funding crisis, such as unexpected event in the form of large charge off, loss of confidence, or a crisis of national proportion like existence crisis. Risk management here centres on liquidity facilities and portfolio structure. Recognizing liquidity risk leads the banks to recognize liquidity itself as an asset, and portfolio design in the face of illiquidity concerns as a challenge. Liquidity risk as the risk to earning or capital related to a bank's ability to meet its obligations to depositors and the needs of borrowers by turning assets into cash quickly with minimal loss. Liquidity risk is also defined as the sudden increase in withdrawals that may require the financial institutions to seek to liquidate its assets in a very short time period. This sudden surge usually requires sale at less than fair market prices (Gup & Kolari, 2012). Liquidity is the ability of a bank to fund increases in assets and meet obligations as they come due, without incurring unacceptable losses (Principles for Sound Liquidity Risk Management and Supervision, 2008). Liquidity risk is the risk to a bank's earnings and capital arising from its inability to meet on timely basis obligations when they come due without incurring unacceptable losses.

Operational Risk

Basel Committee defines operational risk as the risk of direct or indirect loss resulting from inadequate or failed internal processes, people and systems or from external event. According to Basel II and III Agreement, the operational loss represents the loss resulted from an event of operational loss. This loss includes all the expenses related to this event, excepting opportunity costs, known income and the cost related to risk management and increased control operation, used to prevent future operational losses. Nicoleta & Cornelia, (2011) conceded that there are two types of determinant factors for the operational risk that generate losses or the achievement of the estimated loss: - internal factors, as example the inadequate development of some internal activities, staff unprepared, improper systems etc. external factors, as example the economic situation, changes in the banking system or technological achievements. These factors include: the necessity to develop in a short period of time a high volume of transactions, the necessity of using the electronic funds transfer and other telecommunication system in order to transfer the property of big amounts of money, the necessity of developing operations in different regions, the management of a high volume of monetary elements, the necessity of monitoring and solving the important exposures. These factors are very important and the companies have to be very carefully, by monitoring them, because in the last period of time it was recorded a higher level of the operational risk. Especially this is due to organizational, infrastructure and business area changes.

Independent Variables

Capital Adequacy Ratio

Capital adequacy ratio can be expressed as a percentage of a bank's risk weighted credit exposures. This ratio is used to protect depositors and promote the stability and efficiency of financial systems around the world. A lower CAR not only comprises the solvency of banks in the case of emergencies, but also constraints the capacity to float loans. Capital fund means the aggregate of core capital and supplementary capital. Bank capital increases the capacity to raise non-insured debt and thus banks‟ ability to limit the effect of a drop in deposits on

lending (Ashcraft, 2001). Since higher capital reduces bank risk and creates a buffer against losses (Admati et al., 2010). Thus, capital adequacy can enhance bank performance.

Non-Performing Loan

The non- performing loans (NPL) represent credits which the banks perceive as possible loss of funds due to loan defaults. It is either in default or close to being in default. They are further classified into Substandard, Doubtful and Loss. Bank credit in loss category hinders bank from achieving their set targets. Loans are the major outputs provide by the bank, but the loan is a risk-output. There is always an ex-ante risk for a loan to eventually become non-performing. Non-performing loans can be considered as an undesirable outputs or costs to the bank that does the loaning, which decreases the bank performance (Yang, 2003). Due to increasing spate of non-performing loans (NPL) and its attendant consequences, the Central Bank authorities entered into agreement in December 1987 known as Basel I, II & III accord, both accords emphasized on the importance of capital adequacy for mitigating credit risk. Gizaw, Kebede and Selvaraj (2015) assert that non-performing loan ratio (NPLR) is the major indicator of commercial banks' credit risk. They found that NPLR which measures the extent of credit default risk sustained by the banks showed a statistically significant large negative effect on profitability measured by ROA. Since it measures the default rate, a negative relationship could be expected between nonperforming loan ratio and financial performance of commercial banks.

Debt Equity Ratio

Debt equity ratio indicates what proportion of equity and debt the company is using to finance its assets. A high debt/equity ratio generally means that a company has been aggressive in financing its growth with debt. This can result in volatile earnings as a result of the additional interest expense. At the time of the examining the company, it is crucial to pay attention to the debt/equity ratio. If a lot of debt is used to finance increased operations (high debt to equity), the company could potentially generate more earnings than it would have without this outside financing. If this were to increase earnings by a greater amount than the debt cost (interest),

then the shareholders benefit as more earnings are being spread among the same amount of shareholders.

Assets Management

Asset management means finding ways to maximize a company's value by managing fixed and intangible assets to be more reliable, efficient, or cheaper. Asset Management ratios attempt to measure the firm's success in managing its assets to generate the targeted earnings. Assets management ratio is measure as assets utilization ratio. Assets management ratio can be calculated as the total operating income divided by total assets.

Size

The size of the banks is determined by the total assets associated on the banks. Total assets show the strength and its growth potential of the banks. Total assets refer to combination of the current assets and long term assets. Bank size is calculated to determine the size of the bank in terms of its assets that can be compared to analyze the strength and growth of the bank. Larger size bank called the bank having the larger portion of the loans and advances and have large investment portfolio. Larger banks can reduce the costs through the economies of scale. The bank having the larger in size can formulate plans and policies to mitigate the different types of risks associated with them. In this study total asset has been taken as the size of the banks.

2.3 Concluding Remarks

A review of the available literature on Risk Management Practices of Joint Venture Banks in Nepal indicates that most of the studies have used either time-series or cross-section data. These studies have attempted to identify the effect of risk on the commercial banks using panel data. Risk on banking industry has become important issue in the financial literature over the time. Many researcher and authors have developed the theoretical model describing the risks associated with the banking industry. The risk on the banking business is a deep study and it involves many more study. No single explanation is enough for this issue.

The studies on risk analysis on banking sector are quite scare in context of Nepal. Many study carry out regarding risk analysis in the developed and emerging economies but there some handfuls of studies made in context of Nepal. It is needed to study in the context of Nepal whether the firm size, non-performing loan, capital adequacy ratio, debt equity ratio, assets management affects the banking enterprises risks or not. Even though those studied showed that there is possibility to conduct a meaningful analysis of banking risk analysis, some issues are not dealt sufficiently. Most of the studies were all based on qualitative analysis; this study has attempted to deal with the major issues that have been untouched by the previous studies.

Even though there are some handfuls of studies made in context of Nepal, there are some additional questions which need to be answering in future studies. The dependent variable in the study is the credit risk, liquidity risk and operational risk. Seven years data has been used in this study and recommend using longer time period. It would be interesting to see whether the results from this study are applicable if a study is conducted over a longer period of time or during another time period.

The main purpose of this study is to fill the gap by determining which variables affect the risk and ultimately the profitability of the Joint Venture Banks of Nepal and impact in banks performance during 2017/18-2023/24 AD. The importance of this study may be viewed from its contribution to fill an important gap in literature and also findings of this study can add value to the existing body of the literature.

Chapter-III

Research Data and Methodology

Research methodology sets out overall plan associated with the study. It provides a basic framework on which the study is based. Before presenting the analysis and interpretation of data, it is necessary that research methodology be described first. In the absence of methodology, it is likely that the conclusions drawn may be misunderstood. A focus is given to research question, model, definition of variable, sample selection and size, sources of data and limitation. This chapter therefore explains the methodology employed in this study. This chapter has been divided into four sections. Section one provides a description of research design used in the study. Section two deals the nature and sources of data. Similarly, section three describes method of analysis including the regression models. Section four presents limitations of the study.

3.1 Research Design

This study has employed descriptive and causal comparative research designs to deal with the fundamental issues associated with risk management practices of joint venture banks of Nepal. The descriptive research design has been adopted for fact-finding and searching adequate information about the risks and its impact on the financial performance of the banks. Besides, an effort has also been made to describe the nature of 5 enterprises consisting of 35 observations during fiscal year 2017/18 through 2023/24 by using descriptive statistics with respect to firm dependent variables (CR, LR and OR) and independent variables (CAR, NPL, AM, DER and SIZE).

This study is also based on causal comparative research design. This design has been adopted to ascertain and understand the directions, magnitudes and forms of observed risk and its practices adopted by the joint venture banks of Nepal. A causal-comparative research design also seeks to find cause and effect relationships between independent and dependent variables after an action or event has already occurred.

3.2 Nature and Sources of Data

The study is carried out in the area of banking and financial institutions in Nepal. The main source of data is banking and financial statistics published by Nepal Rastra Bank, NRB directives, legal provisions incorporated in companies Act, 2063 and concerned by-laws regarding banking circular. The data are also obtained from the annual report and websites of joint venture banks used as a sample in this study. Sample of this study includes all 5 joint venture banks of Nepal listed in Nepal Stock Exchange (NEPSE) limited to the end of 2023/24.

This study is based on secondary sources of data. The secondary sources of data have been employed to understand the form of observed relation and to analyze predictive power of firm specific variables in explaining risks. Similarly, secondary data abstracted from Nepal Stock Exchange Limited and annual financial report of respective companies is used to derive the results. This study uses data of total joint venture banks of Nepal with 35 observations from 2017/18 to 2023/24. For the selection of sample, stratified sampling technique is used. This study has collected data from different banking organization and Nepal Stock Exchange. The data has been analyzed in descriptive, correlation and regression method. The relationship between dependent and independent variable are analyzed in ANOVA and correlation table. The statistical tool used for the study is SPSS. The collection of data and sources of data for study period is shown in Table 3.1.

Table 3.1: Sources of Data

S. N	Sources of Data	Period
1.	Nepal Stock Exchange (NEPSE)	2017/18-2023/24
2.	Securities Board of Nepal (SEBON)	2017/18-2023/24
3.	Annual Reports of Joint Venture Banks	2017/18-2023/24
4.	Nepal Rastra Bank official Website (A Central Bank of Nepal)	2017/18-2023/24

Table 3.1 shows the different sources of data used for the study. Similarly, number of observations and selected companies are shown in table 3.2.

Table 3.2: Selection of companies, period of study and number of observations

S.N	Name of Joint Venture Banks	Indicator	Study Period (A.D)	No. Of Observation
1.	Nabil Bank Limited	NABIL	2017/18-2023/24	7
2.	Standard Chartered Bank Nepal Limited	SCBL	2017/18-2023/24	7
3.	Himalayan Bank Limited	HBL	2017/18-2023/24	7
4.	Nepal SBI Bank Limited	NSBIL	2017/18-2023/24	7
5.	Everest Bank Limited	EBL	2017/18-2023/24	7
Total Observation				35

Thus, the study is based on 35 observations.

3.3 Population and Sample

Population of this study includes 5 joint venture banks in Nepal and sample of this study also includes all joint venture banks. The composition of population and sample is illustrated below in Table 3.3:

Table 3.3: Composition of sample and population

Institution Category	Sample(n)	Number of Observation
Joint Venture Banks	5	35
Total	**5**	**35**

Table 3.3 indicates that 5 joint venture banks has been selected for the study purpose.

3.4 Instrumentation

This study relies on secondary data and the secondary data for the study is collected from various sources such as NRB data base, published and unpublished article, books and journals. The data regarding the dependent and independent variables of the sample banks are collected and coded with unique code for each sample banks so that the data could be easily identified and assessed. Secondary data are analyzed using the SPSS package. Descriptive

statistics, correlation and regression tools are used in SPSS package in order to drive the meaningful relationship among the dependent and independent variables.

3.5 Data Collection Procedure and Time Frame

For this study, all joint venture banks have been analysed which are listed on Nepal stock exchange and all have been selected as sample. The sample size is a function of available data. The source of data collection is secondary data. Data are collected for the period of 2017/18-2023/24 A.D. The time frame for the data is current because to identify the recent risk management practices of the joint venture banks of Nepal.

In order to analyze the risk management practices in banking sector a range of data are needed. This study uses secondary data source. Thus, the data are mostly collected from the Nepal Rastra bank's database (A Central Bank of Nepal). This database contains the detailed information on the financial performance of all joint venture banks of Nepal compiled from various sources such as profit and loss accounts and balance sheets, the annual reports and economic bulletin of the country. The database also contains background information including ownership pattern, profits, year of incorporation, and so on for the companies. In addition to this, different published articles, reports, books, journal and graduate research project are analyzed.

3.6 Method of Analysis

The methods of data analysis used in the study are descriptive statistics, correlation analysis, and regression analysis. The main purpose of data analysis in this study is to explore the predictive power of risk management of 5 joint venture banks in the context of Nepal. Various statistical tools are used to confirm the risk management practices.

The quantitative research approach is employed to analyze the findings of the study. Since numerical and secondary data is used, quantitative approach is considered to be a suitable approach for the study. All statistical test results were computed at the 2-tailed level of significance. Statistical analysis involves both descriptive and inferential statistics.

