

**IMPACT OF OPERATIONAL RISK MANAGEMENT ON FINANCIAL  
PERFORMANCE OF NEPALESE COMMERCIAL BANKS**

A Dissertation submitted to the Office the Dean, Faculty of Management in partial  
fulfilment of the requirements for the Master of Business Studies (MBS)

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May, 2025

## **CERTIFICATE OF AUTHORSHIP**

I hereby corroborate that I have researched and submitted the final draft of dissertation entitled **“Impact of Operational Risk Management on Financial Performance of Nepalese Commercial Banks”** The work of this dissertation has not been submitted previously for the purpose of conferral of any degrees nor it has been proposed and presented as part of requirements for any other academic purposes. The assistance and cooperation that I have received during this research work has been acknowledged. In addition, I declare that all information sources and literature used are cited in the reference section of the dissertation.

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## REPORT OF RESEARCH COMMITTEE

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## **ACKNOWLEDGEMENTS**

This study entitled “**Impact of Operational Risk Management on Financial Performance of Nepalese Commercial Banks**” has been conducted to satisfy the partial requirements for the degree of Master of Business Studies, Tribhuvan University. A study of this kind would not have been possible without the help of all those who contributed in diverse ways towards its success. Without the continued emotional support provided by my family, I may have not reached the end of this journey. During my studies there were times when work commitments and intermittent stress made me believe that I would not be able to see this journey through. It was during these times, and many others, that their words of encouragement and confidence in my ability gave me the motivation to persist. No words of thanks can adequately express the depth of my appreciation. I would like to extend my immense gratitude to my supervisor Joginder Goet for her valuable supervision and guidance in completing this study. I cannot express the extent to which his patience and understanding allowed me to reach the end of this journey. His encouragement, support, and, above all, his prompt, constructive and greatly appreciated criticism and feedback, were invaluable to the research, writing, and completion of this study. I wish to acknowledge all lecturers and facilitators of Shanker Dev Campus for the various roles each one of them played towards the successful completion of this thesis. I am grateful to Joginder Goet, Acting Campus Chief, and Asso. Prof. Dr. Sajeeb Kumar Shrestha, Research Committee Head, for timely supervision and guidance to complete this work.

I gratefully acknowledge the staff members of Shanker Dev Campus, Kathmandu who provided the assistance to make the dissertation report possible. I would like to express my sincere thanks to my parents, family members and friends who always encouraged and inspired me continuously in whatever way it is possible.

**Amrita Sah**

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## **ABBREVIATIONS**

ADBL:	Agricultural Development Bank
AGM:	Annual General Meeting
AM:	Arithmetic mean
ANOVA:	Analysis of Variance
BS:	Bank Size
CAR:	Capital Adequacy Ratio
CDR:	Credit to Deposit Ratio
CV:	Coefficient of Correlation
EPS:	Earnings Per Share
FY:	Fiscal Year
GBIME:	Global IME Bank Limited
LDR:	Loan to Deposit Ratio
LR:	Liquidity Ratio
NIM:	Net Interest Margin
NIMB:	Nepal Investment Mega Limited
NPL:	Non-Performing Loan
NRB:	Nepal Rasta Bank
ROA:	Return on Assets
SBI:	Nepal SBI Bank Limited
SBL:	Siddhartha Bank Limited
SD:	Standard Deviation

## ABSTRACT

This study investigate the operational risk management on financial performance of Nepalese commercial banks. The main objectives of this study are to assess operational risk management and financial performance of Nepalese commercial banks, to examine the relationship between operational risk management and financial performance of Nepalese commercial banks and to analyze the impact of operational risk management and financial performance of Nepalese commercial banks. In this study Net Interest Margin (NIM), Loan to Deposit Ratio (LDR), Non-Performing Loan (NPL), Liquidity Ratio (LR) and Capital Adequacy Ratio (CAR) are the independent variables and Return on Assets (ROA) is dependent variable. Descriptive Statistics, Correlation analysis and multiple regression analysis were used to present data. The correlation matrix shows that most financial variables are significantly and positively related to each other at the 0.01 significance level. The strongest relationships are between ROA and NIM, and between NPL and CAR, indicating that profitability is closely linked to interest margin efficiency, and that higher levels of loan defaults are associated with stronger capital adequacy. Moderate relationships exist among lending, liquidity, and capital adequacy indicators, highlighting the interconnected nature of financial performance metrics. Overall, the results suggest that improving interest margins, maintaining a sound capital base, and managing liquidity and credit risks are essential strategies for enhancing the financial performance and stability of banks. The regression coefficient table reveals that among the five predictors, LDR, NPL, and CAR have statistically significant positive impacts on ROA, while NIM and LR show positive but statistically insignificant relationships. The findings indicate that efficient loan management, control over non-performing assets, and maintaining strong capital buffers are crucial drivers of profitability for banks. These results support the idea that multiple financial health indicators must be simultaneously managed to enhance overall performance, and offer valuable directions for strategic financial planning in the banking sector.

**Keywords:** *Net Interest Margin, Loan to Deposit Ratio, Non-Performing Loan, Liquidity Ratio, Capital Adequacy Ratio and Return on Assets.*

## **CHAPTER – I**

### **INTRODUCTION**

#### **1.1 Background of the Study**

Operational Risk Management on financial performance refers to the process of identifying, assessing, and mitigating risks that arise from failures in internal processes, systems, human errors, or external events. These risks can result in significant financial losses, reputational damage, or legal repercussions for financial institutions. With the increasing complexity of financial operations, the digitalization of services, and the rising threat of cyber-attacks, ORM has become a critical component of the overall risk management strategy. Effective ORM frameworks are designed to prevent disruptions to critical operations, ensure compliance with regulatory requirements, and minimize the impact of operational failures on a financial institution's stability. The importance of ORM has been further amplified by stringent regulatory standards such as Basel III, which mandates financial institutions to allocate capital to cover operational risks. Modern ORM frameworks integrate advanced analytics, including artificial intelligence (AI) and machine learning, to monitor risk indicators and predict potential disruptions. In addition to addressing technological and process-related risks, ORM also emphasizes cultivating a strong risk culture within the organization to mitigate human errors and ensure resilience against both known and unforeseen disruptions. Operational resilience, particularly after the COVID-19 pandemic, has become a focal point, pushing institutions to develop robust recovery plans that protect critical functions during periods of crisis.

Operational Risk Management (ORM) in financial performance has become a key element of enterprise risk management due to the complexity and interconnected nature of financial systems. Operational risks arise from inadequate or failed internal processes, systems, human errors, or external events, leading to potential financial losses, legal issues, or reputational damage (Chorafas, 2021). In recent years, the financial sector has faced increasing operational risks, driven by digital transformation, cyber threats, regulatory demands, and global interconnectedness (Chernobai, 2022). Financial institutions implement ORM frameworks to identify, assess, mitigate, and monitor operational risks. These frameworks typically involve risk assessments, key risk indicators (KRIs), scenario analysis, and stress

testing. A critical aspect of ORM is the creation and implementation of internal controls to address transaction processing errors, compliance failures, or cyber security breaches. The primary goal is to reduce both the likelihood and impact of operational risk events on business continuity and financial stability (Alexander, 2020).

A significant driver of ORM in the financial sector is regulation, particularly guidance from global institutions like the Basel Committee on Banking Supervision (BCBS). Basel III, for instance, mandates capital adequacy, requiring banks to allocate capital to cover operational risks in addition to credit and market risks (Bessis, 2022). This has led financial institutions to invest in robust risk management systems to comply with these standards. Consequently, many institutions integrate ORM into their broader risk governance frameworks, ensuring that risk culture permeates all organizational levels (Fraser & Simkins, 2021). Technological advancements have reshaped ORM strategies. The rise of digital banking, automation, and artificial intelligence (AI) has introduced new risk landscapes requiring sophisticated approaches to risk management (Bholat, 2020). Many financial institutions now use machine learning algorithms to monitor risk indicators and predict potential disruptions (Liu et al., 2021). For example, AI can detect patterns in transactional data that may signal fraud or system malfunctions. Additionally, institutions face growing threats from hacking, data breaches, and ransom ware attacks, leading to heightened emphasis on cyber security within ORM frameworks (Sheldon & Ramamoorti, 2020). In response, financial institutions have reinforced cyber security protocols and incident response strategies to minimize potential breaches and their effects (Brown, 2021).

Operational risk management also contends with human factors such as errors in judgment, fraud, or failure to follow established protocols. Such risks can result in substantial losses for financial institutions, highlighting the importance of fostering a strong risk culture within organizations. Employees must be actively engaged in identifying and mitigating risks at all levels (Power, 2021). Continuous training and the establishment of a risk-aware culture are essential elements of ORM, particularly as human error remains one of the most challenging risks to manage (Kaplan & Mikes, 2022). The recent concept of operational resilience extends beyond traditional risk management by focusing on an institution's ability to maintain critical operations during and after a disruption (Haldane, 2021). This became

particularly relevant during the COVID-19 pandemic, which exposed weaknesses in global supply chains, remote work setups, and business continuity plans (Elliott, 2020). Regulators increasingly expect financial institutions to not only identify potential risks but also to ensure they have robust recovery plans in place (De Bandt & Hartmann, 2021).

Finally, ORM is increasingly influenced by environmental, social, and governance (ESG) considerations. Operational risks are now seen in a broader context, where financial institutions' social and environmental responsibilities play a crucial role in their risk profiles (Clark et al., 2022). Failure to meet ESG standards can result in reputational risks or legal penalties, leading to operational disruptions. Modern ORM frameworks, therefore, are evolving to incorporate ESG factors alongside traditional operational risk factors (Doherty, 2020).

In conclusion, ORM has become indispensable for financial institutions in today's rapidly changing environment. By addressing technological risks and ensuring compliance with evolving regulatory standards, ORM helps institutions safeguard their financial stability and reputation. The integration of AI and machine learning, combined with a strong risk culture, enables institutions to manage operational risks more effectively. Furthermore, the focus on operational resilience and ESG considerations reflects a more holistic approach to ORM, ensuring institutions are prepared to adapt to both immediate threats and long-term challenges (Jorion, 2021; Power, 2021).

In the context of commercial banks in Nepal, risk management strategies involve determining the optimal mix of debt and equity to finance their operations and investments. Given the capital-intensive nature of operational, where substantial funds are required for setting up production facilities, purchasing raw materials, and covering other operational costs, finding the right balance between debt and equity is essential. A carefully structured capital mix helps these companies manage the cost of capital efficiently while maintaining financial stability. The goal is to minimize financing costs and reduce exposure to risks related to interest rates, debt servicing, and market volatility. For effective financial performance analysis, manufacturing firms in Nepal must focus on key indicators such as profitability ratios, liquidity measures, and debt management metrics, alongside operational

efficiency. Profitability ratios, like return on assets (ROA) and return on equity (ROE), help assess the company's ability to generate income relative to its resources. Liquidity metrics, such as the current ratio, gauge the firm's capacity to meet short-term obligations, while debt management ratios provide insight into how effectively the company handles its debt levels. Additionally, assessing market performance and industry competitiveness offers a broader perspective on the company's financial standing, helping stakeholders understand both its relative position and long-term sustainability.