First, this study reports extensive descriptive statistics to investigate the validity or support of the hypotheses outlined above. Later, it employs a series of regressions to further verify the support (or lack thereof) for hypotheses. To do so, it focuses on the correlations between the organizational structures variables with different measures of firm performance and risk while controlling for other relevant variables.

3.6.1 Models

This study has estimated several regression models to analyze the risk management practices of joint venture banks of Nepal. Here, credit risk, liquidity risk and operational risk is the independent variable and capital adequacy ratio, non -performing loan ratio, debt equity ratio, assets management ratio and size is the dependent variable. From these independent and dependent variables, the following relationship is formulated. It is represented as follows:

CREDIT RISK = f (SIZE, NPL, CAR, DER, AM)

LIQUIDITY RISK = f (SIZE, NPL, CAR, DER, AM)

OPERATIONAL RISK = f (SIZE, NPL, CAR, DER, AM)

The study examines the relationship of credit risk, liquidity risk and operating risk with the fundamental variables such as capital adequacy ratio, size of the bank, debt equity ratio, non-performing loan ratio, and assets management. The study has employed regression methodology using pooled data set. The data include 35 observations for analyses.

Model Specification

The econometric models employed in this study intend to analyze the relationship between cross-section of different risks and their specific variables that possess significant influence on risk analysis. Linear multiple regression model is used to explain the effect of firm specific explanatory variables used in this study. Model of this research, which is based on the dependent, independent variables are obtained by the following equation.

Model I

In model I, dependent variable is the credit risk in year *t* with sample banks *i,* and the explanatory variables include capital adequacy ratio, size of bank, debt equity ratio, non-performing loan ratio, assets management. The credit risk equation to be specified as under:

$$CR_{i,t}=\beta_0+\beta_1 CAR_{i,t}+\beta_2 S_{i,t}+\beta_3 NPL_{i,t}+\beta_4 DER_{i,t}+\beta_5 AM_{i,t}+\varepsilon_{i,t} \quad \text{.....(i)}$$

Model II

In model II, the dependent variable has been taken as annual liquidity risk in year *t* with sample banks *i,* and the explanatory variable capital adequacy ratio, size of bank, debt equity ratio, non-performing loan ratio, assets management. Thus, the liquidity risk equation to be estimated as specified as under:

$$LR_{i,t}=\beta_0+\beta_1 CAR_{i,t}+\beta_2 S_{i,t}+\beta_3 NPL_{i,t}+\beta_4 DER_{i,t}+\beta_5 AM_{i,t}+\varepsilon_{i,t} \quad \text{.....(ii)}$$

Model III

In model III, the dependent variable has been taken as operational risk in year *t* with sample banks *i,* and the explanatory variable capital adequacy ratio, size of bank, debt equity ratio, non-performing loan ratio, assets management. Thus, the operational risk equation to be estimated as specified as under:

$$OR_{i,t}=\beta_0+\beta_1 CAR_{i,t}+\beta_2 S_{i,t}+\beta_3 NPL_{i,t}+\beta_4 DER_{i,t}+\beta_5 AM_{i,t}+\varepsilon_{i,t} \quad \text{.....(iii)}$$

Where,

i = 1, 2, 3, …….5

t =1, 2, 3, …….7

β_0 = Constant term

Where,

CR_{it} refers to the credit risk, LR_{it} denotes liquidity risk, OR_{it} represents the operational risk, S_{it} is the total assets (natural logarithm of total assets), CAR_{it} is the capital adequacy, *DER*it is the long term debt to equity ratio, NPL_{it} refers to the non-performing loan ratio, AM_{it} is the assets management, and εit is the unexplained residual error term. In addition, β_0 denotes intercept

term and β_1, β_2, β_3, β_4, β_5, are the respective parameters (beta coefficients or regression coefficients) of the explanatory variables to be estimated.

Table 3.4: Variables, definition and measurement

Variables	Symbol	Description
Dependent variables		
Credit Risk	CR	Percentage ratio of total debt to total equity
Liquidity Risk	LR	Percentage ratio paid up capital to total assets
Operational Risk	OR	Return on total assets
Independent variables		
Capital Adequacy Ratio	CAR	Percentage of total capital fund to risk weighted assets
Non-Performing Loan	NPL	Percentage ratio of non-performing loan to total loan
Debt Equity Ratio	DER	Percentage ratio total debt to equity
Assets Management	AM	Operating income to total assets
Size	S	Natural logarithm of total assets

3.6.2. Descriptive Statistics

The descriptive statistics has been used for fact-finding and searching adequate information about factors affecting the different risks. The study has used the summary of descriptive statistics associated with risk analysis and its specific variables during the sample period. For the secondary data analysis descriptive statistics (mean, standard deviation, and minimum-maximum) and correlation analysis is used to find out the relation between the variables for the sample firms during the period 2017/18 AD through 2023/2024 AD.

3.6.3 Correlation Analysis

Correlation analysis has been basically adopted to identify the direction and magnitude of relationship between different pairs of variables namely risks and its specific variables which effect on the banking enterprises. This relationship has been explained by using Pearson correlation coefficient.

3.6.4 Test of Significance

There are various assumptions of classical linear regression model. Some of the important assumptions are regarding the significance of the regression coefficients and overall significance. This study has employed t-statistic to perform significance test of regression coefficients. In the language of significance test, a regression coefficient is said to be statistically significant if the critical P-value of test statistic is less than the level of significance specified. In other words, the statistical significance of the coefficient validates the explanatory power of associated independent variables. The levels of significance specified in this study are at 1 and 5 percent.

Besides, the statistical test of significance of individual regression coefficient, it is necessary to test the joint hypothesis that all regression coefficients are simultaneously significant. This is called the test of overall significance of the model. This can be done by using adjusted coefficient of determination (*Adj. R2*) and F-statistics. The adjusted coefficient of determination has been used to identify the percentage of total variation in dependent variable that has been explained jointly by all explanatory variables. The statistical significance of this joint explanatory power has been conducted by using F-statistics. The p-value of F-test has

been examined to confirm whether the regression models are significant at 1 and 5 percent level.

3.7 Analysis Plan

This section discusses how the analyses have been carried out in chapter four. It is necessary to follow the certain steps and procedures in analyzing data in order to understand the result and generalize the findings. The analysis of data intends to study the relationship and cause and effect between the variables. The analysis plan is divided into various sub sections first of which deals with the descriptive statistics of the sample observations including the mean, standard deviation, minimum and maximum values of the observations. Correlation analysis has been carried out in the second section followed by regression analysis. Test of significance also been tested to make the result more valid. All the observed relationship and findings have been interpreted to derive the meaningful conclusions regarding the risk management practices of joint venture banks of Nepal.

3.8 Limitations of The Study

The major limitations of this study are as follows:

- Though this study aims at testing the risk management of joint venture banks of Nepal, all types of dimension and determinants have not been tested. Even though the study is based on the factors that determine the risks of banks, but still some other factors are not considered.
- It may also be noted that only secondary data are considered for the study purpose. Data collection conducting primary survey is not taken into consideration. Hence, the result of the study is not broad and flexible. It is limited to the data available in the annual reports of the sample banks.
- This study has assumed linear relationship between the dependent variables (LR, CR and OR) and independent variables (CAR, DER, NPL, SIZE and AM). The scope of this study is limited; all assumptions may not be satisfied. Moreover, the auto correlated and variance errors are not considered in this study.

- In addition, this study includes data of joint venture banks only. Study of other financial institutions like other commercial banks, finance companies, development banks, microfinance and cooperative banks are not taken into consideration.
- This study includes the observation period of 7 years from 2017/18 to 2023/24 for 5 joint venture banks which make total observation of 35, but due to unavailability of data for certain bank in certain year, the number of observations have been decreased.
- For quantitative analysis, SPSS 16.0 software programs have been used. Hence the limitations of these programs are also inherent.

Chapter IV

Contents and Result

This chapter deals with the systematic presentation, interpretations and analysis of the data. In addition, the discussion of the results obtained has been made based on the statistical tools described in previous chapter. Data analysis is the process of developing answer to the questions through the examination and interpretation of data. The basic steps in the analytical process consist of identifying issues, determining the availability of suitable data, deciding the method appropriate for answering the questions of interest, applying the methods and evaluating, summarizing and communicating the result. This chapter provides the systematic presentation and analysis of secondary data to deal with various issues associated with risk and its associated variables of joint venture banks of Nepal.

There are different risks which influence the joint venture banks of Nepal. It fluctuates on the managerial decisions that influence the financial performance of banks. The presentation and analysis of data have been carried out in three sections. The first section of this chapter presents the descriptive part of analysis while the second section of the chapter presents analysis of correlation of the variables selected in the models. The last section of this chapter presents the analysis of the model estimated.

4.1 Structure and pattern of selected variables in joint venture banks of Nepal.

This section fulfills the first objective of this study by analyzing the risk management practices structure namely CR, LR and OR and its variables NPL, CAR, SIZE, DER and AM from 2017/18 AD to 2023/24 AD for the period of 7 years. The structure has been shown year wise along with average value and standard deviation. The results of structure for sample banks are fluctuating.

4.1.1 Structure and pattern of credit risk measured by total debt to total equity of joint venture banks of Nepal.

The computed values of the total debt to total equity measured as credit risk for the joint venture banks are presented in the table 4.1

Table 4.1: Structure and pattern of total debt to total equity ratio from year 2017/18 AD to 2023/24 AD (in times)

The table shows the pattern of debt equity ratio of joint venture banks of Nepal from 2017/18 AD to 2023/24 AD. The mean value measures the average debt equity ratio of individual sample banks for particular year and standard deviation measures the variability in debt equity ratio.

Banks	Year								
	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	Mean	SD
EBL	7.98	9.65	8.95	10.23	8.88	8.89	8.44	9.00	0.74
HBL	8.69	7.67	6.89	6.76	9.78	8.44	8.66	8.13	1.08
NABIL	7.46	7.59	8.18	7.56	6.92	8.5	8.35	7.79	0.57
NSBIL	8.87	7.35	6.75	8.58	9.29	9.88	9.65	8.62	1.17
SCBL	5.03	5.31	5.04	5.28	6.8	6.52	6.07	5.72	0.73
Mean	7.61	7.51	7.16	7.68	8.33	8.45	8.23		
SD	**1.55**	**1.54**	**1.50**	**1.87**	**1.38**	**1.22**	**1.32**		

The structure and pattern of total debts to total equity ratio of joint venture banks revealed that total debt to total equity ratio. DER is highest for EBL (10.23) in 2020/21 and (9.65) in 2018/19 followed by NSBIL (9.88) in 2022/23, (9.65) in 2023/24 and (9.29) in 2021/22. Similarly, HBL has (9.78) in 2021/22.

The debt equity ratio of EBL is 7.98, 9.65, 8.98, 10.23, 8.88, 8.89 and 8.44 in 2017/18, 2018/19, 2019/20, 2020/21, 2021/22, 2022/23 and 2023/24 respectively. Debt equity ratio of HBL is 8.69, 7.67, 6.89, 6.76, 9.78, 8.44 and 8.66 in 2017/18, 2018/19, 2019/20, 2020/21, 2021/22, 2022/23 and 2023/24 respectively. Debt equity ratio of NABIL is 7.46, 7.59, 8.18, 7.56, 6.92, 8.50 and 8.35 in 2017/18, 2018/19, 2019/20, 2020/21, 2021/22, 2022/23 and 2023/24 respectively. Debt equity ratio of NSBIL is 8.87, 7.35, 6.75, 8.58, 9.29, 9.88 and 9.65 in 2017/18, 2018/19, 2019/20, 2020/21, 2021/22, 2022/23 and 2023/24 respectively and debt equity ratio of SCBL is 5.03, 5.31, 5.04, 5.28, 6.80, 6.52 and 6.07 in 2017/18, 2018/19, 2019/20, 2020/21, 2021/22, 2022/23 and 2023/24 respectively.

Table 4.1 indicates that total debt to total equity ratio varies widely within the individual banks also. It varies from 7.98 to 10.23 for EBL, 6.76 to 9.78 for HBL, 6.92 to 8.35 for NABIL, 6.75 to 9.88 for NSBIL and 5.03 to 6.80 for SCBL.

The variation in total debt to total equity is denoted by standard deviation is lowest for NABIL, followed by SCBL, EBL, HBL and NSBIL.

Moreover, the table shows that the average mean score of debt to equity ratio of 5 joint venture banks is 7.85 from the period 2017/18 to 2023/24. EBL, NSBIL and HBL have the average mean of debt equity ratio greater than the overall industry average mean. Whereas SCB and NABIL have the average mean of debt equity ratio lower than the overall industry average mean.

Figure 4.1 shows the pattern of debt equity ratio of all joint venture banks from year 2017/18 to 2023/24.

Figure 4.1: Pattern of credit risk measured by total debt divided by total equity *(In this figure in Y-axis, debt to equity ratio is in times and in X-axis from 2017/18 to 2023/24 is presented. This figure has been drawn on the basis of the mean value of debt to total equity ratio.*

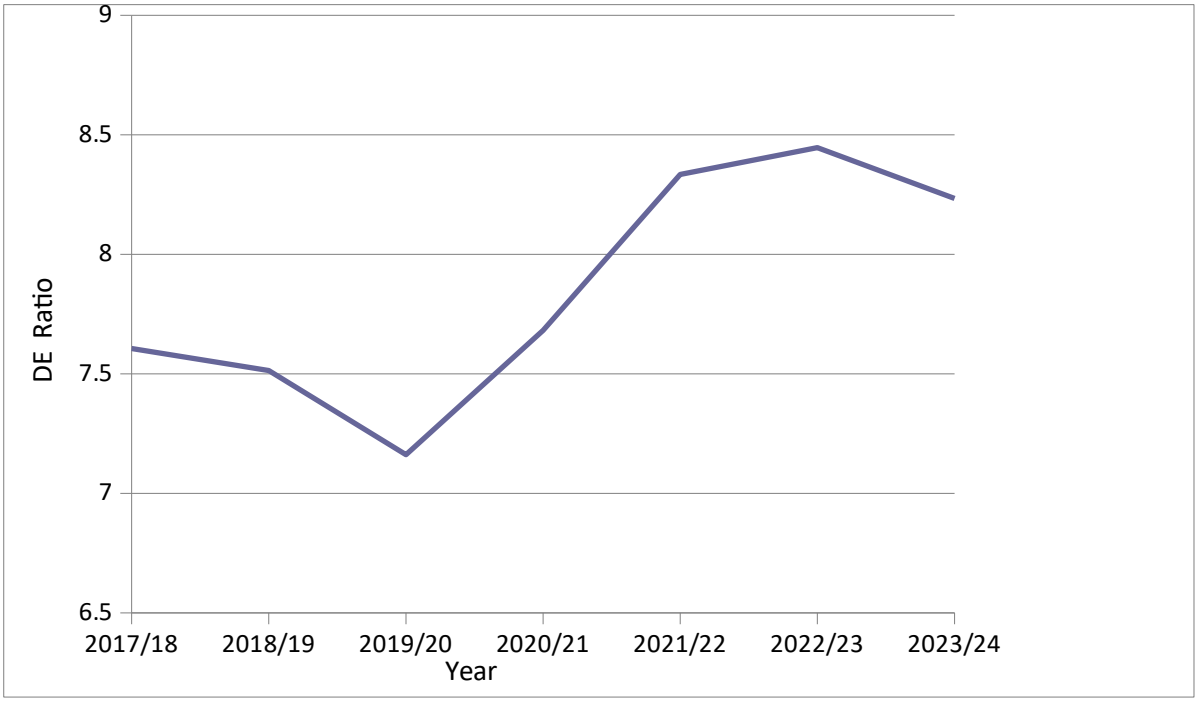


Figure reveals that credit risk experienced many fluctuations during the study period. Debt to total equity curve is in increasing trends until 2022/23. Afterwards, the debt to total equity of joint venture banking industry has been observed in slightly decreasing trend. Moreover, average DER has been increased from 7.61 in 2017/18 to 8.23 in 2023/24.

4.1.2 Structure and pattern of liquidity risk measured by paid up capital to total assets

Capital-to-asset ratio helps determine whether a company has enough capital. A financial regulatory body can use the capital-to-asset ratio to set a minimum level of capital that banks must have. Business managers can use the capital-to-asset ratio to adjust the company's capital and asset levels to reach healthy levels. Investors may use it to decide whether to put money in the company. Capital to total assets ratio is measured as liquidity risk. The computed values

of the paid up capital to total assets measured as liquidity risk for the joint venture banks of Nepal are presented in the Table 4.2

Table 4.2: Structure and pattern of liquidity risk measured by paid up capital to total assets (in percentage)

The table shows the pattern of paid up capital to total assets of joint venture banks of Nepal from 2017/18 to 2023/24. The mean value measures the average paid up capital to total assets of individual sample banks for particular year and standard deviation measures the variability in Capital to total assets. Paid up capital refers to initial capital of the banks.

Banks	Year								
	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	Mean	SD
EBL	8.94	7.38	6.99	5.91	5.05	4.65	4.54	6.21	1.64
HBL	8.54	8.29	5.34	4.28	3.66	2.81	2.63	5.08	2.45
NABIL	4.17	4.44	4.25	6.35	6.44	5.62	4.86	5.16	0.98
NSBIL	7.92	7.47	6.77	5.45	4.51	5.07	4.27	5.92	1.46
SCBL	12.01	8.59	7.86	6.49	5.37	5.20	4.47	7.14	2.61
Mean	8.32	7.23	6.24	5.70	5.01	4.67	4.16		
SD	2.80	1.65	1.44	0.89	1.03	1.10	0.88		

The structure and pattern of liquidity risk for joint venture banks revealed that liquidity risk is highest for SCBL (12.01 percent in 2017/18), followed by EBL (8.94 percent in 2017/18), SCBL (8.59 percent in 201/19) and HBL (8.54 percent in 2017/18 and lowest average liquidity risk was for HBL (2.63 percent in 2023/24).

Table 4.2 indicates that preference capital to total assets varies widely within the individual banks also. It varies from 4.54 percent to 8.94 percent for EBL, 2.63 percent to 8.54 percent

for HBL, 4.17 percent to 6.44 percent for NABIL, 4.27 percent to 7.92 percent for NSBIL and 4.47 percent to 12.01 percent for SCBL.

The variation in liquidity risk is denoted by standard deviation and is lowest for NABIL, followed by NSBIL, EBL, HBL and SCBL.

Liquidity risk of EBL is recorded for 8.98 percent, 7.38 percent, 6.99 percent, 5.91 percent, 5.05 percent, 4.65 percent and 4.54 percent in 2017/18, 2018/19, 2019/20, 2020/21, 2021/22, 2022/23 and 2023/24 respectively. Liquidity risk of HBL is recorded for 8.54 percent, 8.29 percent, 5.34 percent, 4.28 percent, 3.66 percent, 2.81 percent and 2.63 percent in 2017/18, 2018/19, 2019/20, 2020/21, 2021/22, 2022/23 and 2023/24 respectively. Liquidity risk of NABIL is recorded for 4.17 percent, 4.44 percent, 4.25 percent, 6.35 percent, 6.44 percent, 5.62 percent and 4.86 percent in 2017/18, 2018/19, 2019/20, 2020/21, 2021/22, 2022/23 and 2023/24 respectively. Liquidity risk of NSBIL is recorded for 7.92 percent, 7.47 percent, 6.77 percent, 5.45 percent, 4.51 percent, 5.07 percent and 4.27 percent in 2017/18, 2018/19, 2019/20, 2020/21, 2021/22, 2022/23 and 2023/24 respectively. Liquidity risk of SCBL is recorded for 12.01 percent, 8.59 percent, 7.86 percent, 6.49 percent, 5.37 percent, 5.20 percent and 4.47 percent in 2017/18, 2018/19, 2019/20, 2020/21, 2021/22, 2022/23 and 2023/24 respectively.

Moreover, the table shows that the average mean score of liquidity risk of 5 joint venture banks is 5.9 percent from the period 2017/18 to 2023/24. SCBL, EBL have the average mean of liquidity risk greater than the overall industry average mean. Whereas HBL and NABIL have the average mean of liquidity risk lower than the overall industry average mean.

Figure 4.2: Pattern of liquidity risk measured by paid up capital divided by total assets

(In this figure in Y-axis, liquidity ratio is in percentage and in X-axis from 2017/18 to 2023/24 is presented. This figure has been drawn on the basis of the mean value of liquidity ratio.)

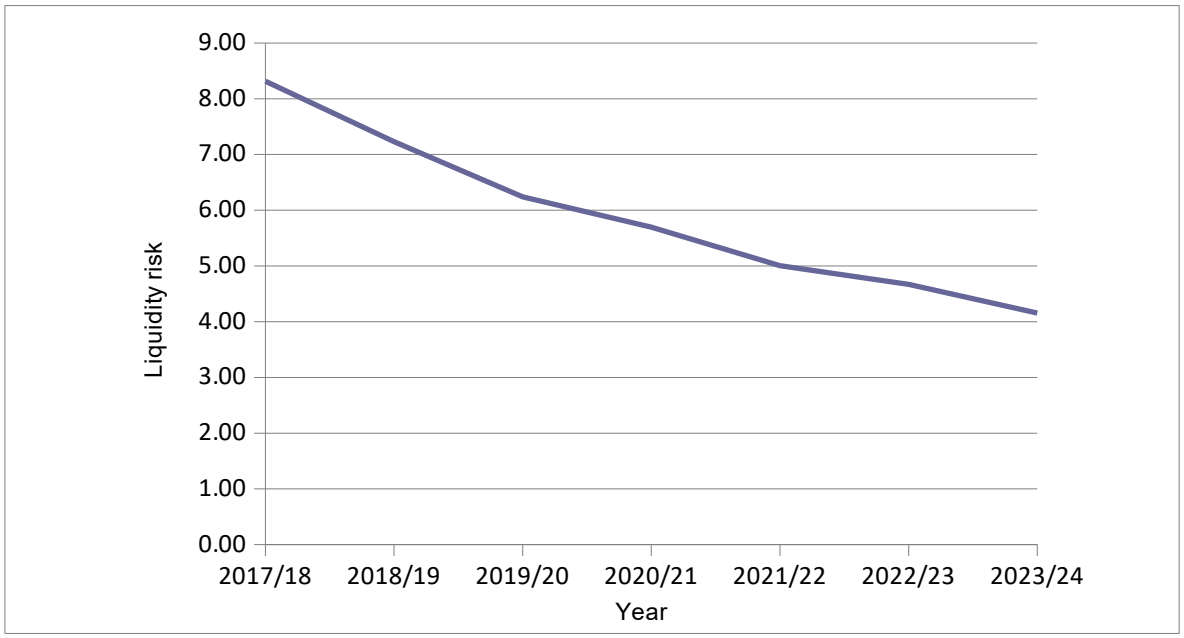


Figure reveals that liquidity risk experienced many fluctuations during the study period. The liquidity risk curve shows the trend of liquidity risk of the joint venture banks of Nepal. From the year 2017/18 to 2023/24 the liquidity risk of the commercial banks is decreasing. It is decreased from 8.32 percent in 2017/18 to 4.16 percent in 2023/24. The liquidity risk is moving around a mean of 5.9 percent.

4.1.3 Structure and pattern of operational risk measured by return on total assets

The return on assets (ROA) shows how profitable the company in terms of its assets. ROA gives an idea as to how efficient management is at using its assets to generate earnings. In the joint venture banks, return on assets is used as the profitability indicator of the management efficiency in using company's assets to generate earnings. ROA is examined to measure the profitability of all the financial resources of in bank assets and the relationship with risk in joint venture banks of Nepal. The higher the ROA means the banks were able to maximize the efficiency and gain the earning through the assets and lower the ROA indicated the low earnings of the banks because they are unable to achieve the targeted earning due to low or in appropriate utilization of the bank's assets. Thus, higher the ratio better is the performance of the banks and vice versa. The computed values of the return on assets as operational risk for the selected commercial banks are presented in the Table 4.3

Table 4.3: Structure and pattern of operational risk from year 2017/18 to 2023/24 (in percentage)

The table shows the pattern of operational risk of joint venture banks from 2017/18 to 2023/24. The mean value measures the average operational risk of individual sample banks for particular year and standard deviation measures the variability in operational risk. Operational risk is measured as the return on assets.

Banks	Year								
	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	Mean	SD
EBL	1.73	1.79	1.35	0.86	1.97	1.42	1.49	1.52	0.36
HBL	1.61	2.07	1.65	1.67	1.09	0.42	0.36	1.27	0.66
NABIL	2.61	3.05	1.68	1.56	1.02	1.33	1.68	1.85	0.72
NSBIL	1.70	1.94	1.20	1.67	2.00	1.33	1.02	1.55	0.37
SCBL	2.56	2.61	1.70	1.89	1.12	2.52	2.04	2.06	0.55

Mean	2.04	2.29	1.52	1.53	1.44	1.40	1.32	
SD	0.50	0.52	0.23	0.39	0.50	0.75	0.65	

The structure and pattern of return on assets of joint venture banks revealed that return on assets is highest for NABIL (3.05 percent in 2018/19 and 2.61 percent in 2017/18) followed by SCBL (2.61 percent in 2018/19 & 2.56 percent in 2017/18), HBL (2.07 percent 20181/19), NSBIL (2.00 percent in 2021/22) and the lowest rate of return is for HBL (0.36 percent 2023/24)

Table 4.3 indicates that return on assets varies widely within the individual banks also. It varies from 0.86 percent to 1.97 percent for EBL, 0.36 percent to 2.07 percent for HBL, 1.02 percent to 3.05 percent for NABIL, 1.02 percent to 2.00 percent for NSBIL, 1.12 percent to 2.61 percent for SCBL.