## **1.2 Problem Statement**

Operational Risk Management (ORM) in financial services has emerged as one of the most pressing challenges in the increasingly digitalized and complex global financial ecosystem. Unlike credit or market risks, which are more quantifiable and predictable, operational risks stem from a wide variety of sources, including internal process failures, system disruptions, human error, external threats such as cyber-attacks, and unforeseen natural events (Power, 2021). Financial institutions, whether banks, insurance companies, or asset managers, are constantly exposed to these operational risks, which can significantly affect their profitability, regulatory compliance, and reputational standing. The primary challenge for financial services firms today is to develop and implement robust ORM frameworks that can proactively identify, assess, and mitigate such risks while balancing the demands of innovation, regulatory requirements, and customer expectations.

One of the critical issues facing operational risk management in the financial sector is the rise of cyber threats. The financial industry has become a prime target for hackers due to the large volumes of sensitive data and financial transactions it handles. A significant operational risk arises from data breaches and cyber-attacks that not only cause financial losses but also lead to severe reputational damage and regulatory penalties (Brown, 2021). Despite increased investments in cyber security and risk mitigation technology, institutions struggle to stay ahead of rapidly evolving threats. According to the Financial Stability Board (FSB) (2022), cyber incidents affecting financial institutions have escalated both in terms of frequency and severity, posing systemic risks that can destabilize the broader financial system.

In addition to cyber risks, financial institutions face internal operational challenges. Process errors, system breakdowns, and inadequate internal controls can lead to significant financial disruptions. For example, a failure in transaction processing systems can delay payments, create discrepancies, and even result in regulatory violations. This issue is compounded by legacy systems that are often outdated and incapable of handling modern demands for real-time data processing and automation (Chorafas, 2021). Many firms are undertaking digital transformation initiatives to modernize their operations, but these projects are not without risks, including implementation failures, misalignment of technology with business goals, and employee resistance to change (Fraser & Simkins, 2021).

Human error also plays a substantial role in operational risk. From misjudgments by senior management to compliance failures by frontline staff, human factors contribute significantly to operational losses. For instance, the failure to adhere to anti-money laundering (AML) protocols or other regulatory standards can result in hefty fines and sanctions, as well as reputational harm. Human error is especially difficult to eliminate because it often involves cultural issues within an organization, such as poor risk awareness, inadequate training, or ineffective communication (Kaplan & Mikes, 2022). The increasing regulatory pressure on operational risk management presents another layer of complexity. Regulatory bodies such as the Basel Committee on Banking Supervision (BCBS) require financial institutions to allocate capital to cover potential operational risks under frameworks like Basel III. This requires a comprehensive and ongoing assessment of operational risks, which adds an administrative burden to financial institutions already facing constraints in terms of resources and talent (Bessis, 2022). Additionally, regulators are becoming more stringent regarding the adequacy of internal controls, business continuity planning, and risk management systems, which necessitates continuous improvement of ORM practices (Sheldon & Ramamoorti, 2020).

Furthermore, the concept of operational resilience has gained prominence in response to the COVID-19 pandemic, which exposed vulnerabilities in the operational infrastructures of financial institutions worldwide. The pandemic forced a shift towards remote work, increasing reliance on digital infrastructure and exposing gaps in business continuity plans. As a result, regulators and financial institutions are placing more emphasis on ensuring that

critical services can continue to operate even during extreme disruptions (Elliott, 2020). This shift towards operational resilience is reshaping ORM practices, requiring institutions to consider not just risk prevention but also how quickly they can recover from disruptions. Another emerging issue in operational risk management is the growing importance of environmental, social, and governance (ESG) factors. ESG considerations are increasingly being incorporated into operational risk frameworks as institutions recognize that failing to manage these risks can have severe reputational and financial implications (Clark et al., 2022). For example, a company that fails to meet environmental standards may face legal penalties and public backlash, both of which can disrupt operations. As a result, financial institutions are now integrating ESG risks into their ORM frameworks to ensure that they are resilient to not only financial and operational disruptions but also to the evolving societal expectations around sustainability and corporate responsibility (Doherty, 2020).

In conclusion, the problem of operational risk management in financial services is multifaceted, involving cyber threats, internal process failures, human error, regulatory pressures, and the increasing demand for operational resilience. Financial institutions must navigate this complex landscape by investing in robust ORM frameworks, modernizing legacy systems, fostering a risk-aware culture, and meeting the evolving expectations of regulators and society. While technological advancements such as AI and machine learning offer promising solutions for risk identification and mitigation, they also introduce new risks that must be carefully managed. As the financial services industry continues to evolve, the challenge will be to develop a comprehensive and adaptive approach to ORM that can keep pace with both the internal and external risks facing the sector (Jorion, 2021; Power, 2021). Therefore, this study was conducted to fill the gap. This study stated the following research questions.

- i. What is the operational risk management and financial performance of Nepalese commercial banks?
- ii. Is there any relationship between operational risk management and financial performance of Nepalese commercial banks?
- iii. What is the impact of operational risk management and financial performance of Nepalese commercial banks?

### **1.3 Objectives of the Study**

The main objectives of this study is to analyze the risk management strategies of Nepalese commercial banks. The specifics objectives of this study are as follows;

- i. To assess operational risk management and financial performance of Nepalese commercial banks.
- ii. To examine the relationship between operational risk management and financial performance of Nepalese commercial banks.
- iii. To analyze the impact of operational risk management and financial performance of Nepalese commercial banks.

### **1.4 Rationale of the Study**

Operational Risk Management (ORM) has gained increasing importance in the global financial landscape due to the rise of technological disruptions, cyber threats, and regulatory demands. In the context of Nepalese commercial banks, the need for robust ORM practices is particularly crucial due to the sector's rapid digitalization and integration into the global financial system. As Nepalese banks expand their services and adopt digital platforms, they become more exposed to operational risks such as system failures, cyber-attacks, and human errors, which could lead to significant financial losses and reputational damage. The study of ORM in this sector is essential to help these banks identify potential risks and implement effective strategies to ensure business continuity, enhance operational efficiency, and maintain trust with their stakeholders.

Another key rationale for studying ORM in Nepalese commercial banks lies in the evolving regulatory environment. With global standards like Basel III influencing national regulatory frameworks, Nepalese banks are required to strengthen their risk management practices, particularly in operational areas. As regulatory bodies in Nepal push for higher standards in capital adequacy and operational resilience, understanding how these banks manage operational risks becomes vital for ensuring compliance and mitigating potential regulatory penalties. This study would therefore contribute to the broader discussion on aligning Nepalese banking practices with international best practices, ensuring that banks not only

meet regulatory requirements but also maintain competitiveness in the regional and global markets.

Moreover, the financial stability of Nepal's economy is closely tied to the performance of its banking sector, which acts as a key driver of economic growth and development. Furthermore, the study would provide valuable insights into how banks can develop a more resilient operational framework, enhance their financial performance, and contribute to the sustainable growth of the Nepalese economy. This makes ORM not just a matter of internal risk mitigation but also a critical element of national economic strategy.

### **1.5 Limitations of the Study**

Every study has its own limitations, so it was also note be free from that. This study was conducted for the partial fulfilment of Master Degree in Business (MBS), so it possesses some limitations of its own kind. This study covers the time duration of ten years financial statement from F/Y 2013/14 to 2022/23 for the purpose of analysis of operational risk management and financial performance of Nepalese commercial banks.

- i. The accuracy of the study is based on the data and the various published documents of selected banks only because it ensure accurate comprehensive findings, it is often recommended to combine data from multiple sources.
- ii. The data is used from the secondary sources because of accessibility, cost effectiveness, historical perspectives, large sample size and comparative analysis.
- iii. This study has concentrated only in the operational risk management and financial performance of Nepalese commercial banks of ADBL, GBIME, NIMB, SBL and SBI among 20 Nepalese commercial banks because these banks are top level of commercial banks in Nepal.
- iv. This study is not applicable to all banks since it is concerned to commercial five banks.
- v. This study is only based on operational risk management and financial performance, so few measurement tools in a study depends on the specifics research objectives,

available data, and context of the research topics. It should carefully consider the relevant metrics to ensure a comprehensive and accurate analysis.

## **CHAPTER-II**

### **LITERATURE REVIEW**

A literature review is a comprehensive and systematic examination of existing scholarly research and publications relevant to a particular topic or area of study. It involves the identification, evaluation, and synthesis of previous studies to gain insights into what has already been explored, highlight research gaps, and provide a theoretical foundation for new investigations. The primary purpose of a literature review is to understand the current state of knowledge, establish the context for the research problem, and justify the need for further study. By critically analyzing the findings, methodologies, and conclusions of prior works, a literature review ensures that the researcher builds upon established knowledge and avoids duplication.

#### **2.1 Conceptual Review**

Operational Risk Management (ORM) in financial performance refers to the process of identifying, assessing, and mitigating risks that arise from failures in internal processes, systems, human errors, or external events. Operational Risk Management (ORM) has gained critical importance due to the growing complexity of financial activities, digital transformation, and the surge in cyber threats. These risks can lead to major financial setbacks, damage an institution's reputation, or result in legal consequences. A well-structured ORM framework plays a vital role in safeguarding essential operations, maintaining regulatory compliance, and reducing the effects of operational breakdowns on an institution's overall stability. The relevance of ORM has increased significantly with the implementation of rigorous standards like Basel III, which requires banks to allocate capital specifically for operational risks. Contemporary ORM systems now incorporate cutting-edge technologies such as artificial intelligence and machine learning to detect early warning signals and anticipate possible disruptions. Beyond technological and procedural threats, ORM also stresses the importance of nurturing a strong organizational risk culture to minimize human errors and enhance resilience. In the aftermath of the COVID-19 pandemic,

ensuring operational resilience has become a key priority, driving financial institutions to create comprehensive recovery strategies to safeguard critical services during emergencies.

Operational Risk Management (ORM) and financial performance has emerged as a fundamental part of enterprise risk management, especially in relation to financial performance, due to the increasing complexity and interdependence of financial systems. Operational risks stem from failures or inadequacies in internal processes, technological systems, human actions, or external factors, all of which can result in financial losses, reputational harm, or legal consequences (Chorafas, 2021). The financial industry has seen a rise in such risks in recent years, influenced by rapid digital advancements, heightened cyber threats, stricter regulatory frameworks, and growing global interconnectivity (Chernobai, 2022). To manage these risks, financial institutions adopt ORM frameworks that focus on identifying, evaluating, controlling, and continuously monitoring operational threats. These frameworks commonly include tools such as key risk indicators (KRIs), risk assessments, stress testing, and scenario planning. A key element of ORM is the establishment of robust internal controls designed to prevent issues such as processing errors, non-compliance, and cybersecurity incidents. Ultimately, ORM aims to minimize both the probability and consequences of operational risk events to ensure business continuity and maintain financial resilience (Alexander, 2020).

Impact of operational risk management and financial performance of commercial banks, with key directives coming from international bodies like the Basel Committee on Banking Supervision (BCBS). Under Basel III, financial institutions are obligated to maintain sufficient capital not only for credit and market risks but also for operational risks (Bessis, 2022). This has prompted banks to enhance their risk management infrastructures to meet compliance expectations. As a result, ORM is now often embedded within broader risk governance structures, promoting a risk-aware culture across all organizational levels (Fraser & Simkins, 2021). Meanwhile, technological progress has significantly transformed ORM practices. The expansion of digital banking, automation, and artificial intelligence (AI) has introduced complex risk scenarios that demand more advanced management techniques (Bholat, 2020). Today, many institutions utilize machine learning tools to track risk metrics and forecast possible disruptions (Liu et al., 2021). AI technologies, for example, can identify

unusual patterns in transaction data that may indicate fraud or system failures. Moreover, the rising incidence of cyber threats such as hacking, ransomware, and data breaches has made cybersecurity a critical component of ORM (Sheldon & Ramamoorti, 2020). In response, organizations have strengthened their cybersecurity frameworks and developed robust incident response plans to mitigate the impact of potential cyber incidents (Brown, 2021).

Operational risk management and financial performance) also addresses human-related risks, such as poor decision-making, intentional misconduct, or non-compliance with established procedures. These types of risks can lead to significant financial damage, underscoring the need for a strong risk-conscious environment within financial institutions. Encouraging employee involvement in recognizing and managing risks across all departments is vital (Power, 2021). Ongoing staff training and promoting a culture of risk awareness are key components of effective ORM, especially since human error remains one of the most difficult risks to control (Kaplan & Mikes, 2022). The emerging concept of operational resilience takes ORM a step further by focusing on an organization's ability to sustain essential functions during and after adverse events (Haldane, 2021). This approach gained particular importance during the COVID-19 crisis, which revealed vulnerabilities in global operations, remote work systems, and continuity strategies (Elliott, 2020). As a result, regulatory authorities now place greater emphasis on institutions not only identifying potential threats but also having comprehensive contingency and recovery plans in place (De Bandt & Hartmann, 2021).

In recent years, operational risk management and financial performance has been increasingly shaped by environmental, social, and governance (ESG) factors. Operational risks are no longer viewed solely through internal or technical lenses, but rather within a broader framework that includes an institution's responsibilities toward society and the environment (Clark et al., 2022). Non-compliance with ESG principles can expose organizations to reputational harm, legal consequences, and potential operational setbacks. As a result, contemporary ORM systems are gradually integrating ESG considerations alongside conventional risk elements to create a more comprehensive and responsible risk management approach (Doherty, 2020).

In the context of Nepalese commercial banks, operational risk management and financial performance emphasize achieving an optimal balance between debt and equity to support their operations and investment activities. Since operational processes often require significant financial resources such as funding for infrastructure, raw materials, and other essential expenditures maintaining a well-balanced capital structure is vital. An appropriate mix of debt and equity enables banks to control their capital costs efficiently while ensuring financial stability. The primary objective is to lower financing expenses and limit vulnerability to risks stemming from interest rate fluctuations, debt repayment obligations, and market instability. To evaluate financial performance accurately, manufacturing firms in Nepal should monitor key financial indicators, including profitability, liquidity, and debt management ratios, alongside measures of operational effectiveness. Ratios like Return on Assets (ROA) and Return on Equity (ROE) are useful for determining how well a company utilizes its resources to generate profits. Liquidity ratios, such as the current ratio, assess the firm's ability to fulfill short-term liabilities, while debt ratios highlight how effectively the business manages its financial obligations.

## **2.2 Theoretical Review**

A theoretical review involves a critical analysis of established theories and conceptual models connected to a particular research subject. Its primary aim is to explore how these theories have evolved, how they are applied, and how effectively they explain the issue being studied. Through examining and comparing different theoretical approaches, the review uncovers their advantages, limitations, and overall value to the academic field. This comparative evaluation assists in selecting the most suitable theoretical foundation for the research at hand, supporting the development of hypotheses and influencing the structure and direction of the study.

### **2.2.1 Agency Theory**

Agency Theory, introduced by Jensen and Meckling (1976), serves as a crucial foundation in understanding corporate governance and its implications for risk management, especially within financial institutions. It addresses the dynamic between principals (such as

shareholders) and agents (like managers), where decision-making authority is delegated by the former to the latter. This delegation often leads to conflicts of interest, as managers may pursue personal objectives such as enhanced compensation or job security rather than maximizing shareholder value (Eisenhardt, 1989; Shleifer & Vishny, 1997). Such misalignment can significantly contribute to operational risks in the financial sector, where unchecked managerial behavior may result in poor risk oversight or aggressive risk-taking (Tirole, 2001).

A key concept within Agency Theory is moral hazard, which arises when managers exploit information asymmetry for personal gain. Since they typically possess more detailed knowledge about the institution's internal workings than shareholders, managers may engage in actions that lack transparency and evade external monitoring (Ross, 1973). For instance, they might approve high-risk ventures that enhance short-term bonuses but jeopardize the organization's long-term stability through operational failures, fraud, or financial misreporting (Fama & Jensen, 1983). This issue becomes even more critical in the financial services industry due to the intricate nature of transactions and the potential for cascading effects across the broader financial system (Holmstrom, 1979).

A significant element of agency theory is adverse selection, which arises when principals are unable to fully evaluate the skills or intentions of agents prior to entering into a formal relationship (Akerlof, 1970). This challenge can lead to the recruitment of managers who may lack the expertise needed to effectively oversee operational risks or who may exaggerate their qualifications. In financial institutions, this can result in poor decision-making and insufficient risk controls, ultimately causing operational losses (Hermalin & Weisbach, 1998). The issue of adverse selection highlights the importance of transparent recruitment processes, thorough evaluations, and continuous performance assessments to ensure that agents are capable of supporting the organization's risk management objectives (Jensen & Meckling, 1976).

To address agency-related challenges, it is vital for financial institutions to implement strong governance frameworks that align managerial actions with shareholder interests. This can involve performance-based incentive systems such as stock options that encourage managers

to prioritize sustainable value creation over immediate personal rewards (Core, Guay, & Larcker, 2003). Additionally, oversight mechanisms, including independent board members and external auditing practices, are essential in minimizing agency-related operational risks (Shleifer & Vishny, 1997). These governance tools enhance managerial accountability and reduce the possibility of self-serving behavior, helping to safeguard the institution's financial performance and operational integrity (Fama & Jensen, 1983).

Nevertheless, some scholars contend that agency theory, while insightful in examining the dynamics between principals and agents, tends to present a narrow view of human motivation by assuming individuals act mainly out of self-interest (Davis, Schoorman, & Donaldson, 1997). In contrast, alternative approaches such as stewardship theory propose that agents may be intrinsically driven to serve the organization's best interests, especially when there is a strong organizational culture rooted in trust, commitment, and shared goals (Donaldson & Davis, 1991). Even with such criticisms, agency theory continues to play a central role in shaping our understanding of corporate governance and risk management, particularly in the context of increasingly stringent regulatory expectations around transparency and accountability (Bebchuk & Fried, 2004).

In conclusion, agency theory provides a robust analytical lens for exploring how conflicting interests between shareholders and managers can contribute to operational risks, especially within financial institutions. It emphasizes the significance of aligning managerial incentives with long-term corporate objectives, enhancing transparency, and enforcing effective governance structures to mitigate the adverse effects of information asymmetry and self-serving behaviors. Despite the emergence of alternative viewpoints, agency theory remains a foundational model for examining and addressing the complex risk and governance challenges faced by modern financial organizations (Jensen & Meckling, 1976; Eisenhardt, 1989).

### **2.2.2 Contingency Theory**

Contingency Theory, developed during the 1950s and 1960s, rejects the idea of a universal method for effective organizational management. Instead, it argues that the most suitable

management approach is contingent upon the unique internal and external factors an organization encounters (Fiedler, 1964). The theory maintains that businesses should tailor their strategies, structures, and operational processes to align with the specific conditions of their environment, rather than following a standardized framework (Donaldson, 2001). Key determinants such as organizational scale, technological capabilities, market dynamics, and regulatory frameworks play a vital role in shaping managerial decisions (Woodward, 1965). For example, financial institutions in rapidly changing or uncertain markets are likely to benefit from more adaptive and responsive risk management systems compared to those operating in more predictable environments (Galbraith, 1973).

A fundamental principle of Contingency Theory is the idea that no single management style is universally superior; rather, organizational success hinges on adapting practices to fit specific situational factors (Lawrence & Lorsch, 1967). In the context of operational risk management within financial services, this could imply that banks operating in regions with uncertain or frequently changing regulatory environments may benefit from a decentralized approach, allowing quicker responses to new regulations (Donaldson, 2001). In contrast, financial institutions in areas with stable regulatory systems might find a more centralized and standardized risk management framework to be more effective, as it enhances operational efficiency and ensures compliance without requiring constant adjustments (Drazin & Van de Ven, 1985). Additionally, Contingency Theory emphasizes the role of leadership style in determining organizational success. Fiedler's (1964) contingency model of leadership suggests that no single leadership style is inherently effective, and that leaders should adapt their approach based on the task, environment, and team they are leading. In terms of risk management, this means that leaders must tailor their strategies to the specific risks their institutions face. For example, in addressing cyber security threats, a financial institution may benefit from a more participative leadership style, encouraging collaboration and innovative solutions to mitigate these risks (Daft, 2010).

Contingency Theory also highlights the significance of technology and operational complexity in shaping organizational structure and, by extension, risk management approaches. Woodward's (1965) research emphasized that the type of technology an organization utilizes plays a pivotal role in determining the most effective organizational

structure, which directly impacts risk management practices. Financial institutions equipped with sophisticated technological systems may require highly specialized risk management strategies, while smaller organizations with simpler systems may lean on more traditional and straightforward risk controls (Mintzberg, 1979). Additionally, organizations operating in environments with high uncertainty, such as rapidly fluctuating financial markets, may find it beneficial to adopt flexible and adaptive organizational structures that allow for quick responses to operational risks (Burns & Stalker, 1961).

In conclusion, Contingency Theory provides a flexible, context-dependent approach to understanding organizational behavior and risk management. It highlights the importance of organizations, particularly in the financial services sector, staying adaptable and responsive to the dynamic and constantly evolving factors that influence operational risks (Donaldson, 2001). By tailoring risk management strategies to the unique conditions they face, organizations can enhance their performance and minimize risks in ways that a one-size-fits-all approach cannot achieve (Fiedler, 1964; Woodward, 1965).