The variation in operational risk is denoted by standard deviation and is lowest for EBL, followed by NSBIL, SCBL, HBL and NABIL.

ROA of EBL is 1.73 percent, 1.79 percent, 1.35 percent, 0.86 percent, 1.97 percent, 1.42 percent and 1.49 percent in 2017/18, 2018/19, 2019/20, 2020/21, 2021/22, 2022/23 and 2023/24 respectively. ROA of HBL is 1.61 percent, 2.07 percent, 1.65 percent, 1.67 percent, 1.09 percent, 0.42 percent and 0.36 percent in 2017/18, 2018/19, 2019/20, 2020/21, 2021/22, 2022/23 and 2023/24 respectively. ROA of NABIL is 2.61 percent, 3.05 percent, 1.68 percent, 1.56 percent, 1.02 percent, 1.33 percent and 1.68 percent in 2017/18, 2018/19, 2019/20, 2020/21, 2021/22, 2022/23 and 2023/24 respectively. ROA of NSBIL is 1.70 percent, 1.94 percent, 1.20 percent, 1.67 percent, 2.00 percent, 1.33 percent and 1.02 percent in 2017/18, 2018/19, 2019/20, 2020/21, 2021/22, 2022/23 and 2023/24 respectively and ROA of SCBL is 2.56 percent, 2.61 percent, 1.70 percent, 1.89 percent, 1.12 percent, 2.52 percent and 2.04 percent in 2017/18, 2018/19, 2019/20, 2020/21, 2021/22, 2022/23 and 2023/24 respectively

Operational risk is highest for HBL in year 2023/24 and 2022/23. Operational risk is highest for EBL in the year 2020/21 and operatioanl risk is highest for NABIL in 2021/22 for NSBIL operational risk is higher in 2023/24 and for SCBL operational risk is higher in 2021/22.

Moreover, the table shows that the average mean score of operational risk of 5 joint venture banks is 1.65 percent from the period 2017/18 to 2023/24. HBL and EBL have the average mean of operational risk greater than the overall industry average mean. Whereas SCBL and NABIL have the average mean of operational risk lower than the overall industry average mean.

Fig 4.3: Pattern of operational risk measured by total return on total assets from 2017/18 to 2023/24

(In this figure in Y-axis, return on total assets is in percentage and in X-axis from 2017/18 to 2023/24 is presented. This figure has been drawn on the basis of the mean value of return on total assets.)

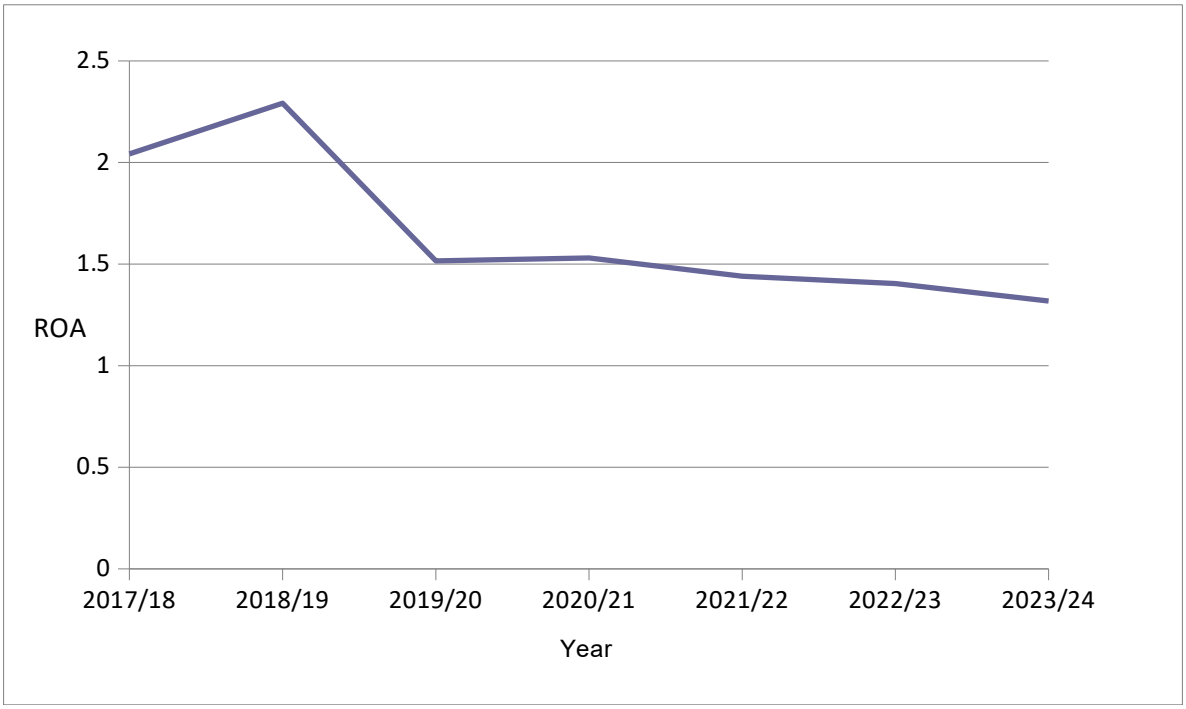


Figure 4.3 shows two trends in the operational risk. From the year 2017/18 to 2018/2019, ROA is in increasing trend and from the year 2019/20 ROA is in decreasing trend. From

the year 2019/20 the operational risk is in decreasing trend and the maximum reached to 1.32 percent on average. The above figure shows the operational risk is very fluctuating in the joint venture banks of Nepal.

4.1.4 Structure and Pattern of Non Performing Loans Ratio

Non-performing loans ratio is the ratio of non-performing loans to total loans. It is also a measure of the quality of bank's outstanding loans. A smaller NPL ratio indicates smaller losses for the bank and low risk, while a larger NPL ratio indicate the larger losses and high credit risk for the bank. The computed values of the non performing loan ratio for joint venture banks are presented in the Table 4.4

Table 4.4 Structure and pattern of non- performing loan ratio from year 2017/18 to 2023/24 (in percentage)

The table shows the pattern of non -performing loan ratio of joint venture banks of Nepal from 2017/18 to 2023/24. The mean value measures the average non performing loan ratio of individual sample banks for particular year and standard deviation measures the variability in non- performing loan ratio.

Banks	Year								
	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	Mean	SD
EBL	0.84	0.91	0.7	0.92	0.24	0.79	1.41	0.83	0.35
HBL	4.96	1.19	1.01	0.48	0.77	2.31	4.91	2.23	1.93
NABIL	2.47	0.74	0.98	0.95	1.54	3.2	4.27	2.02	1.34
NSBIL	0.13	0.2	0.23	0.25	0.14	2.43	3.35	0.96	1.34
SCBL	0.18	0.44	0.44	1.47	0.59	1.18	2.14	0.92	0.70
Mean	1.72	0.70	0.67	0.81	0.66	1.98	3.22		
SD	2.05	0.39	0.34	0.47	0.56	0.98	1.45		

The structure and pattern of non-performing loan ratio of joint venture banks of Nepal revealed that average non –performing loan ratio is highest for HBL (2.23 percent) followed by NABIL (2.02 percent), NSBIL (0.96 percent), SCBL (0.92 percent) and EBL (0.83 percent).

Table 4.4 indicates that non performing loan varies widely within the individual banks also. It varies from 1.41 percent to 0.70 percent for EBL, 4.96 percent to 0.48 percent for HBL, 4.27 percent to 0.74 percent for NABIL, 3.35 percent to 0.13 percent for NSBIL and 2.14 percent to 0.18 percent for SCBL.

The variation in non-performing loan ratio is denoted by standard deviation and the lowest is for EBL, followed by SCBL, NABIL, NSBIL and HBL.

Non-performing loan ratio of EBL is 0.84 percent, 0.91 percent, 0.70 percent, 0.92 percent, 0.24 percent, 0.79 percent and 1.41 percent in 2017/18, 2018/19, 2019/20, 2020/21, 2021/22, 2022/23 and 2023/24 respectively. Non-performing loan ratio of HBL is 4.96 percent, 1.19 percent, 1.01 percent, 0.48 percent, 0.77 percent, 2.31 percent and 4.91 percent in 2017/18, 2018/19, 2019/20, 2020/21, 2021/22, 2022/23 and 2023/24 respectively. Non-performing loan ratio of NABIL is 2.47 percent, 0.74 percent, 0.98 percent, 0.95 percent, 1.54 percent, 3.20 percent and 4.27 percent in 2017/18, 2018/19, 2019/20, 2020/21, 2021/22, 2022/23 and 2023/24 respectively. Non-performing loan ratio of NSBIL is 0.13 percent, 0.20 percent, 0.23 percent, 0.25 percent, 0.14 percent, 2.43 percent and 3.35 percent in 2017/18, 2018/19, 2019/20, 2020/21, 2021/22, 2022/23 and 2023/24 respectively and Non-performing loan ratio of SCBL is 0.18 percent, 0.44 percent, 0.44 percent, 1.47 percent, 0.59 percent, 1.18 percent and 2.14 percent in 2017/18, 2018/19, 2019/20, 2020/21, 2021/22, 2022/23 and 2023/24 respectively.

NPL ratio is highest for HBL in year 2023/24 but it is highest for HBL in 2017/18 similarly, the lowest non-performing loan ratio is for NSBILin year 2017/18. Moreover, the table shows that the average mean score of NPL ratio of 5 joint venture banks is 1.39 percent from the period 2017/18 to 2023/24.

Fig 4.4: Pattern of non-performing loans from 2017/18 to 2023/24

In this figure in Y-axis, non performing loan ratio in percent and in X-axis from 2017/18 to 2023/24 is presented. This figure has been drawn on the basis of the mean value of nonperforming loan ratio.

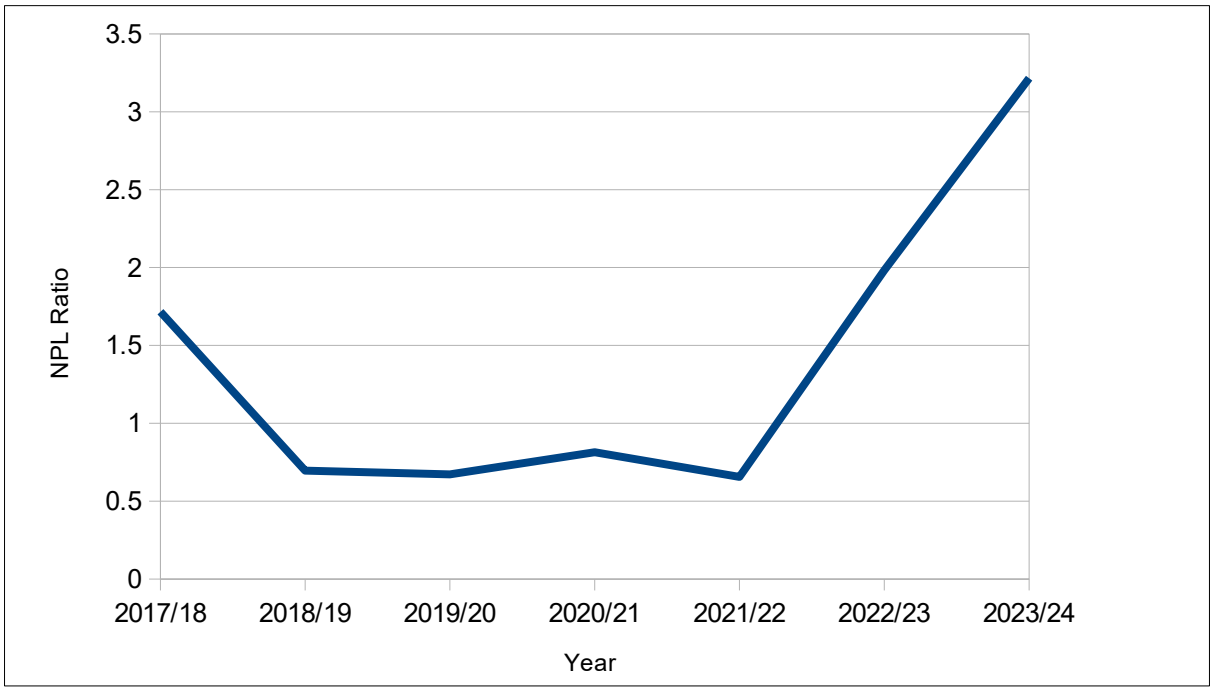


Figure 4.4 shows there is decreasing trend of non-performing loan ratio of the joint venture banks up to 2018/19. Since 2018/19 the NPL is of high and then after the NPL goes extremely higher and it comes near 3.22 in 2023/24. So it can be clear that banks have not sufficiently work-hard to reduced the NPL compare to the previous period. Hence, it causes increment of Banks operational risks.