### **2.2.3 Operational Risk Event Theory**

Operational Risk Event Theory, as developed by risk management scholars, focuses on the analysis and learning from past operational risk events to enhance future risk management strategies. This theory stresses the importance of systematically documenting, analyzing, and understanding operational failures, such as fraud, system failures, and procedural errors, to identify patterns, assess vulnerabilities, and create preventive measures (Jorion, 2007). The core idea behind Operational Risk Event Theory is that by examining historical data on risk events, organizations can improve their ability to predict and mitigate similar incidents in the future (Power, 2004).

A central element of this theory is the use of event databases, which gather detailed information on operational risk incidents. These databases track the frequency, severity, and impact of various risk events, offering valuable insights into the nature and causes of operational risks (Basel Committee on Banking Supervision, 2001). For example, financial institutions use these databases to monitor incidents like cyber security breaches, compliance

violations, and system failures. By analyzing such events, organizations can identify recurring risk factors and trends, which can guide the development of focused risk management strategies and controls (Gordon & Loeb, 2002).

The theory also emphasizes the use of scenario analysis as a tool for evaluating potential future risk events based on past data. Scenario analysis involves creating detailed simulations of possible risk situations to assess their potential impact and likelihood. This method allows organizations to prepare for high-impact, low-probability events that may not be adequately reflected in historical data but could have significant consequences (Hiles, 2009). For instance, a financial institution might apply scenario analysis to model the impact of a severe economic downturn or a major cyber-attack, helping to build more resilient risk management frameworks.

Furthermore, Operational Risk Event Theory underscores the importance of learning from past events to improve risk management practices. This includes conducting thorough post-incident reviews and root cause analyses to identify the factors that led to operational failures (Kaplan & Mikes, 2012). By understanding the underlying causes and implementing corrective measures, organizations can enhance their risk controls and lower the chances of similar events happening again. For example, a bank that incurs a significant operational loss due to weak fraud detection systems may invest in new technologies or revise its procedures to avoid future losses. Critics of Operational Risk Event Theory argue that relying exclusively on past data may not account for emerging risks or changing risk landscapes (McNeil, Frey, & Embrechts, 2005). The focus on historical events may limit its ability to address new or evolving risks that haven't been captured in past data. Therefore, while examining past incidents is valuable, it should be paired with forward-thinking risk assessment strategies to ensure a comprehensive approach to risk management (Power, 2004).

In summary, Operational Risk Event Theory offers a systematic approach to managing operational risks by utilizing historical data on past risk events. By employing tools such as event databases, scenario analysis, and post-incident reviews, organizations can identify risk patterns, foresee potential challenges, and develop stronger risk management strategies.

Although it has certain limitations, the theory continues to be an essential tool for refining operational risk management practices and boosting organizational resilience (Jorion, 2007; Kaplan & Mikes, 2012).

#### **2.2.4 Risk Culture Theory**

Risk Culture Theory emphasizes how an organization's culture shapes its approach to identifying, managing, and responding to risks. It suggests that the norms, values, and day-to-day practices embedded in an organization significantly influence how employees perceive and handle risk (Giddens, 1991). The theory highlights that risk culture reflects collective beliefs and attitudes toward risk, impacting how information about risk is shared, how decisions are taken, and how individuals react to risk-related challenges (Power, 2004).

At the heart of this theory is the belief that a strong risk culture integrates risk management into routine decision-making and encourages active involvement from employees at all levels (Paine, 2007). Organizations with such cultures tend to support transparent communication, assign clear roles related to risk responsibilities, and align employee incentives with broader risk management goals (Kirkpatrick & Mayer, 2012). For instance, in well-governed financial institutions, risk culture is often reinforced through structured reporting systems, risk-focused training programs, and ethical guidelines that promote vigilance and responsible behavior (Hillson & Murray-Webster, 2007).

Risk Culture Theory underscores the pivotal role of leadership in cultivating a healthy risk-aware environment within organizations. Leaders influence the development of risk culture by setting clear expectations, modeling responsible behavior, and consistently promoting risk management values (Schein, 2010). When leadership actively upholds ethical practices and emphasizes the importance of managing risk, it encourages employees throughout the organization to adopt similar behaviors, reinforcing a culture where risk considerations are an integral part of daily operations (Kirkpatrick & Mayer, 2012). In contrast, when leadership neglects risk issues or fails to support risk initiatives, the overall culture may become complacent, allowing critical risk factors to go unaddressed (Beasley, Branson, & Hancock, 2010).

The theory also highlights the significance of aligning organizational structures and systems with risk management objectives. For a robust risk culture to thrive, risk responsibilities must be clearly defined across all levels of the organization (Paine, 2007). This includes setting up dedicated risk management teams, conducting routine risk evaluations, and implementing channels for regular monitoring and communication of risk-related concerns (Power, 2004). Institutions may form risk committees, apply standardized risk frameworks, and perform audits to ensure that risk procedures are effectively integrated and adhered to throughout the organization. Despite its strengths, Risk Culture Theory faces some criticisms, particularly regarding the challenge of transforming organizational culture and the difficulty in objectively assessing risk culture (Brenner, 2007). Moreover, the theory may underemphasize external factors like compliance mandates or personal attitudes toward risk (Giddens, 1991). Nevertheless, cultivating a strong and supportive risk culture remains essential for building organizational resilience and enhancing the overall effectiveness of risk management practices (Schein, 2010).

To summarize, Risk Culture Theory emphasizes the vital influence of organizational culture on how risks are identified, assessed, and managed. When a culture promotes risk awareness, encourages transparent communication, and aligns rewards with sound risk management practices, it strengthens an organization's ability to effectively handle risks and improve long-term resilience (Power, 2004; Paine, 2007). The development and maintenance of a strong risk culture rely heavily on effective leadership, clearly defined organizational roles, and well-integrated risk management systems (Kirkpatrick & Mayer, 2012; Hillson & Murray-Webster, 2007).

### **2.2.5 Enterprise Risk Management Theory**

Enterprise Risk Management (ERM) Theory offers a structured, organization-wide approach to identifying, evaluating, and managing risks in a cohesive and strategic way. Gaining prominence in the early 2000s, ERM marked a departure from fragmented, department-specific risk practices in favor of a more integrated system that recognizes how various risks can collectively impact organizational goals (COSO, 2004). The central premise is that by

overseeing risk from a broad, enterprise-wide perspective, organizations are better positioned to meet their strategic targets and remain resilient in the face of uncertainty (Spencer, 2009).

One of the fundamental aspects of ERM Theory is the alignment of risk management with an organization's strategic direction. The COSO framework emphasizes that risk-related activities should be closely linked to an organization's mission and decision-making processes (COSO, 2004). This ensures that potential risks and opportunities are considered proactively, allowing organizations to manage them before they escalate (Frigo & Anderson, 2011). By embedding risk awareness into strategy formulation and execution, ERM helps organizations stay on course toward achieving their long-term goals.

Another essential element of Enterprise Risk Management (ERM) Theory is the principle of risk governance. ERM underscores the necessity of implementing a solid governance framework to guide and monitor risk-related activities. This involves clearly outlining responsibilities, defining acceptable levels of risk (risk appetite and tolerance), and ensuring risk processes adhere to both internal policies and external regulations (Beasley, Branson, & Hancock, 2010). Strong governance also requires active involvement from senior executives and the board of directors, ensuring that risk oversight is consistent with the organization's strategic goals and overall risk tolerance (Gordon et al., 2009).

In addition, ERM Theory stresses the importance of aggregating risks and managing them as a portfolio. This comprehensive approach allows organizations to evaluate their total risk exposure by examining risks across all departments and operations. Viewing risks collectively helps in identifying patterns, minimizing potential losses, and improving resilience through better risk diversification (Chapman, 2006). For example, banks using ERM frameworks can consolidate risk data from different units and locations to understand their cumulative exposure, enabling more strategic decisions regarding risk control and capital distribution (Mikes, 2009).

Moreover, Enterprise Risk Management (ERM) Theory emphasizes the significance of effective risk communication and cultivating a risk-aware culture. Successful risk management hinges on transparent communication of risk information across all levels of the

organization and fostering a culture that actively supports risk-conscious behavior (Power, 2004). In organizations where ERM is deeply embedded, there is an open exchange about potential risks, a high level of risk awareness among employees, and risk management becomes an integral part of everyday operations (Kirkpatrick & Mayer, 2012). This cultural foundation ensures that risk management transcends formal policies and becomes part of the organization's identity. However, ERM implementation is not without its difficulties. Establishing an ERM framework can be demanding, often requiring substantial investments in time, resources, and adjustments to existing structures and organizational mindsets (Beasley et al., 2010). Its success heavily relies on the accuracy and quality of risk data, as well as the organization's capacity to evaluate and respond to dynamic risk environments effectively (Frigo & Anderson, 2011).

To summarize, ERM Theory delivers a unified and strategic method for handling risks by embedding risk management into core business planning, strengthening oversight mechanisms, and nurturing a culture of risk awareness. Organizations that adopt ERM can better align their risk strategies with overarching objectives, enhance their response to uncertainty, and build stronger operational resilience (COSO, 2004; Spencer, 2009).

### **2.2.6 The Three Lines of Defense Model**

The Three Lines of Defense Model serves as a prominent framework used to structure risk management and governance within organizations. It organizes risk oversight responsibilities into three coordinated layers, each with unique roles and accountability to ensure comprehensive risk management (COSO, 2009). By clearly distinguishing the functions of each line, the model strengthens organizational efforts to detect, manage, and reduce risk effectively. The first line of defense consists of operational management, which is directly involved in executing day-to-day internal controls and risk management activities. Managers at this level are tasked with recognizing and addressing risks within their functional domains, ensuring that appropriate controls are actively applied and effective (Institute of Internal Auditors (IIA), 2013). For example, a finance department manager might monitor compliance with internal financial procedures, conducting regular reviews to prevent errors or fraudulent activities.

Risk management and compliance teams, which play a supervisory and advisory role. These groups are responsible for crafting and upholding risk management frameworks, monitoring organizational risk levels, and supporting the first line by ensuring risk practices are applied correctly (IIA, 2013). Key personnel such as risk officers, compliance specialists, and quality control staff belong to this layer, offering expertise and oversight to help operational units align their risk controls with internal standards and external regulations (COSO, 2009).

The internal audit function, which delivers independent evaluations of the organization's overall risk management, control systems, and governance structure (IIA, 2013). Internal auditors review and assess the performance of both the first and second lines, conducting thorough audits to verify the effectiveness of risk mitigation strategies. Their objective perspective supports transparency and accountability by communicating findings to top executives and the board, thereby strengthening the integrity of the organization's risk management framework (COSO, 2009). One of the main advantages of the Three Lines of Defense Model is its structured and multi-layered approach to managing risk, where each line plays a distinct yet complementary role in building a strong risk control environment. By assigning specific duties and accountability to each group, the model helps minimize the risk of duplication or oversight in risk-related tasks (Beasley, Branson, & Hancock, 2010). Nonetheless, practical implementation can face hurdles, such as fostering seamless communication and collaboration between the lines, and upholding the impartiality of the internal audit function (IIA, 2013).

To conclude, the Three Lines of Defense Model offers a clear and organized framework for handling risks by distributing responsibilities among operational managers, compliance and risk units, and internal auditors. This layered structure promotes thorough risk oversight at all organizational levels, strengthening governance systems and boosting overall resilience (COSO, 2009; IIA, 2013).

### **2.3 Empirical Review**

An empirical review systematically examines and synthesizes research studies that present evidence-based insights on a specific topic or hypothesis. It concentrates on analyzing

findings derived from primary research methods such as experiments, surveys, and observational studies to assess the credibility and accuracy of the conclusions presented. Through evaluating the methodologies, outcomes, and broader implications of these studies, an empirical review provides a thorough overview of the existing evidence, uncovers recurring themes, and identifies areas where further research is needed.

### **2.3.1 Empirical Review of International Journals and Articles**

Cornwell et al. (2023) examined the operational risks are increasingly prevalent and complex to manage in organizations, The increasing financial and non-financial costs of operational risks, exacerbated by the inefficiencies and biases of traditional manual, static, and qualitative risk management methods, has driven the use of data analytics for more objective and dynamic risk management. Despite this progress, there is a lack of a comprehensive map of the various operational risks, techniques, and goals across industries. This paper provides a detailed review of the growing field of data analytics in operational risk management (ORM), specifically within financial services (FS) and energy and natural resources (ENR). A thorough literature search identified 2,538 publications, and after performing bibliometric and content analyses on 191 relevant studies, the research is organized using a novel multi-layered framework. This framework enables an in-depth examination of the analytics methods and data used. Five key themes are identified that are of significance to practitioners, researchers, educators, and students across sectors: risk identification, causal factors, risk quantification, risk prediction, and risk decision-making. Generally, ENR studies are more focused on identifying causal factors and predicting specific events, while FS studies are more advanced in the area of risk quantification. The review concludes by highlighting areas where further research is necessary to enhance ORM in both FS and ENR, ultimately leading to better decision-making.

Budianto and Dewi (2023) examined the advancement and growth of research on operational hazards in the Islamic and Conventional Financial Industry from 2002 to 2022. The researchers carried out an extensive search for relevant articles from both domestic and international journals indexed on Google Scholar, Sinta, and Scopus using the Perish Harzing application with the keyword "operational risk." This search yielded a total of 348 research

articles, which were then analyzed descriptively through a literature review using the VOS viewer application. The results showed a noticeable increase in the number of publications related to operational risk over the years. The VOS viewer analysis identified nine distinct research clusters associated with operational risk. Additionally, the literature review highlighted 11 key themes that are closely linked to operational risk in both Islamic and Conventional Financial Institutions.

Altaf (2022) analyzed the impact of operational risk management (ORM) processes, the study examines the relationship between corporate governance (CG) and operational risk management (ORM) practices, focusing on processes such as identification, assessment, analysis, monitoring, and control. It suggests that CG can play a crucial role in enhancing ORM practices. Data was collected through a questionnaire from 167 operational risk managers at commercial banks, and multiple linear regression analysis was conducted. The findings highlight the significant impact of CG, along with operational risk identification (ORI), monitoring, and control, on ORM practices in commercial banks in Pakistan. The study recommends that policymakers strengthen the ORM framework by incorporating CG. Additionally, effective identification, monitoring, and control of operational risks are essential for reducing such risks.

Cristea (2021) analyzed the operational risks, and the possible financial losses that can be resulted in are important. The introduction of various prudential regulations for effective operational risk management has made operational risk one of the most critical risks in the banking sector within a short span of time. This paper outlines the key components of operational risk, the steps involved in risk management, and the causes of operational risks. A case study of a Romanian bank highlights prudential regulations and methods for calculating the minimum capital required for operational risks. The study also considers crisis simulations as a vital part of operational risk management. It compares the evolution of the minimum operational risk capital requirement in the Romanian banking system from 2008 to 2018 with the trends in the European banking sector. The study finds that in 2018, the basic indicator method was predominantly used to calculate the minimum capital requirement for operational risks.

Kiyumi (2021) analyzed the relationship between operational risk management and customer complaints in Omani banks. The present study utilized a quantitative approach to explore the relationships between the variables in the research, with data collected through a survey conducted on commercial banks in Oman. The results show that effective operational risk management is negatively and significantly associated with customer complaints, as it ensures proper handling of risks. Conversely, the absence of risk management practices has a negative impact on Omani banks. Furthermore, the findings indicate that as operational risk management improves, customer complaints decrease. This research makes a valuable contribution by highlighting the significant impact of operational risk management on customer complaints in Omani banks.

Fadun and Oye (2020) analyzed the impact of operational risk management practices on the financial performance of commercial banks in Nigeria. This study utilized 10 years of secondary data (2008-2017) from the audited financial statements of selected commercial banks in Nigeria. The data was analyzed using the Linear Multiple Regression Model. The results indicated a positive relationship between operational risk management and the financial performance of banks. The findings suggest that effective operational risk management practices have a positive impact on banks' financial performance. It is recommended that bank management allocate sufficient resources to understanding and managing operational risks to enhance both risk management and financial performance. Since the study is based on a limited sample, a larger sample size could provide valuable insights for future research.

Hajisaaaid (2020) examined the relationship between operational risk management and profitability of eight companies working in the basic material sector in Saudi Arabia during the period 2009 to 2018. The study employs regression analysis, the fixed effect model, the random effect model, and the Hausman test as statistical methods. Return on equity (ROE) serves as the dependent variable, while the ratios of total debt to assets (DA), long-term debt to assets (LDA), and short-term debt to assets (STDA) are the independent variables. The results indicate a negative correlation between ROE and the ratio of short-term debt to total assets (STDA). Additionally, a positive relationship is found between profitability and total

debt (DA), while a negative relationship exists between the long-term debt to total assets ratio (LDA) and ROE.

Ali and Faisal (2020) analyzed the impact of risk management strategy on performance on the success of business organizations. The debt-to-equity ratio, which compares internal capital to external capital, is a key aspect of a company's risk management strategies. In Saudi Arabia's petrochemical sector, companies primarily rely on equity, but their financial performance has been on a decline from 2004 to 2016. The study uses secondary data sourced from the websites of Saudi petrochemical firms. It measures and compares the financial volatility and sensitivity of these firms' financial ratios using financial ratio trend index and financial ratio volatility analysis. By calculating the correlation between the trend indexes (TICBI) of the independent and dependent variables, the study examines how changes in debt equity influence other variables. The findings reveal that petrochemical firms underperformed due to underutilized resources, a result of low demand and falling product prices, driven by a mix of internal and external factors. Research shows that the key drivers of growth in China's petrochemical industry include scale, demand, production costs, profitable product lines, and affordable foreign capital.

Falih et al. (2020) examined the relationship of operational risk management and competitive advantages in enhancing the Iraqi banking sector. The banking industry is currently characterized by intense competition, rapid changes in customer expectations, rising regulatory standards, technological innovations, and heightened rivalry. A review of the literature explored studies on operational risk management and its link to competitive advantage. The theoretical framework is grounded in the resource-based view, which posits that operational risk management is closely tied to gaining a competitive edge. This study examines the relationship between operational risk management and competitive advantages in enhancing the Iraqi banking sector, focusing on people risk management, systems, procedures, processes, and external risks. The research used a quantitative approach, surveying 144 respondents, including executives and department heads in the Iraqi banking sector. Data were collected via questionnaires and analyzed using SPSS software. The results revealed several key conclusions, highlighting that increased focus on managing operational risks significantly contributes to building a competitive advantage in the banking industry.

The findings also showed a positive impact of operational risk management variables such as people, systems, procedures, and external risks on competitive advantage, indicating the sector's potential for strong performance.

Muhammad, Wahyoe and Wahdi (2019) examined that foreign penetration in terms of assets and branches has different impacts on credit risk in the banking sector. In general, a higher proportion of foreign banks' total assets tends to worsen bad debts, while an increased number of foreign banks can help reduce credit risk. Additionally, the level of banking competition and the economic health of a country play a significant role in determining the extent to which international banks can reduce credit risk. When bank concentration exceeds a certain threshold, but not market dominance, a higher ratio of foreign bank branches can contribute to reducing bad debt. These findings are particularly relevant in emerging markets. Moreover, the theory suggesting that losses from larger non-interest income in banks helps explain the increased credit risk associated with foreign penetration and banking competition. Given the fluctuating levels of foreign involvement and competition in the banking sector, it is advisable for banks to avoid using cross-selling strategies to boost non-interest income.

Raman, Sharker, and Uddinj (2019) examined the impact of operation risk management on profitability of publicly listed manufacturing companies in Bangladesh. This article examines the relationship between independent variables (debt ratio, equity ratio, and debt-to-equity ratio) and other financial variables using fixed effects regression. The dependent variables analyzed include earnings per share (EPS), equity, return on assets (ROA), and return on equity (ROE). The findings indicate that ROA is positively influenced by both the debt and equity ratios, but negatively impacted by the debt-to-equity ratio. Additionally, ROE is positively affected by the equity ratio but negatively by the debt ratio. Lastly, EPS is significantly negatively impacted by both the debt and equity ratios.

Harmantzis (2018) examined financial markets, growing regulatory environments, and increasingly complex financial systems have led risk managers to realize the importance of measuring and managing Operational Risk. The Basle Committee on Banking Supervision defines operational risk as the potential for loss, either direct or indirect, resulting from inadequate or failed internal processes, personnel, systems, or external events. Issues such as

infrastructure failures (e.g., IT disruptions, terrorist attacks), fraud (e.g., rogue trading), and legal or regulatory challenges (e.g., fines) have driven the need for proactive operational risk management within major financial services organizations. This paper provides an updated, critical review of key aspects of operational risk management, including methodologies, data collection, analytics, and implementation, drawing from practical experience.

Ajibola et al. (2018) examined the research on impact of risk management strategies on financial performance of quoted manufacturing firms in Nigeria over the period 2005-2014. The study examines the financial performance of Nigerian listed manufacturing companies in relation to their risk management strategies using a panel data approach. The results from the ordinary least squares analysis show that the long-term debt ratio (LTD), total debt ratio (TD), and return on equity (ROE) have significant positive correlations, though the association between ROE and its positive correlation is not statistically significant. Short-term debt ratio (STD) and equity have a minimal negative relationship with return on assets (ROA), suggesting that ROE serves as a better indicator of financial performance. The study concludes that companies should prioritize long-term debt and that risk management strategies positively impact financial performance.