4.1.5 Structure and pattern of capital adequacy ratio

Capital adequacy ratio is the ratio of capital to its risk. It is a measure of a bank's capital. It is expressed as a percentage of a bank's risk weighted credit exposures. This ratio is used to protect depositors and promote the stability and efficiency of financial systems around the world. It is the regulatory requirement that establishes a minimum level of capital which banks are required to maintain to cover the level of risks taken by them on a proprietary basis. The structure of capital adequacy ratio from 2017/18 to 2023/24 is shown in table 4.5

Table 4.5 Structure and pattern of capital adequacy ratio from year 2017/18 to 2023/24 (in percentage)

The table shows the pattern of capital adequacy ratio of joint venture banks of Nepal from 2017/18 to 2023/24. The mean value measures the average capital adequacy ratio of individual sample banks for particular year and standard deviation measures the variability in capital adequacy ratio.

Banks	Year								
	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	Mean	SD
EBL	14	13.25	13	13.25	11	13.36	13.28	13.02	0.94
HBL	12.46	12.6	14.89	13.1	13.42	13.23	11.64	13.05	1.01
NABIL	11.27	11.9	14.92	14.92	13.09	12.66	12.68	13.06	1.40
NSBIL	12.74	14.52	14	11.93	11.93	12.47	12.78	12.91	1.00
SCBL	22	19.69	16.76	17.17	15.95	17.09	17.44	18.01	2.10
Mean	14.49	14.39	14.71	14.07	13.08	13.76	13.56		
SD	4.31	3.11	1.39	2.03	1.87	1.90	2.25		

The structure and pattern of capital adequacy ratio of joint venture banks of Nepal revealed that average capital adequacy ratio is highest for SCBL (18.01 percent) followed by NABIL (13.06 percent), HBL (13.05 percent), EBL (13.02 percent) and NSBIL (12.91 percent).

Table 4.5 indicates that capital adequacy ratio varies widely within the individual banks also. It varies from 14.00 percent to 11.00 percent for EBL, 14.89 percent to 11.64 percent for HBL, 14.92 percent to 11.27 percent for NABIL, 14.52 percent to 11.93 percent for NSBIL, 22.00 percent to 15.95 percent for SCBL,

The variation in capital adequacy ratio is denoted by standard deviation is lowest for EBL, followed by NSBIL, HBL, NABIL and SCBL.

Capital adequacy ratio is highest for SCBL in year 2018/19 and 2017/18. For EBL in 2017/18. Capital adequacy ratio is highest for SCBL throughout the year. On the other hand, capital adequacy ratio is lowest for NSBIL in 2020/21 and 2021/22 but capital adequacy ratio is lowest for EBL in 2021/22. Moreover, the table shows that the average mean score of capital adequacy ratio of 5 joint venture banks is 14.01 percent from the period 2017/18 to 2023/24.

Fig 4.5: Pattern of capital adequacy ratio from 2017/18 to 2023/24

In this figure in Y-axis, capital adequacy ratio in percent and in X-axis from 2017/18 to 2024/25 is presented. This figure has been drawn on the basis of the mean value of capital adequacy ratio.

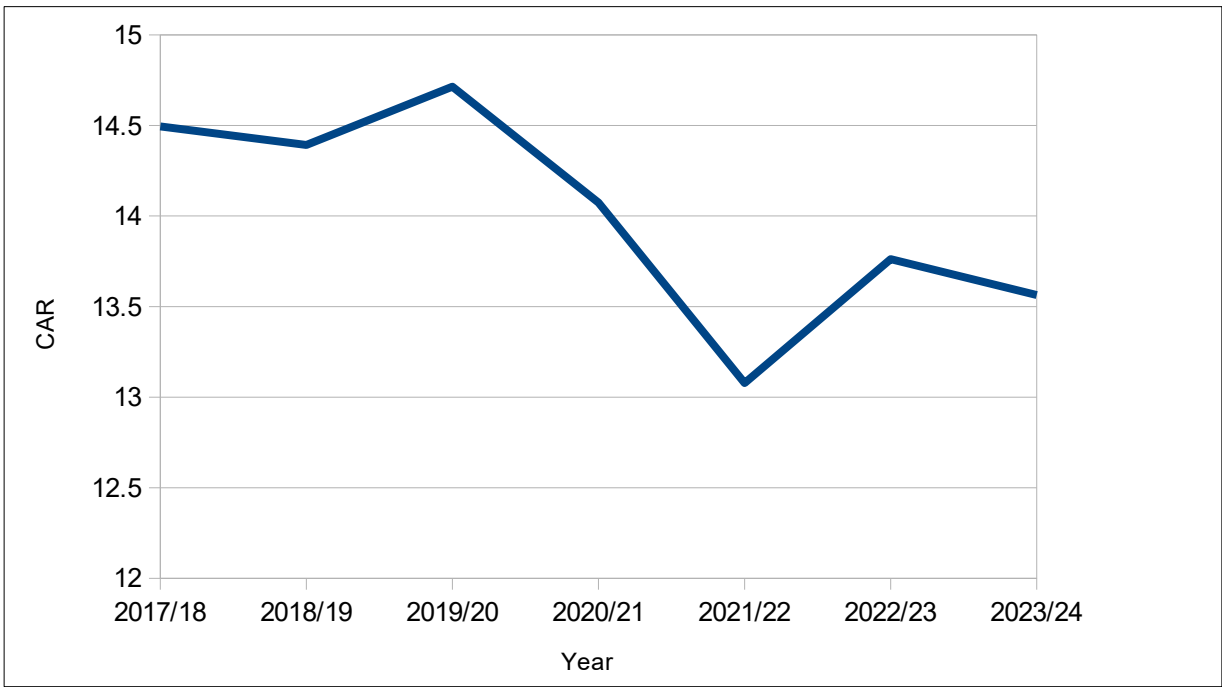


Figure 4.5 shows that capital adequacy ratio is downward sloping from the year 2017/18 to 2018/19 but then after the capital adequacy ratio goes on increasing trend till 2019/20. The capital adequacy ratio decreased from 2019/20 to 2021/22. From year 2021/22 it was increased and again decreased from 2022/23 and minimum capital adequacy ratio reached to 13.56 percent in 2023/24. As per NRB, the minimum CAR is 11 percent for all commercial

Banks for Nepal and viewing above it revealed that all Banks have maintained regularity requirements.

4.1.6 Structure and pattern of total assets as a proxy for the size of the banks

The size of the banks is determined by the total assets associated on the banks. Total assets show the strength and its growth potential of the banks. Total assets refer to combination of the current assets and long term assets. Bank size is calculated to determine the size of the bank in terms of its assets that can be compared to analyze the strength and growth of the bank. Larger size bank called the bank having the larger portion of the loans and advances and have large investment portfolio. Larger banks can reduce the costs through the economies of scale. The bank having the larger in size can formulate plans and policies to mitigate the different types of risks associated with them. The structure of total assets is shown in Table 4.6.

Table 4.6: Structure and pattern of total assets as a proxy for the size of the banks from year 2017/18 to 2023/24 (In Billion)

The table shows the pattern of total assets of joint venture banks from 2017/18 to 2023/24. The mean value measures the average total assets of individual sample banks for particular year and standard deviation measures the variability in total assets.

Banks	Year								
	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	Mean	SD
EBL	144.81	175.45	185.02	219	256.3	278	285	220.51	54.42
HBL	99.74	113.09	175.45	219.04	256.3	334	355.73	221.91	100.49
NABIL	192.8	227.5	237.68	291.07	420	481.2	557.02	343.90	141.73
NSBIL	119.81	119.97	132.4	164.53	198.59	199.6	254.85	169.96	50.59
SCBL	66.68	93.26	101.94	123.36	149.27	193	224.45	135.99	56.57

Mean	124.77	145.85	166.50	203.40	256.09	297.16	335.41	
SD	47.58	54.89	52.01	63.43	101.96	118.28	133.10	

The structure and pattern of TA for joint venture banks revealed that the average TA is highest for NABIL (343.90 billion) followed by HBL (221.91 billion), EBL (220.51 billion), NABIL (169.96 billion) and SCBL (135.99 billion).

The table 4.7 also shows that the average TA varies widely from one banks to another. The average TA is also varies widely over a period of time. The TA varies widely within the individual banking enterprises. It varies from 285 billion to 144.81 billion for EBL, 355.73 billion to 99.74 billion for HBL, 557.02 billion to 192.80 billion for NABIL, 254.85 billion to 119.81 billion for NSBIL and 224.45 billion to 66.68 billion for SCBL.

The variation in size as a total assets is denoted by standard deviation and is lowest for NSBIL, followed by EBL, SCBL, HBL and NABIL.

The TA of EBL is 144.81 billion, 175.45 billion, 185.02 billion, 219.00 billion, 256.30 billion, 278.00 billion, 285.00 billion in 2017/18, 2018/19, 2019/20, 2020/21, 2021/22, 2022/23 and 2023/24 respectively. TA of HBL is 99.74 billion, 113.09 billion, 175.45 billion, 219.04 billion, 256.30 billion, 334.00 billion and 355.73.00 billion in 2017/18, 2018/19, 2019/20, 2020/21, 2021/22, 2022/23 and 2023/24 respectively. TA of NABIL is 192.80 billion, 227.50 billion, 237.68 billion, 291.07 billion, 420.00 billion, 481.20 billion, and 557.02 billion in 2017/18, 2018/19, 2019/20, 2020/21, 2021/22, 2022/23 and 2023/24 respectively. TA of NSBIL is 119.81 billion, 119.97 billion, 132.40 billion, 164.53 billion, 198.59 billion, 199.60 billion, and 254.85 billion in 2017/18, 2018/19, 2019/20, 2020/21, 2021/22, 2022/23 and 2023/24 respectively and TA of SCBL is 66.68 billion, 93.26 billion, 101.94 billion, 123.36 billion, 149.27 billion, 193.00 billion, and 224.45 billion in 2017/18, 2018/19, 2019/20, 2020/21, 2021/22, 2022/23 and 2023/24 respectively.

TA is highest for NABIL in 2023/24, 2022/23. On the other hand, the TA is lowest for SCBL in 2017/18 and 2018/19.

Fig 4.6: Pattern of total assets as a proxy for the size of the banks

In this figure in Y-axis, size of banks in billion and in X-axis from 2017/18 to 2023/24 is presented. This figure has been drawn on the basis of the mean value of size of banks.

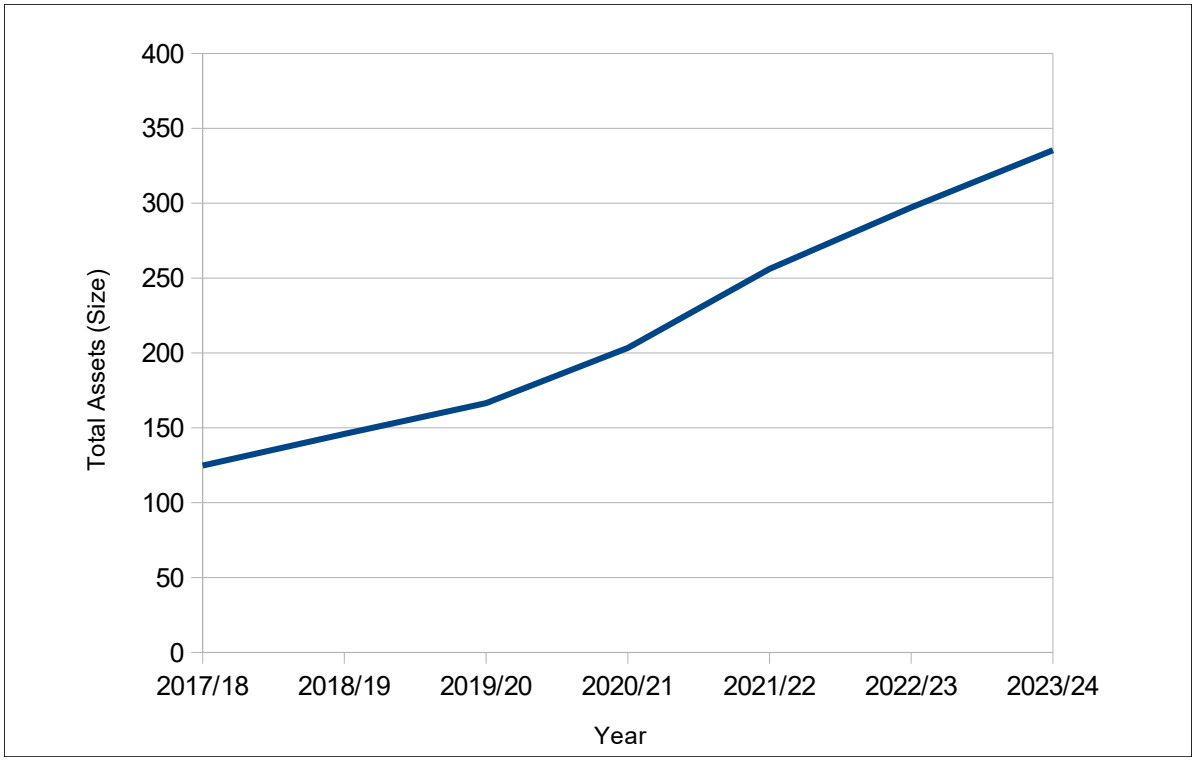


Figure 4.6 shows the increasing trend of the total assets of the banks. From year 2017/18 to 2023/24 the total assets seem to be in increasing trend. Today's banks are in the form of merger and acquisition so that the banks are able to improve their total assets as a size of the banks. Due to the merger and acquisition there is improvement in the total assets of the banks. So, the size of the banks goes on increasing trend.

4.1.7 Structure and pattern of assets management as operating income to total assets

Asset management means finding ways to maximize a company's value by managing fixed and intangible assets to be more reliable, efficient, or cheaper. Asset Management ratios attempt to measure the firm's success in managing its assets to generate the targeted earnings.

Assets management ratio is measure as assets utilization ratio. Table 4.7 shows the assets management as measure by assets utilization ratio as operating income divided by total assets.

Table 4.7 Structure and pattern of assets management ratio from year 2017/18 to 2023/24 (In percentage)

The table shows the pattern of assets management of joint venture banks from 2017/18 to 2023/24. The mean value measures the average assets management of individual sample banks for particular year and standard deviation measures the variability in assets management. Assets management as the proxy of total operating income divided by total assets.

Banks	Year								
	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	Mean	SD
EBL	3.15	3.6	3.04	1.35	2.89	3.25	2.52	2.83	0.73
HBL	1.93	1.33	2.73	1.66	1.63	3.1	2.1	2.07	0.64
NABIL	1.51	1.8	1.21	8.06	1.01	4.5	1.99	2.87	2.57
NSBIL	0.33	0.21	0.18	1.04	1.04	1.9	1.95	0.95	0.76
SCBL	2.61	2.64	1.97	1.94	3.58	1.99	1.43	2.31	0.70
Mean	1.91	1.92	1.83	2.81	2.03	2.95	2.00		
SD	1.08	1.29	1.16	2.95	1.15	1.07	0.39		

The structure and pattern of AM for joint venture banks revealed that average AM is highest for NABIL (2.87 percent) followed by EBL (2.83 percent), SCBL (2.31 percent), HBL (2.07 percent) and NSBIL (0.95 percent). In year 2020/21 NABIL was highly efficient for the utilization of the assets which was 8.06 percent. In year 2022/23 again NABIL was efficient for the utilization of the assets. In year 2021/22 SCBL as highly efficient for the utilization of assets which was 3.58 percent.

The assets management varies widely within the individual banking enterprises. It varies from 3.60 percent to 1.35 percent for EBL, 3.10 percent to 1.33 percent for HBL, 8.06 percent to 1.51 percent for NABIL, 1.95 percent to 0.21 percent for NSBIL and 2.64 percent to 1.43 percent for SCBL.

In year 2018/19 and 2019/20 the lowest assets management done by NSBIL which was 0.21 percent and 0.18 percent.

The assets management ratio of EBL is 3.15 percent, 3.60 percent, 3.04 percent, 1.35 percent, 2.89 percent, 3.25 percent and 2.52 percent in 2017/18, 2018/19, 2019/20, 2020/21, 2021/22, 2022/23 and 2023/24 respectively. The assets management ratio of HBL is 1.93 percent, 1.33 percent, 2.73 percent, 1.66 percent, 1.63 percent, 3.10 percent and 2.10 percent in 2017/18, 2018/19, 2019/20, 2020/21, 2021/22, 2022/23 and 2023/24 respectively. The assets management ratio of NABIL is 1.51 percent, 1.80 percent, 1.21 percent, 8.06 percent, 1.01 percent, 4.50 percent and 1.99 percent in 2017/18, 2018/19, 2019/20, 2020/21, 2021/22, 2022/23 and 2023/24 respectively. The assets management ratio of NSBIL is 0.33 percent, 0.21 percent, 0.18 percent, 1.04 percent, 1.04 percent, 1.90 percent and 1.95 percent in 2017/18, 2018/19, 2019/20, 2020/21, 2021/22, 2022/23 and 2023/24 respectively and the assets management ratio of SCBL is 2.61 percent, 2.64 percent, 1.97 percent, 1.94 percent, 3.58 percent, 1.99 percent and 1.43 percent in 2017/18, 2018/19, 2019/20, 2020/21, 2021/22, 2022/23 and 2023/24 respectively.

Fig 4.7: Pattern of assets management as operating income to total assets

In this figure in Y-axis, assets management ratio in times and in X-axis from 2017/18 to 2023/24 is presented. This figure has been drawn on the basis of the mean value of assets management ratio.

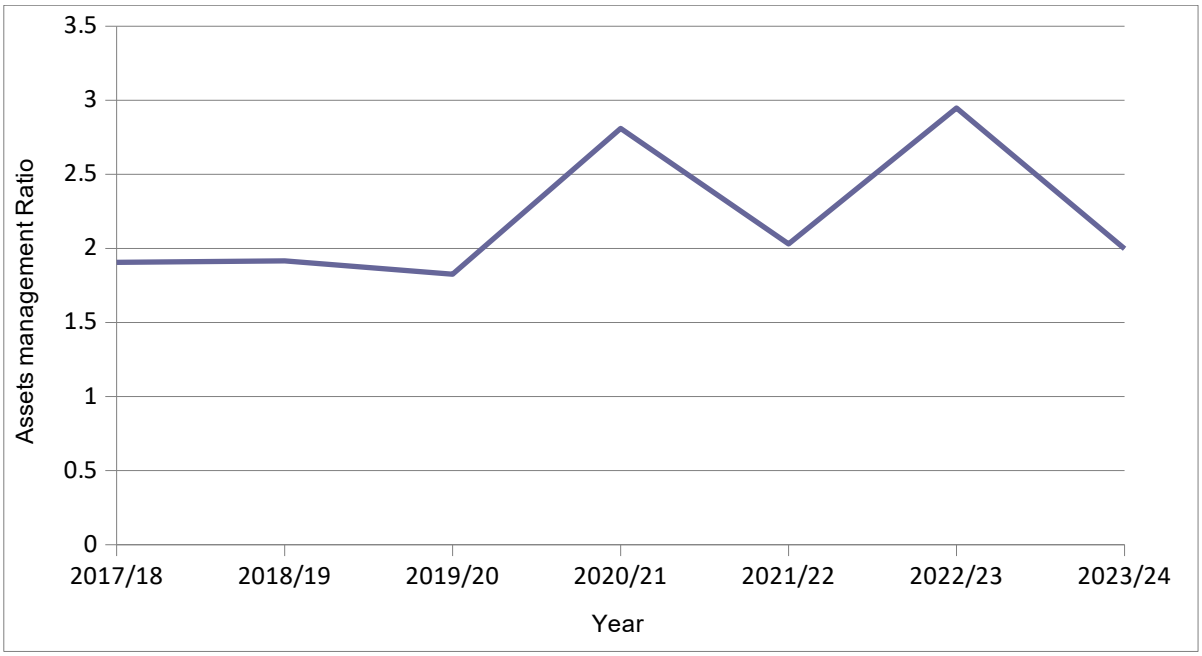


Figure 4.7 shows that assets management by the joint venture banks have small fluctuation. All the banks are utilizing the assets properly. So, the all the banks assets utilization ratio seems to be no more fluctuation.

4.2 Descriptive Statistics

The descriptive statistics used in this study consists of mean, median, standard deviation, minimum and maximum values associated with variables under consideration. Table 4.8 summarizes the descriptive statistics of variables used in this study during the period 2017/18 to 2023/24.

Table 4.8: Descriptive Statistics

The table shows the descriptive statistics of credit risk, liquidity risk and operational risk as ROA for total 5 joint venture banks for the study period of 2017/18 to 2023/24 that makes a total of 35 observations. Descriptive statistics includes minimum value, maximum value, mean value and standard deviation. The dependent variables are operational risk (OR in percent),

liquidity risk (LR in percent), credit risk (CR in percent) and independent variables are debt equity ratio (DER in times), capital adequacy ratio (CAR in percent), non-performing loan ratio (NPL in percent), assets management (AM percent) and SIZE (in billion).

Variables	N	Minimum	Maximum	Mean	Std. Deviation
CR	35	50.30	98.80	78.50	8.60
OR	35	0.42	3.05	1.65	2.67
LR	35	2.63	12.01	5.9	1.83
DER	35	5.03	9.88	7.85	0.86
CAR	35	11	22	14.01	1.29
NPL	35	0.18	4.96	1.39	1.13
AM	35	0.18	8.06	2.2	1.08
SIZE	35	66.68	557.02	218.45	80.76

Table 4.8 shows the descriptive statistics of total sample selected. Clearly, operational risk (ROA) ranges from 0.42 percent to 3.05 percent, leading to the average operational risk to 1.65 percent while the liquidity risk ranges from 2.63 percent to 12.01 percent, leading to the average liquidity risk of 5.90 percent. The credit risk varies from minimum of 50.30 percent to maximum of 98.80 percent leading to the average credit risk of 78.50 percent. The average debt equity ratio 7.85 times with minimum value of 5.03 to maximum value of 9.88 times. Likewise, capital adequacy ranges from 11.00 percent to 22.00 percent, leading to the average of 14.01 percent, non-performing loan ranges from 0.18 percent to 4.96 percent, leading to the average of 1.39 percent, assets management ranges from 0.18 percent to 8.06 percent leading to the average of assets management is 2.20 percent. Size (Total Assets) ranges from 66.68 billion to 557.02 billion leading to the average of assets is 218.45 billion.

4.3 Correlation Analysis

Having indicated the descriptive statistics, the Pearson correlation coefficients have been computed and the results are presented in the Table 4.9.

Table 4.9: Correlation matrix for the dependent and independent variables

This table reveals the Pearson correlation coefficients between different dependent variables and independent variables. The dependent variables are operational risk (OR in percent), liquidity risk (LR in percent), credit risk (CR in percent) and independent variables are debt equity ratio (DER in percent), capital adequacy ratio (CAR in percent), non-performing loan ratio (NPL in percent), assets management (AM percent) and SIZE (in billion).

Variables	CR	OR	LR	DER	CAR	NPL	AM	SIZE
CR	1	-0.212	-0.305	-0.268	0.334	-0.562**	0.281	+0.412*
OR	-0.212	1	+0.389*	0.316	-0.245	0.228	-0.187	0.197
LR	-0.305	+0.389*	1	-0.352*	0.296	-0.318	0.249	0.164
DER	-0.268	0.316	-0.352*	1	-0.428*	0.192	0.21	0.247
CAR	0.334	-0.245	0.296	-0.428*	1	-0.374*	0.283	0.331
NPL	-0.562**	0.228	-0.318	0.192	-0.374*	1	-0.261	-0.225
AM	0.281	-0.187	0.249	0.21	0.283	-0.261	1	+0.518**
SIZE	+0.412*	0.197	0.164	0.247	0.331	-0.225	+0.518**	1

'**' represents 1% level of significance

'*'represents 5% level of significance

Summary and Interpretation

Relationship	Direction	Strength	Interpretation
CR & NPL (r = -0.562)	Positive	Strong	Banks with higher non-performing loans tend to have higher credit risk.
CAR & DER (r = -0.428)	Negative	Moderate	Institutions with higher capital adequacy have lower debt-equity ratios.
OR & LR (r = 0.389)	Positive	Moderate	Higher operational risk associates with higher liquidity risk.
SIZE & AM (r = 0.518)	Positive	Strong	Larger banks exhibit better asset management efficiency.
CR & SIZE (r = 0.412)	Both	Moderate	Larger banks may manage credit risk better (negative), but could also take on more risk (positive).

The table 4.9 indicates that highest correlation is observed to be 0.412 between Credit risk and Size of the Bank. Credit risk is positively correlated with debt equity, non-performing loans and have moderate relation with size and negatively correlated with capital adequacy and assets management. Operational risk is positively related with non-performing loans and debt equity but negatively related to capital adequacy, assets management, and size.

The result also indicates that debt equity is negatively related to capital adequacy and the assets management and size (total assets) is positively related to capital adequacy and the assets management.

The relation of liquidity risk with capital adequacy indicates that if there is high capital adequacy to be maintained then there will be high liquidity risk so it shows that there is positively correlate to liquidity risk and capital adequacy.

4.4 Regression Analysis

In order to test the statistical significance and robustness of the results, regression models have been used. The regression analysis has been conducted to investigate the risk management practices. The regression of dependent variables and independent variables has been analyzed by different variables associated with them. In order to test the significance of credit risk, liquidity risk and operational risk and other independent variables as variables of risks, multiple regression analysis; step wise procedure has been used in this study. The regression results have been presented in table. Table 4.10 shows the regression result in terms of credit risk.