Pinedo and Xue (2017) analyzed the operational risk in financial services from an operations management perspective, focusing in particular on process design, process management, and human behavior aspects. The financial services industry faces unique operational risks that distinguish it from other service sectors. While numerous books and papers have addressed operational risk in financial services over the years, most of the literature has focused on its conceptual and statistical elements, rather than its practical aspects. Operational risk in financial services has largely been overlooked by the operations management field. This framework argues that operational risk in financial services can benefit significantly from research in operations management, particularly from the practices and theories applied in manufacturing and other service industries. The aim of this study is to highlight specific challenges and questions in operational risk management that could inspire further research in this area of operations management.

Epetimehin and Obafemi (2015) examined the effective management of operational risk is paramount importance for every financial institution board and senior management. Globalization and deregulation of financial markets, along with increased competition and the rise of advanced, sophisticated technologies, have led to significant changes in the financial sector's product distribution channels and service delivery mechanisms. These changes have introduced greater complexity into operations, making the sector's risk profiles more diverse, complex, and potentially catastrophic. The New Capital Adequacy Framework now requires financial institutions to assess the regulatory frameworks related to operational risk management. A study was conducted with 150 employees from various financial institutions, including banks, insurance companies, stockbrokers, and microfinance organizations. The study used Analysis of Variance (ANOVA) to test the hypotheses, and responses were analyzed using the Statistical Package for Social Science (SPSS). The findings indicated that effective operational risk management positively influences the financial development and growth of the financial sector.

**Table 1**

*Summary and Empirical Review at International Context*

S.N	Authors	Objectives	Research methodology	Findings
1.	Cornwell et al. (2023)	To examine operational risks are becoming more widespread and difficult to handle within organizations, often leading to significant financial losses as well as other non-financial consequences.	Correlation coefficient and multiple regression was used.	The findings indicate that the in-depth analysis highlights specific areas requiring additional research to enhance operational risk management (ORM) both within and outside the financial services (FS) and energy and natural resources (ENR) sectors, aiming to support better decision-making.
2.	Budianto and Dewi (2023)	To examine the development and expansion of studies related to operational risks within both Islamic and conventional financial sectors.	Panel data analysis was employed, analyzing the fixed effect and random effect models was used.	The results revealed a notable annual increase in publications concerning operational risks. Analysis using VOSviewer identified nine separate research clusters associated with operational risk topics.

3. Altaf (2022) To analyze the effects of operational risk management (ORM) strategies on the performance of commercial banks in Pakistan. Regression analysis was used. The findings demonstrate that corporate governance (CG) and the processes of identifying, monitoring, and controlling operational risks have a substantial influence on ORM practices in Pakistan's commercial banks.
4. Cristea (2021) To analyze operational risks and the potential financial losses they may cause are of significant concern. Correlation analysis and multiple regression were used. The study concludes that in 2018, the Basic Indicator Approach was predominantly utilized to calculate the minimum capital required for addressing operational risks.
5. Kiyumi (2021) To analyze the connection between operational risk management and the occurrence of customer complaints in banks operating in Oman. Multiple regression analysis was used. The results show that effective operational risk management is significantly and negatively associated with customer complaints, as it ensures proper handling of risks. Conversely, the findings indicate that the lack of risk management in Omani banks leads to a negative impact.
6. Fadun and Oye (2020) To analyze the operational risk management practices influence the financial performance of commercial banks in Nigeria. Linear Multiple Regression Model was used. The results indicated a positive correlation between operational risk management and the financial performance of banks. The findings suggest that effective operational risk management practices have a favorable impact on the financial performance of banks.
7. Hajisaaid (2020) To examine the connection between capital structure and profitability in eight companies operating within the basic materials sector in Saudi Arabia. Regression analysis, fixed effect models, random effect models, and the Hausman test are the statistical methods that were applied. The findings reveal a negative correlation between return on equity (ROE) and the short-term debt to total assets (SDA) ratio. While profitability and total debt (DA) are positively correlated, return on equity (ROE) shows a negative correlation with the long-term debt to total assets (LDA) ratio.
8. Ali and To analyze the financial Correlation and The findings indicate that

- Faisal (2020) performance, regression petrochemical companies profitability, and capital analysis was outperformed expectations, as structure influence an used. they did not fully utilize their organization's ability to achieve business success. resources due to low demand and decreased product prices, which were caused by various internal and external factors.
9. Falih et al. (2020) To examine the connection between operational risk management and competitive advantages in strengthening the Iraqi banking sector. Descriptive Statistics, correlation analysis and regression analysis were used. The paper's results presented several assumptions and conclusions, including the finding that growing attention to managing operational risks plays a crucial role in creating a competitive advantage within the banking industry, thereby enhancing its overall competitiveness.
10. Muhammad, Wahyoe , & Wahdi (2019) To examine the varying impacts of foreign penetration, in terms of assets and branches, on credit risk within the banking sector. Hypothesis was used. The results are especially evident in emerging markets. Additionally, the loss-leader hypothesis, which focuses on boosting noninterest revenue for banks, helps to clarify part of the increased credit risk in banks due to foreign penetration and heightened competitiveness.
11. Raman, Sharker and Uddinj (2019) To examine how the capital structure influences the profitability of publicly traded industrial companies in Bangladesh. Regression analysis was used. The key finding of the study was that the debt-to-equity ratio significantly decreases ROA, while both the debt ratio and equity ratio have a notable positive effect on it. The study also shows that the debt-to-equity ratio significantly lowers ROE, whereas the equity ratio significantly boosts it. Finally, the debt-to-equity ratio is shown to significantly reduce earnings per share.
12. Harmantzis (2018) To examine the evolving financial markets, expanding regulatory frameworks, and the growing Linear regression model was used. The results indicated that, according to the Basel Committee on Banking Supervision, operational risk refers to the potential for direct

		complexity of financial systems.		or indirect losses caused by insufficient or malfunctioning internal processes, personnel, and systems, or by external events.
13.	Ajibola, Wisdom and Qudus (2018)	To examine the impact of capital structure on the financial performance of publicly traded manufacturing companies in Nigeria.	Panel methodology was applied to analyze to present data.	The panel ordinary least squares results indicate a statistically significant positive relationship between the long-term debt ratio (LTD), total debt ratio (TD), and return on equity (ROE). However, the relationship between ROE and the short-term debt ratio (STD) is positive but statistically insignificant.
14.	Pinedo and Xue (2017)	To analyze the operational risk in financial services through the lens of operations management.	Regression analysis was used.	The results indicated that operational risk in financial services can greatly benefit from research in both the theoretical and practical aspects of operations management, as applied in manufacturing and other service industries.
15.	Epetimehin and Obafemi (2015)	To examine the critical importance of effectively managing operational risk for the boards and senior management of financial institutions.	ANOVA, Hypothesis, Correlation and regression analysis were used.	The results revealed that the management of operational risks has a positive impact on the financial development and growth within the financial sector.

### 2.3.2 Empirical Review of Nepalese Journals and Articles

Dhital (2024) examined the effect of corporate governance attributes on risk management practices of Nepalese commercial banks. The study examines non-performing loans and operational risk as the dependent variables, with independent variables including board size, board diversity, audit committee, risk management committee, board meetings, and leverage. The research uses secondary data from 15 commercial banks, with 105 observations spanning from 2015/16 to 2021/22. The data were gathered from publications and websites of Nepal Rastra Bank (NRB), Banking and Financial Statistics by NRB, and annual reports of the selected banks. Correlation coefficients and regression models were employed to

assess the significance and impact of corporate governance on risk management practices in Nepalese commercial banks. The findings indicate that the risk management committee has a negative effect on both non-performing loans and operational risk, meaning that an increase in the number of directors on the risk management committee results in a decrease in both types of risks. Likewise, a larger audit committee size also reduces non-performing loans and operational risk. On the other hand, the leverage ratio positively impacts operational risk, suggesting that a higher leverage ratio increases operational risk. Additionally, board meetings have a positive impact on both non-performing loans and operational risk, meaning that an increase in the frequency of board meetings leads to higher risks. Lastly, board diversity, particularly an increase in female board members, was found to positively impact both non-performing loans and operational risk, indicating that more female board members correlate with higher risks.

Bashyal and Bhandari (2023) examined the impact of operational risk management on the financial performance of insurance companies in Nepal. This study uses a panel least squares regression model to analyze the balance data of 14 insurance companies over the period from 2013 to 2020, comprising 126 observations. The independent variables include the ratio of total debt, equity to total assets, company size, liquidity ratio, and asset tangibility, while the dependent variable is return on assets (ROA). Data for the analysis were obtained from the annual insurance report, financial and insurance statistics, and insurance monitoring reports published by Nepal's central bank. The analysis employed pooled OLS models, random effects models, and fixed effects models. A descriptive-comparative and causal-comparative research design was adopted, with data analysis conducted using Eviews-12 software for model diagnostics, tuning, and analysis. The study utilized descriptive statistics, Pearson correlation analysis, and multiple regression models. After performing model diagnostics using Eviews-12, the random effects model was selected as the most appropriate. The regression results show that the total debt ratio (TDR) has a negative and statistically significant effect on ROA, while the equity to total assets (ETTA) ratio has a positive and statistically significant impact on ROA. Company size was found to have a positive but statistically insignificant effect on ROA. The asset tangibility variable was found to be statistically insignificant, indicating that it does not significantly affect the financial

performance of insurance companies. Overall, the study concludes that the equity to total assets ratio, leverage, and asset tangibility have an influence on the financial performance of Nepali insurance companies.

Mahat et al. (2023) examined the performance of insurance companies in Nepal from the perspectives of enterprise risk management. The performance of insurance companies is influenced by various factors, including the identification, assessment, mitigation, implementation, and management of risks. A systematic questionnaire survey was conducted with 100 respondents, carefully selected from key personnel across various insurance company branches in the Kathmandu Valley. Step-wise regression and correlation techniques were employed for data analysis. The study's primary finding indicates that while the identification, assessment, and reduction of risks positively affect a company's performance, the management and implementation of risk strategies have a negative impact. Notably, the effect of risk mitigation was found to be statistically significant.

Darlami (2023) examined the impact of financial ratios, operational efficiency and non-performing loan on the profitability of Nepalese commercial banks. The study examines the relationship between return on assets (ROA) and return on equity (ROE) as dependent variables, with leverage, liquidity ratio, net interest margin, capital adequacy ratio, non-performing loans, and operating efficiency as independent variables. The analysis is based on secondary data from 20 commercial banks, covering 120 observations from 2015/16 to 2020/21. Data was collected from the Bank Supervision Report published by Nepal Rastra Bank (NRB) and annual reports of the selected banks. To test the significance of financial ratios, operational efficiency, and non-performing loans on profitability, correlation coefficients and regression models were used. The study finds that leverage negatively affects ROA, suggesting that an increase in leverage ratio leads to a decrease in ROA. In contrast, the liquidity ratio has a positive impact on both ROA and ROE, meaning an increase in liquidity ratio enhances both metrics. Similarly, net interest margin positively affects both ROA and ROE, indicating that higher net interest margin boosts profitability. Capital adequacy ratio is positively correlated with ROA, meaning an increase in this ratio improves ROA. Non-performing loans negatively impact ROE, suggesting that higher non-performing loans decrease ROE. Finally, operating efficiency has a negative effect on both

ROA and ROE, indicating that higher operational efficiency leads to a reduction in both profitability metrics for Nepalese commercial banks.