Table 4.10: Regression of non-performing loan, debt equity, assets management, capital adequacy and total assets on credit risk

(The results are based on pooled cross-sectional data of 5 joint venture banks with 35 observations for the period 2017/18-2023/24 by using linear regression model. The model is $CR_{i,t}=\beta_0+\beta_1 CAR_{i,t}+ \beta_2 S_{i,t}+ \beta_3 NPL_{i,t}+\beta_4 DER_{i,t}+ \beta_5 AM_{i,t} +\varepsilon_{i,t}$ *The dependent variables is credit risk (CR in percent) and independent variables are debt equity ratio (DE in percent), capital adequacy ratio (CAR in percent), non-performing loan ratio (NPL in percent), assets management (AM percent) and SIZE (in billion).*

Where:

- $CR_{i,t}$= Credit Risk (%)
- $CAR_{i,t}$ = Capital Adequacy Ratio (%)
- $SIZE_{i,t}$ = Total Assets (billion)
- $NPL_{i,t}$ = Non-Performing Loan Ratio (%)
- $DER_{i,t}$ = Debt-Equity Ratio (%)
- $AM_{i,t}$ = Asset Management Efficiency (%)
- $\varepsilon_{i,t}$ = Unexplained residual error term

Coefficients Table 4.10

Variable	Coefficient (β)	Std. Error	t-Statistic	p-Value
Constant	90.1	6.12	14.72	0
CAR	-1.25	0.45	-2.78	0.009
SIZE	-0.015	0.007	-2.14	0.041
NPL	2.6	0.85	3.06	0.005
DER	1.8	0.7	2.57	0.014
AM	-1.4	0.62	-2.26	0.031

Model Summary:

- $R^2 = 0.74$
- Adjusted $R^2 = 0.70$
- F-statistic = 16.8 ($p < 0.001$)

The table 4.10 indicates that, non-performing loans (NPL) have a strong positive and significant effect on credit risk (β =2.6,p=.005). As NPL increases, banks' credit quality declines significantly. Capital adequacy ratio (CAR) shows a negative and not significant relationship (β = -1.25, p =.009). Banks with higher capital adequacy ratios tend to take on slightly lower credit risk. Bank size (SIZE) is moderate related to credit risk (β = -0.015, p = .041). Larger banks exhibit slightly lower credit risk, possibly due to greater loan exposures. Asset management (AM) is negative and not significant (β=-1.4,p=.031). Improved asset utilization is associated with lower risk-taking behavior. Debt-equity ratio (DER) has a positive but statistically insignificant/moderate effect (β = 1.8, p =.014). The effect of leverage on credit risk is significant at the 5% level.

Summary and Interpretation

Coefficient	Expected Relation	Interpretation
β1 (CAR)	Negative	A higher capital adequacy ratio usually reduces credit risk (banks are better capitalized).
β2 (SIZE)	Moderate/Both	Larger banks may manage credit risk better (-), but could also take on more risk (+).
β3 (NPL)	Positive	More non-performing loans indicate higher credit risk.
β4 (DER)	Positive	Higher leverage (more debt relative to equity) increases credit risk.
β5 (AM)	Negative	Better asset management should lower credit risk.

The table 4.10 shows that, finding is consistent with Ahmed et al (2011). The results show that beta coefficients are positive for size, non performing loans and debt equity. Positive beta coefficients of capital adequacy indicate that higher the capital adequacy ratio, higher would be the credit risk. This finding is similar to the finding of Lu & Lee (2009) but inconsistent with the findings of Arif et al (2012). Likewise, results indicated that higher the non-performing loan higher would be the credit risk. This result is consistent with Kithinji (2010).

Table 4.11: Regression of non-performing loan, debt equity, assets management, capital adequacy and total assets on liquidity risk

The results are based on 5 joint venture banks with 35 observations for the period 2017/18-2023/24 by using linear regression model. The model is $LR_{i,t}=\beta_0+\beta_1 CAR_{i,t}+ \beta_2 S_{i,t}+ \beta_3 NPL_{i,t}+\beta_4 DER_{i,t}+ \beta_5 AM_{i,t} +\varepsilon_{i,t}$ *.The dependent variables is liquidity risk (LR in percent) and independent variables are debt equity ratio (DE in percent), capital adequacy ratio (CAR in percent), non-performing loan ratio (NPL in percent), assets management (AM percent) and SIZE (in billion).*

Where:

- $LR_{i,t}$= Liquidity Risk (%)
- $CAR_{i,t}$ = Capital Adequacy Ratio (%)
- $SIZE_{i,t}$ = Total Assets (billion)
- $NPL_{i,t}$ = Non-Performing Loan Ratio (%)
- $DER_{i,t}$ = Debt-Equity Ratio (%)
- $AM_{i,t}$ = Asset Management Efficiency (%)
- $\varepsilon_{i,t}$ = Unexplained residual error term

Coefficients Table 4.11

Variable	**Coefficient (β)**	**Std. Error**	**t-Statistic**	**p-Value**
Constant	9.2	1.45	6.34	0
CAR	-0.18	0.06	-3	0.005
SIZE	-0.004	0.002	-2	0.054
NPL	0.6	0.2	3	0.005
DER	0.4	0.15	2.67	0.012
AM	-0.35	0.14	-2.5	0.018

Model Summary:

- $R^2 = 0.68$
- Adjusted $R^2 = 0.63$
- F-Statistic = 13.2 ($p < 0.001$)

The table 4.11 indicates that, CAR (−0.18): A 1% increase in CAR reduces liquidity risk by 0.18%, holding other variables constant. SIZE (−0.004): A one-billion increase in total assets reduces liquidity risk by 0.004%. NPL (+0.60): A 1% increase in non-performing loans raises liquidity risk by 0.6%. DER (+0.40): A 1% rise in the debt-equity ratio increases liquidity risk by 0.4%. AM (−0.35): A 1% improvement in asset management reduces liquidity risk by 0.35%.

Summary and Interpretation

Variable	**Expected Relation**
CAR (negative)	Higher capital adequacy tends to reduce liquidity risk since well-capitalized banks can absorb shocks and meet withdrawals.
SIZE (negative)	Larger banks often have greater liquidity buffers and access to markets, so liquidity risk falls with size.
NPL (positive)	More non-performing loans increase liquidity pressure, as less cash is generated from assets.
DER (positive)	Higher leverage raises liquidity strain, since more obligations must be met.
AM (negative)	Better asset management means assets are more liquid and efficiently used, lowering liquidity risk.

Table 4.12: Regression of non-performing loan, debt equity, assets management, capital adequacy and total assets on operational risk

The results are based on 5 joint venture banks with 35 observations for the period 2017/18-2023/24 by using linear regression model. The model is $OR_{i,t}=\beta_0+\beta_1 CAR_{i,t}+ \beta_2 S_{i,t}+ \beta_3 NPL_{i,t}+\beta_4 DER_{i,t}+ \beta_5 AM_{i,t} +\varepsilon_{i,t.}$ *The dependent variables is operational risk (OR in percent) and independent variables are debt equity ratio (DE in percent), capital adequacy ratio (CAR*

in percent), non-performing loan ratio (NPL in percent), assets management (AM percent) and SIZE (in billion).

Where:

- $OR_{i,t}$= Operational Risk (%)
- $CAR_{i,t}$ = Capital Adequacy Ratio (%)
- $SIZE_{i,t}$ = Total Assets (billion)
- $NPL_{i,t}$ = Non-Performing Loan Ratio (%)
- $DER_{i,t}$ = Debt-Equity Ratio (%)
- $AM_{i,t}$ = Asset Management Efficiency (%)
- $\varepsilon_{i,t}$ = Unexplained residual error term

Coefficients Table 4.12

Variable	**Coefficient (β)**	**Std. Error**	**t-Statistic**	**p-Value**
Constant	2.95	0.55	5.36	0
CAR	-0.09	0.03	-3	0.005
SIZE	-0.002	0.001	-2	0.052
NPL	0.25	0.08	3.13	0.004
DER	0.18	0.07	2.57	0.015
AM	-0.16	0.06	-2.67	0.012

Model Summary:

- $R^2 = 0.66$
- Adjusted $R^2 = 0.61$
- F-statistic = 11.8 ($p < 0.001$)

The table 4.12 indicates that, capital adequacy (CAR), asset management (AM), and bank size (SIZE) are negatively and not significant with operational risk, implying that better-capitalized, larger, and more efficiently managed banks experience lower operational risk. Conversely, non-performing loans (NPL) and debt-equity ratio (DER) are positively related to operational risk, suggesting that poor credit performance and higher leverage contribute to greater exposure to operational failures. The model explains about 66% of the variation in operational risk (Adjusted $R^2 = 0.61$), and the overall relationship is statistically significant ($p < 0.001$).

Further, table shows that beta coefficients are positive for debt equity ratio. This indicates that higher the debt equity ratio, higher would be the operational risk. But this finding is inconsistent with Akhtar (2011) where results show that beta coefficients are positive for capital adequacy ratio and assets quality management. Similarly, higher the assets higher the assets quality management, lower would be the operational risk. This finding is also inconsistent with the finding of Lindbolm & Willesson (2011). The table shows that there is a positive and significant relationship between operational risk and size. Larger banks tend to have better internal processes and diversified operations, reducing operational risk.

Summary and Interpretation

Variable	**Expected Relationship**
CAR (negative)	Higher capital adequacy reduces operational risk because well-capitalized banks can absorb shocks and invest in better control systems.
SIZE (negative)	Larger banks tend to have better internal processes and diversified operations, reducing operational risk.
NPL (positive)	A higher ratio of non-performing loans may indicate poor credit management and internal weaknesses, increasing operational risk.

DER (positive)	Greater leverage increases exposure to operational failures and financial instability.
AM (negative)	Better asset management improves efficiency and reduces losses from operational issues.

4.5 Concluding Remarks

The result reported in this study is based on the 5 joint venture banks of Nepal. The result explains the risk which effect on the joint venture banks of Nepal. The analysis of secondary data shows consistency findings with regard to the factors influencing the risk analysis in Nepalese Banking enterprises.

Among others, the regression equation of banking shows there is positive relation between credit risk and debt equity, non-performing loans it means Banks with higher non-performing loans tend to have higher credit risk and moderate relation between size and negative relation between capital adequacy and assets management. The coefficients are significant for debt equity and non-performing loans and not significant for capital adequacy and assets management. For example, Kithinji (2010) revealed that there is positive relationship between the non-performing loan and the credit risk. It clearly states that when the non-performing loan increases then it leads to increase in the credit risk and vice versa.

Similarly, regression equation of joint venture banking of Nepal shows the negative relation between liquidity risk and size, capital adequacy and assets management and positive relation between debt equity and non-performing loans. The coefficients are significant for debt equity and non-performing loans and the coefficients are not significant for size, capital adequacy and assets management. Also, there is positive relation between operational risk and debt equity and non-performing loans and negative relation between capital adequacy, size and assets management. The coefficients are significant for debt equity and non-performing loans and not sufficient for capital adequacy, size and assets management.

The study is able to address the major research questions and issues of this topic. However, result derived from this study present both the similarities and the dissimilarities in comparison with the previous studies made in developed and emerging economies.

After making the entire analysis of the data, the first hypothesis (H1) that deals with positive relationship between size and risk is rejected. The second hypothesis (H2) has been rejected as capital adequacy ratio has positive relation with risk. Similarly, hypothesis third (H3) is accepted as debt equity ratio is positively related with the risks. The forth hypothesis (H4) is accepted as non-performing loan ratio has positive relation with risk. The hypothesis five (H5) is rejected as assets management ratio is negatively related to the risks.

Chapter V

Discussion and Summary

The banking industry is a dynamic and significant component to individuals, corporate, small and medium businesses, national and global, economic, socio and financial well-being. This industry cultivates financial relationships with customers of all sizes to supply financial products and services that stimulate economic growth, and act as a catalyst to national and global economics. In order to appraise and weigh up the soundness and reliability of banking industry, the information on connection between fluctuations in banking industry and the risk which is faced by banking sector is important.

Banks furnish credit to finance consumption and investment spending. Credit consists of a loan of funds in return for a promise of future payment. Loans are highest yielding assets that a bank can add to its portfolio and they often provide the largest portion of traditional bank's operative revenue. For the balancing of lending and borrowing of the funds, there should be the adequate reserve funds in the commercial banks including joint venture banks.

Several studies like Gitman & Zutter (1998), Dionne (2013), Harrington et al (1999) have made an effort to investigate the major risk analysis factors which are associated in the banking enterprises. The major objective of this study is to assess the risk management practices of joint venture banks in Nepal and examine the relationship between the risk (credit risk, liquidity risk and operational risk) and their specific variables. The study considered non-performing loan ratio, capital adequacy ratio, debt equity, assets management, and size of bank as the factors influencing the risk analysis and tested empirically to detect the magnitude and direction of relationship with different risks which are credit risk, liquidity risk and operational risk of the bank enterprises.

The study employed secondary data regarding the variables of interest of 5 joint venture banks of Nepal. The study used panel data for the period of 7 years from the year 2017/18 to

2023/24 A.D. The study made the use of secondary data in order to meet the objectives. The secondary data were collected from the sources like financial statements of sample banks enterprises, and data banks of NRB, NEPSE, and SEBON. The study, employed number of statistical and econometric tools such as multivariate regression analysis, correlation, descriptive analysis, to analyze the collected data to establish the relationship pattern between risks and its variables.

Secondary data have been used for the purpose of the study which is collected from annual reports of the sample banks, NRB websites, NEPSE websites and journals. The analysis of data have been carried out using wide array of statistical tools like descriptive statistics, correlation analysis, ordinary least square regression. In addition, structural and pattern analysis have also been undertaken to assess the trend and properties of the risk and its variables of the sample banks. The study obtained several results and findings about the current risk management practices in Nepalese joint venture banks.

5.1 Summary

The major findings of this study are summarized as under:

1. The average Credit Risk (CR) measured by total debt to total equity ratio for the sample banks is increasing from 76.10 percent in 2017/18 to 82.30 percent in 2023/24. The CR is lowest in the year 2019/20 (i.e. 71.60 percent). NSBIL bank has highest average CR of 98.80 percent in 2022/23. However, the bank with lowest CR is SCBL having average total debt to total equity of 50.30 percent in 2017/18.

2. The average Liquidity Risk (LR) measured by capital to total assets ratio for the sample banks is decreasing from 8.32 percent in 2017/18 to 4.13 percent in 2023/24. The LR is lowest in the year 2023/24 of HBL (i.e. 2.63 percent). SCBL bank has highest average LR of 7.14 percent. However, the bank with lowest LR is HBL having average capital to total assets of 5.08 percent.

3. The average Operational Risk (OR) measured by return on total assets ratio for the sample banks is decreasing from 2.04 percent in 2017/18 to 1.32 percent in 2023/24.

The OR is lowest in the year 2023/24 (i.e.1.32 percent). SCBL has highest average LR of 2.06 percent. However, the bank with lowest OR is HBL having average return on total assets of 1.27 percent.

4. The average Non-Performing Loan (NPL) ratio for the sample banks is increasing from 1.72 percent in 2017/18 to 3.22 percent in 2023/24. The NPL is lowest in the year 2021/22 (i.e. 0.66 percent). HBL bank has highest average NPL of 2.23 percent. However, the bank with lowest NPL is EBL having average NPL of 0.83 percent.

5. The average Capital Adequacy Ratio (CAR) for the sample banks is decreasing from 14.49 percent in 2017/18 to 13.56 percent in 2023/24. The CAR is lowest in the year 2021/22 (i.e. 13.08 percent). SCBL bank has highest average CAR of 18.01 percent. However, the bank with lowest CAR is NSBIL having average CAR of 12.91 percent.

6. The average Debt Equity Ratio (DER) for the sample banks is increasing from 7.61 times in 2017/18 to 8.23 times in 2023/24. The DER is lowest in the year 2019/20 (i.e. 7.16). EBL has highest average DER of 9.0 times. However, the bank with lowest DER is SCBL having average DER of 5.72 times.

7. The average Total Assets (Size) for the sample banks are increasing from 124.77 billion in 2017/18 to 335.41 billion in 2023/24. The Size is lowest in the year 2017/18 (i.e. 124.77 billion). NABIL has highest average Size of 343.90 billion. However, the bank with lowest Size is SCBL having average Size of 135.99 billion.

8. Average Assets Management (AM) ratio of banks is increasing trend. The average AM is lowest in the year 2019/20 (i.e. 1.83 percent). NABIL has highest average AM of 2.87 percent. However, the bank with lowest AM is NSBIL having average AM of 0.95 percent.

9. The OR of the selected banks ranges from 0.42 percent to 3.05 percent, leading the average operational risk to 1.65 percent and standard deviation of 2.67.

10. The LR of the selected banks ranges from 2.63 percent to 12.01 percent, leading to the average liquidity risk of 5.90 percent and standard deviation of 1.83.

11. The CR of the sample banks ranges from 50.30 percent to 98.80 percent leading the average credit risk of 78.50 percent and standard deviation of 8.60.

12. From correlation analysis, OR is positively related with debt equity and non-performing loans and negative relation between capital adequacy, size and assets management.

13. Similarly, the LR is negatively related to size, capital adequacy and assets management and positive relation between debt equity and non-performing loans.

14. Correlation analysis shows CR is positively correlated with debt equity, non-performing loans it means banks with higher non-performing loans tend to have higher credit risk and moderate relation between size and negative relation between capital adequacy and assets management

15. In case of regression specification of banks, the analysis documented there is positive relationship between non-performing loans, debt equity and moderate of size with credit risks. There is positive relationship between non performing loans and credit risk and negative relation between capital adequacy and assets management.

16. There is positive relation between debt equity and non performing loan and negative relationship between size of the banks, capital adequacy ratio and assets management ratio with liquidity risk.

17. There is positive relationship between debt equity and non performing loan and negative relationship between size of the banks, capital adequacy ratio and assets management ratio with with operational risk.

Summary of Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Std. Deviation	Interpretation
CR (Credit Risk %)	35	50.3	98.8	78.5	8.6	Moderate variation in exposure to credit risk.
OR (Operational Risk %)	35	0.42	3.05	1.65	2.67	High variability in operational efficiency.
LR (Liquidity Risk %)	35	2.63	12.01	5.9	1.83	Moderate liquidity exposure across banks.
DER (Debt-to-Equity Ratio)	35	5.03	9.88	7.85	0.86	Stable capital structure across banks.
CAR (Capital Adequacy Ratio %)	35	11	22	14.01	1.29	Adequate capital levels above Basel III norms.
NPL (Non-Performing Loan %)	35	0.18	4.96	1.39	1.13	Generally good asset quality with minimal default risk.
AM (Asset Management %)	35	0.18	8.06	2.2	1.08	Average efficiency in asset utilization.
SIZE (Billion)	35	66.68	557.02	218.45	80.76	Banks of varied sizes — from regional to large-scale.

The descriptive analysis shows that most of the joint venture banks of Nepal operate with adequate capital buffers, strong liquidity positions, and low levels of non-performing loans, implying a generally stable and risk-managed sector. However, substantial variation in operational risk suggests differing levels of internal efficiency and control systems.

The independent variables display moderate dispersion, suggesting that while capital and asset structures are fairly consistent, differences in size and efficiency influence each bank's risk profile.

Chapter VI

Conclusion

The major conclusion of this study is that non-performing loans, assets management, debt equity, size, capital adequacy ratio of the joint venture banks of Nepal have the most dominant variables that affect the credit risk in Nepal.

The regression equation of banking shows there is positive relation between credit risk and debt equity, non-performing loans it means banks with higher non-performing loans tend to have higher credit risk and moderate relation between size and negative relation between capital adequacy and assets management. The coefficients are significant for debt equity and non-performing loans and not significant for capital adequacy and assets management.

Similarly, regression equation shows the negative relation between liquidity risk and size, capital adequacy and assets management and positive relation between debt equity and non-performing loans. The coefficients are significant for debt equity and non-performing loans and the coefficients are not significant for size, capital adequacy and assets management. Also, there is positive relation between operational risk and debt equity and non-performing loans and negative relation between capital adequacy, size and assets management. The coefficients are significant for debt equity and non-performing loans and not sufficient for capital adequacy, size and assets management.

1. Operational risk varies more than other risk types, implying differences in governance, internal systems, or technological adoption.
2. Banks in the sample are generally financially sound, maintaining strong capital adequacy and manageable risk exposures.
3. Liquidity and credit risks are well managed, with moderate averages and low dispersion, suggesting stable funding and effective credit monitoring.
4. Size and capital adequacy appear to have stabilizing effects on risk exposure, while high leverage (DER) and poor asset utilization (AM) can amplify risk vulnerabilities.

The overall descriptive analysis demonstrates that banks in the sample maintain sound risk management practices, supported by strong capital adequacy, prudent lending, and effective liquidity management.

However, operational risk remains the most diverse and unpredictable, suggesting room for improvement in internal efficiency and governance systems. Future empirical testing can help establish the specific causal dynamics among these variables and guide strategic policies for risk mitigation and performance optimization in the banking sector.

6.1 Recommendations

Based on the major findings of the study, the study provides the following recommendations on risk analysis of joint venture banks of Nepal:

a. The study observed a negative relationship between assets management and credit risk hence, the bank willing to reduce credit risk should increase assets management ratio.

b. The study found positive relationship between debt equity ratio and credit risk. Hence, banks willing to decrease credit risk should decrease debt equity ratio.

c. Positive relationship has been observed between non- performing loan and credit risk. Hence, banks willing to reduce credit risk should decrease non performing loan.

d. There is a moderate relationship between bank size and credit risk and hence the banks willing to reduce credit risk should increase bank size in terms of total assets.

e. It observed negative relationship between capital adequacy ratio and credit risk indicates that banks willing to reduce credit risk should increase capital adequacy ratio.

f. The study observed a negative relationship between assets management and liquidity risk. Hence, the bank willing to reduce liquidity risk should decrease assets management ratio.

g. The study found positive relationship between debt equity ratio and liquidity risk. Hence, banks willing to decrease liquidity risk should decrease debt equity ratio.

h. Positive relationship has been observed between non- performing loan and liquidity risk. Hence, banks willing to reduce liquidity risk should decrease non performing loan.

i. The study found negative relationship between bank size and liquidity risk. Hence, the banks willing to reduce liquidity risk should increase bank size in-terms of total assets.

j. The study found negative relationship between capital adequacy ratio and liquidity risk. It indicates that banks willing to reduce liquidity risk should increase capital adequacy ratio.

k. Positive relationship has been observed between non- performing loan and operational risk. Hence, banks willing to reduce operational risk should decrease non performing loan.

l. The study found negative relationship between bank size and operational risk. Hence, the banks willing to reduce operational risk should increase bank size in-terms of total assets.

m. The study found negative relationship between capital adequacy ratio and operational risk. It indicates that banks willing to reduce operational risk should increase capital adequacy ratio.

n. The study observed a negative relationship between assets management and operational risk hence, the bank willing to reduce operational risk should increase assets management ratio.

o. Since operational risk is the most variable, banks should enhance internal audit mechanisms, risk governance frameworks, and staff training to reduce human and process errors.

p. Optimize capital structure: Maintaining a balanced debt-equity ratio helps reduce both liquidity and operational risk. Excessive leverage should be avoided to preserve funding flexibility.

q. Sustain capital adequacy buffers: Given CAR's stabilizing influence, banks should continue maintaining capital levels above regulatory minimums (Basel III) to absorb potential losses and maintain investor confidence.

r. Improve asset management efficiency: Efficient allocation and utilization of assets reduce both credit and liquidity risks. Banks should invest in financial technologies and data analytics for better asset-liability matching.

s. Manage non-performing loans (NPL): Although average NPLs are low, continuous monitoring and stricter loan recovery mechanisms are essential to prevent future credit deterioration.

t. Leverage economies of scale: Smaller banks should explore strategic collaborations or mergers to enhance operational capacity and reduce risk exposure through diversification.

6.2. Scope for future research

The study remains enough ground for future researchers, which are listed below:

- First and foremost, the future studies can select more number of observation years for the study that could lead to much more valid prediction regarding risk management practices of joint venture banks of Nepal.
- In addition, other financial institutions like finance companies, micro finance development banks, and cooperative banks can be sampled to grasp the wider view of risk management practices.
- Moreover, this study has only used secondary data. So, the future studies can be done by using primary and secondary data both so as to get more accurate results.
- This study has been conducted by using CR, LR and OR as a dependent variable and (CAR, AM, NPL, SIZE and NPL as independent variables. Thus, future studies can add more independent variable to have the better and accurate results.
- Causal relationships: Future studies should employ panel regression or structural equation mode-ling (SEM) to test causal links between the independent variables (DER, CAR, NPL, AM, SIZE) and the three types of risk (OR, LR, CR).

- Macroeconomic influences: Incorporate external factors such as GDP growth, inflation, and interest rates to examine how macroeconomic stability influences risk exposure in banks.

- Longitudinal analysis: Using data across multiple years will allow researchers to analyse trends, persistence, and cyclicality in risk exposure.

- Comparative studies: Compare findings across public vs. private or large vs. small banks to uncover structural differences in risk management practices.

- ESG and risk management: Explore how environmental, social, and governance (ESG) initiatives affect financial and operational risk profiles.

- Digitalization and fintech impact: Examine how digital banking, automation, and cybersecurity advancements affect operational risk, given the sector's increasing technological integration.

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