Bhatt et al. (2023) examined the determinants of credit risk management and their relationship with the performance of commercial banks in Nepal. The study also explores the impact of credit risk management on the performance of Nepali commercial banks. The results indicate a positive correlation between environmental risk and credit risk management. Furthermore, it is found that credit risk management is significantly influenced by credit appraisal measures. Additionally, market risk analysis plays a significant role in shaping credit risk management. The study highlights that credit risk management mediates the relationship between market risk analysis, credit assessment metrics, environmental risk, and the performance of commercial banks. To reduce credit risk and enhance financial performance, it is recommended that managers focus on implementing effective risk prevention and control strategies.

Chalise and Adhikari (2022) examined the impact of risk management and firm size on the financial performance of Nepalese commercial banks. The study examines secondary data from a sample of 14 commercial banks over the period from 2013/14 to 2019/20, including public, joint venture, and private banks. Regression analysis is used to assess the relationships between return on assets (ROA), earnings per share (EPS), and risk management strategies as well as company size (total assets). The results indicate that risk management strategies, such as the debt/equity ratio, are negatively correlated with both ROA and EPS. Conversely, the study shows that both ROA and EPS improve with an increase in company size (total assets). The findings support the use of senior equity capital in the risk management strategies of Nepali commercial banks.

Paudel (2021) analyzed of risk management and efficiency of work in Nepalese society. Cooperative societies have been formed by people with similar goals to achieve common objectives, providing access to capital markets for the poor, middle class, and illiterate populations in rural areas. This model has also proven successful in urban areas. While risk management is always a part of operations, various stakeholders remain critical of the risks faced by depository institutions. Although regulatory requirements for cooperatives are not as

stringent as those imposed on banks by the central bank, several risks have been observed within the sector. As cooperatives have expanded both horizontally and vertically, ethical practices have been diluted, leading to issues such as adverse selection, lack of transparency, and weak governance. The study analyzes risk management and operational efficiency using both quantitative and qualitative methods. It suggests that strong and prompt regulations should be implemented to eliminate unfair practices. The credit risk management of cooperatives is deemed unsatisfactory, and it is recommended that authorities select appropriate credit risk management systems, with a focus on improving management practices. The study also shows that risk variables are significantly linked to financial performance, efficiency, and organizational factors. The Credit Vulnerability Ratio for long-term solvency risk and credit default risk stands at 55% and 10%, respectively, indicating the sensitivity and potential danger of these variables in the daily operations of cooperatives. It suggests that a uniform regulatory approach may not be effective for this sector.

Chhetri (2021) investigated the effect of credit risk on the financial performance of commercial banks in Nepal. The panel data of 17 commercial banks, comprising 85 observations from 2015 to 2020, was analyzed. The regression model showed that the non-performing loan ratio (NPLR) has a negative and statistically significant effect on financial performance (ROA). The capital adequacy ratio (CAR) and bank size (BS) were found to have a negative but statistically insignificant impact on financial performance (ROA). The credit-to-deposit ratio (CDR) exhibited a positive but insignificant relationship with financial performance (ROA). The study concluded that the management quality ratio (MQR) has a positive and significant association with the financial performance (ROA) of commercial banks in Nepal. The study recommends that it is crucial for Nepalese commercial banks to adopt effective credit risk management practices, enhance their credit analysis and loan management processes, safeguard their assets, and minimize the high incidence of non-performing loans and their adverse impact on financial performance.

Timilsina (2020) examined the determinants of risk management in Nepalese commercial banks. The study utilizes secondary data from 16 commercial banks, with 112 observations spanning from 2011/12 to 2017/18. The total debt-to-total assets ratio and total debt-to-total equity ratio were chosen as dependent variables, while return on assets, bank size, asset

tangibility, asset growth, and liquidity were considered as independent variables. Data was gathered from the annual reports of the selected banks. Pearson's correlation coefficients and regression models were applied to assess the significance and impact of bank-specific factors on risk management in Nepalese commercial banks. The results indicate that bank size and asset tangibility are positively correlated with the total debt-to-total assets ratio, while return on assets, asset growth, and liquidity show negative correlations with the total debt-to-total assets ratio.

Shah and Vongbusin (2019) investigated the impact of credit risk management on bank profitability in Nepalese commercial banks. In this study, return on assets (ROA) is treated as the dependent variable, while the non-performing loan ratio, leverage ratio, capital adequacy ratio, loan loss provision, and credit interest to credit facilities are the independent variables. Data for the analysis was sourced from the Banking and Financial Statistics, Nepal Rastra Bank's Bank Supervision Report, and the annual reports of selected commercial banks. The study, based on 250 observations from 25 banks, employs a mix of the Independent t-test, Pearson's correlation, analysis of variance (ANOVA), and multiple regression analysis. The results indicate that ROA negatively correlates with the capital adequacy ratio, leverage ratio, non-performing loan ratio, and loan loss provision ratio. In contrast, a positive relationship is found between ROA and credit interest to credit facilities.

Shrestha (2018) analyzed the risk management of a dairy development company. In his research, secondary data was primarily used, along with various financial tools to analyze the working capital management activities of DDC. The study aimed to evaluate the current assets and liabilities, their impacts, and their interrelationships. It also focused on identifying trends in asset composition and risk management strategies, as well as assessing equity performance and asset management. The key findings from the study indicate that DDC has adopted a conservative approach to working capital management, particularly concerning current asset management. Over the study period, the company's investment in current assets was lower than in net fixed assets, and the company's stance on the proportion of current asset investment remains ambiguous. Cash and bank balances, which make up the second-largest portion of short-term assets, show frequent volatility. Similarly, inventory and accounts receivable, significant components of current assets, also display erratic behavior.

This volatility results from the inefficient use of shareholder wealth, total assets, and current assets.

Dhodary (2018) examined on risk management in Nepalese non-financial Enterprises. Interest rate, assets, liabilities and borrowing are the variables used in this study. Various statistical measures, including standard deviation, coefficient of variation, average, percentage, minimum, and maximum, were used in the analysis. The results of the survey show that Nepalese non-financial businesses exhibit diverse preferences regarding borrowing maturity structures. However, most businesses do not factor in interest rates or the practice of aligning the structure of their assets and liabilities when making borrowing decisions. Given the importance of ensuring a proper alignment between the structure of assets and liabilities, it is recommended that businesses consider this factor in their borrowing decisions.

Bhattarai (2017) examined the effect of risk management on the performance of manufacturing company listed at the Nepal stock exchange. Secondary data from the annual reports and financial statements of eight manufacturing companies over the past decade were collected. The findings from the multiple regression analysis reveal a significant negative relationship between the performance of Nepalese manufacturing companies and their risk management strategies. In addition to risk management practices, the study identifies a significant positive relationship between company size and performance, whereas asset tangibility shows a negative correlation with performance.

Kattel (2016) analyzed the risk measurement practices of commercial banks in Nepal. This paper aims to explore the views of Nepalese bankers regarding the importance of credit risk assessment and the use of various tools to evaluate the risk levels of individual borrowers. The study's findings indicate that Nepalese bankers recognize the significance of utilizing multiple methods to accurately assess risk. Moreover, during the credit evaluation process, Nepalese commercial banks have implemented several techniques, including the matrix method, internal rating system, standard approach, judgment-based assessments, causal model linear probability, and linear discriminant analysis.

## **Table 2**

*Summary and Empirical Review at Nepalese Context*

S. N	Authors	Objectives	Research methodology	Findings
1.	Dhital (2024)	To examine the impact of corporate governance characteristics on the risk management practices of commercial banks in Nepal.	Correlation coefficient and regression models were used to present data.	The study found that the risk management committee negatively affects both non-performing loans and operational risk. This suggests that an increase in the number of directors on the risk management.
2.	Bashyal & Bhandari, (2023)	To examine the impact of risk management strategies on the financial performance of insurance companies in Nepal.	Descriptive statistics, Pearson's correlation analysis, and multiple regression models was used.	The study concluded that while ETTA has a statistically significant positive effect on ROA, TDR has a statistically significant negative impact on ROA. Conversely, firm size has a positive but statistically insignificant effect on ROA.
3.	Mahat et al. (2023)	To analyze the performance of insurance companies in Nepal through the lens of enterprise risk management.	Correlation and regression analysis were used to present data.	The main conclusion of the study indicates that while risk management and its implementation negatively affect a company's performance, risk identification, assessment, and mitigation have a positive impact on the performance of insurance companies.
4.	Darlami (2023)	To examine the influence of financial ratios, operational efficiency, and non-performing loans on the profitability of commercial banks in Nepal.	Correlation and regression models were used.	It suggests that an increase in the liquidity ratio results in higher return on assets and return on equity. Similarly, a higher net interest margin positively affects both return on assets and return on equity, implying that an increase in net interest margin boosts both measures.
5.	Bhatt et al. (2023)	To examine the factors influencing credit risk management and their connection to the performance of	Descriptive, correlation analysis and Multiple regression	The results show a positive relationship between environmental risk and credit risk management. Additionally, it was revealed that credit risk

- commercial banks in Nepal. were used to present data. management is significantly affected by credit appraisal criteria.
6. Chalise & Adhikari (2022) To examine the effect of risk management strategies and firm size on the financial performance of commercial banks in Nepal. Regression analysis was used. The results revealed a negative relationship between risk management strategies (debt/equity) and both ROA and EPS. Conversely, it showed that both ROA and EPS increased with the size of the firm (total assets).
  7. Paudel (2021) To analyze the relationship between risk management and work efficiency in Nepalese society. Descriptive, correlation and regression analysis were used. The credit risk management of cooperatives appears to be inadequate; therefore, relevant authorities should implement suitable credit risk management systems, and management should prioritize credit risk management.
  8. Chhetri (2021) To investigated the impact of credit risk on the financial performance of commercial banks in Nepal. Multiple regression model was used to present data. The regression model (ROA) shows that non-performing loans (NPLR) have a statistically significant negative impact on financial performance. Meanwhile, bank size (BS) and the capital adequacy ratio (CAR) have a negative but statistically insignificant effect on financial performance (ROA).
  9. Timilsina (2020) To examine the factors influencing risk management strategies in commercial banks in Nepal. The Pearson's correlation coefficients and regression models was used. The findings suggest that return on assets, asset growth, and liquidity have a negative relationship with the total debt to total assets ratio, while bank size and asset tangibility are positively correlated.
  10. Shah and Vongbusin (2019) To investigated the effect of credit risk management on the profitability of commercial banks in Nepal. Pearson's Correction, analysis of variance (ANOVA), multiple regression analysis were used to present data. The results show that the return on assets, as the dependent variable, is negatively associated with the capital adequacy ratio, leverage ratio, non-performing loan ratio, and loan loss provision ratio. On the other hand, a positive correlation exists between return on assets and the credit interest to credit facilities ratio.

11.	Shrestha (2018)	To analyze the working capital management of the Dairy Development Corporation.	Regression analysis was used.	The study's main findings indicate that the Dairy Development Corporation follows a conservative working capital policy in managing its current assets and has been increasing its investment in working capital.
12.	Dhodary (2018)	To examine the risk management strategies employed by non-financial enterprises in Nepal.	Minimum, maximum, percentage, average, standard deviation and coefficient of variation was used.	The survey results show that various non-financial enterprises in Nepal have diverse preferences regarding borrowing maturity structures, and the majority do not consider interest rates or the alignment of their asset and liability structures when making borrowing decisions.
13.	Bhattarai (2017)	To examine the impact of risk management on the performance of manufacturing companies listed on the Nepal Stock Exchange.	Regression analysis was used.	A significant positive relationship exists between the size of the company and its performance, while a negative relationship is observed between tangibility and performance.
14.	Panthi (2018)	To examine the comparative analysis of the risk management strategies employed by listed manufacturing companies.	Descriptive and regression analysis was used.	The key findings revealed that the average Degree of Operating Leverage (DOL) for BNL and UNL are 3.29 and 1.72, respectively. Compared to BNL, UNL exhibits a relatively favorable DOL. A higher DOL indicates that the company is riskier.
15.	Kattel (2016)	To Investigate the risk measurement practices employed by commercial banks in Nepal.	Correlation analysis and multiple regression model were used to present data.	The study concludes that bankers in Nepal recognize the importance of employing various methods to effectively assess risk.

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## 2.4 Research Gap

Earlier studies on the impact of operational risk management on the financial performance of commercial banks have largely employed traditional methods, relying on widely used indicators. An analysis of prior theses shows that only a few have focused on the specific commercial banks chosen in this research, highlighting a significant gap in existing literature. This study seeks to bridge that gap by specifically targeting first-class commercial banks, with a central focus on operational risk management. Furthermore, it investigates how operational risk management in financial institutions relates to stock market efficiency. Key market participants such as stockbrokers, financial analysts, and individual investors were identified as major sources of data. A survey was conducted to collect meaningful perspectives from these stakeholders, acknowledging their vital role in the stock market ecosystem.

Limited research has examined the role of operational risk management in the financial performance of commercial banks, particularly in the Nepalese context. This study aims to fill that gap by analyzing operational risk management practices across five selected commercial banks, each founded in different time periods. The research covers fiscal years 2013/14 to 2022/23, which may pose constraints in terms of the findings' precision due to the brief duration. The primary objective is to assess operational risk management within Nepalese commercial banks, explore its connection with financial services, and evaluate its overall impact. While earlier studies have predominantly applied statistical techniques such as descriptive statistics, correlation, and multiple regression analysis, few have incorporated fundamental financial analysis tools. Additionally, there has been minimal emphasis on key financial indicators like Net Interest Margin (NIM), Loan to Deposit Ratio (LDR), Non-Performing Loans (NPL), Liquidity Ratio (LR), and Return on Assets (ROA), which are crucial in understanding operational risk. This study intends to analyze how these indicators interact and collectively influence operational risk management in the banking sector.

This study holds significance from both academic and policy perspectives, offering value to a wide range of audiences such as individuals, researchers, educators, students, and industry

professionals. It is anticipated that future scholars in this area will also find it beneficial in supporting and enhancing their own research endeavors.

## **CHAPTER-III**

### **RESEARCH METHODOLOGY**

This study adopts a quantitative research methodology to examine operational risk management on financial performance of Nepalese commercial banks, utilizing secondary data sourced from the annual reports of selected banks. To assess the impact of various factors on profitability, the study applies descriptive statistics, correlation analysis, and regression models. The banks included in the sample are chosen based on specific criteria to maintain consistency and relevance across the data set, which covers a defined time frame. Statistical software is used to analyze the data, ensuring precision in identifying the relationships among variables, with the findings offering valuable insights into the determinants of financial performance in Nepalese commercial banks.

#### **3.1 Research Design**

To fulfill the objectives of this research, a combination of descriptive, causal research designs have been employed. The descriptive research design was utilized to gather factual data and obtain sufficient information. This approach, commonly used in surveys, aims to assess the attitudes, behaviors, and traits of a specific population and to depict current situations or events. This particular study focuses on evaluating the profitability status of ADBL, GBIME, NIMB, SBL, and SBI.

#### **4.2 Population and Sampling Design**

The entire population for this study consists of 20 commercial banks in Nepal, as identified by Nepal Rastra Bank (NRB, 2023), all of which are currently generating substantial profits. Based on this context, five banks have been purposefully selected as the sample for the research, representing institutions with notable financial performance within the industry. The selection of Agricultural Development Bank (ADBL), Global IME Bank Limited (GBIME), Nepal Investment Mega Bank Limited (NIMB), Siddhartha Bank Limited (SBL), and Nepal SBI Bank Limited (SBI) using the judgmental sampling method is based on their significance, market presence, and diverse establishment periods in the Nepalese banking

sector. These banks were chosen intentionally due to their representation of both government-owned and private sector banks, enabling a comprehensive evaluation of operational risk management and financial performance. Additionally, these institutions possess a rich history of operations, sufficient financial disclosures, and consistent availability of annual reports, which are crucial for reliable and meaningful data analysis. This purposeful selection helps ensure the study reflects a balanced view of the banking industry's practices and performance in Nepal.

### **4.3 Nature and Sources of Data**

This study primarily relies on secondary data sources. The data have been collected from various materials, including annual reports, audit reports, balance sheets, income statements, official websites, both published and unpublished theses, financial performance documents of banks, as well as newspapers, journals, and magazines.

### **3.4 Instrument of Data Collection**

This research utilizes a variety of data published by banks, including financial performance reports, articles, journals, reference materials, annual reports, and information from their official websites. Additional data were sourced from institutions and authorities such as the Nepal Rastra Bank (NRB), Nepal Stock Exchange, and the Ministry of Finance. Furthermore, relevant data and insights were obtained from economic journals, periodicals, bulletins, magazines, and a wide range of published and unpublished documents. Some of the reviewed literature was primarily gathered from the Central Library of Tribhuvan University, Kirtipur, and Shanker Dev Campus.

### **3.5 Data Processing Procedure**

Initially, data were collected from the banks' annual reports and organized into a spreadsheet. These data were then used to calculate financial ratios and generate relevant figures as required for the study. To carry out this analysis, the collected data were processed using software tools such as Microsoft Excel and Microsoft Word.

### 3.6 Methods of Analysis

In this process, several profitability measurement methods and techniques are utilized to obtain accurate results. The collected data, organized systematically, are analyzed and presented using financial and statistical tools, including ratio analysis and Karl Pearson's correlation coefficient.

#### 3.6.1 Financial Tools

Ratio analysis is a powerful and commonly used tool for financial analysis. It involves calculating ratios between two elements within financial statements, illustrating the mathematical relationship between them. In financial terms, a ratio represents the quantitative connection between two variables. Ratios are essential for summarizing extensive financial data, enabling qualitative evaluations, and are regarded as key indicators for assessing a company's performance. Although many ratios exist to assess and interpret financial performance, only the relevant and significant ones are considered for our specific objective.

#### 3.6.2 Statistical Tools

Statistical tools play a crucial role in business operations. It is essential to calculate every aspect of performance in the business world to accurately determine profit or loss. Below are some mathematical tools commonly used to interpret data.

##### 1. Arithmetic Mean

The arithmetic mean represents the average obtained by summing all the values in a dataset and then dividing that total by the number of observations. It is a basic yet essential tool in statistical analysis, providing a central value for a given set of numbers.

$$\bar{X} = \frac{\sum X}{N}$$

Where,

$\bar{X}$  = Arithmetic Mean

$\sum X$  = Sum of Elements

N = Number of Observation

## 2. Standard Deviation

The standard deviation is a statistical measure that evaluates how much the values in a dataset deviate from the mean. It is determined by taking the square root of the variance. By examining how far each data point lies from the average, it captures the degree of variability within the data. A larger distance of values from the mean reflects greater dispersion, leading to a higher standard deviation.

$$S. D = \sqrt{\frac{\sum(X - \bar{X})^2}{N}}$$

## 3. Coefficients of Variation

Standard deviation serves as an absolute measure of dispersion. When dispersion is expressed relative to the standard deviation, it is referred to as the coefficient of standard deviation. The percentage form of the coefficient of standard deviation is called the coefficient of variation (C.V.). A lower C.V. indicates greater uniformity and consistency, while a higher C.V. reflects less uniformity. Standard deviation alone is not sufficient for comparing the variability of two different datasets; It is computed as follows.

$$\text{Coefficients of variation (C.V.)} = \frac{S.D}{\bar{X}} * 100$$

## 4. Coefficient of Correlation

The correlation coefficient is a statistical measure that quantifies the strength and direction of the relationship between two variables based on their relative movements. It plays a crucial role in evaluating the extent of linear association between variables. The most widely used technique for measuring correlation is "Karl Pearson's coefficient of correlation." When the values of the variables increase or decrease together, the correlation is considered positive; whereas, if one value increases while the other decreases, the correlation is negative. The value of the correlation coefficient (r) always lies between +1 and -1. The correlation coefficient between two variables, X and Y, can be calculated using the following formula.

$$r = \frac{N\Sigma XY - \Sigma X, EY}{\sqrt{N\Sigma X^2 - (\Sigma X)^2} \sqrt{N\Sigma Y^2 - (\Sigma Y)^2}}$$

Where,

r = the correlation coefficient between two variables of X and Y Properties

- a) It lies between -1 and +1
- b) If r = +1, then there is perfect positive correlation.
- c) If r = -1, then there is perfect negative correlation.
- d) If r = 0, then there is no correlation.
- e) If r = 0.7 to 0.99 (or- 0.7 to -0.99) then there is high degree positive or negative correlation.

### 5. Multiple Regression Analysis

Multiple linear regression (MLR) is a widely used form of linear regression that describes the relationship between a single continuous dependent variable and two or more independent variables, which may be either continuous or categorical. MLR is a statistical method that uses several predictors to estimate the outcome of a response variable. Its primary objective is to build a model that reflects the linear association between the independent (explanatory) variables and the dependent (response) variable.

#### Study Model

**Financial Performance (Y) =  $\beta_0 + X_1 \beta_1 + X_2 \beta_2 + X_3 \beta_3 + X_4 \beta_4 + X_5 \beta_5 + e$**

Where,

X1= Net Interest Margin

X2= Loan to Deposit Ratio

X3= Non-Performing Loan

X4= Liquidity Ratio

X5= Capital Adequacy Ratio

### 3.7 Research Framework and Definition of Variables

The conceptual framework of this research is presented in graphic from which reflects the variables selected in research. It is presented below:

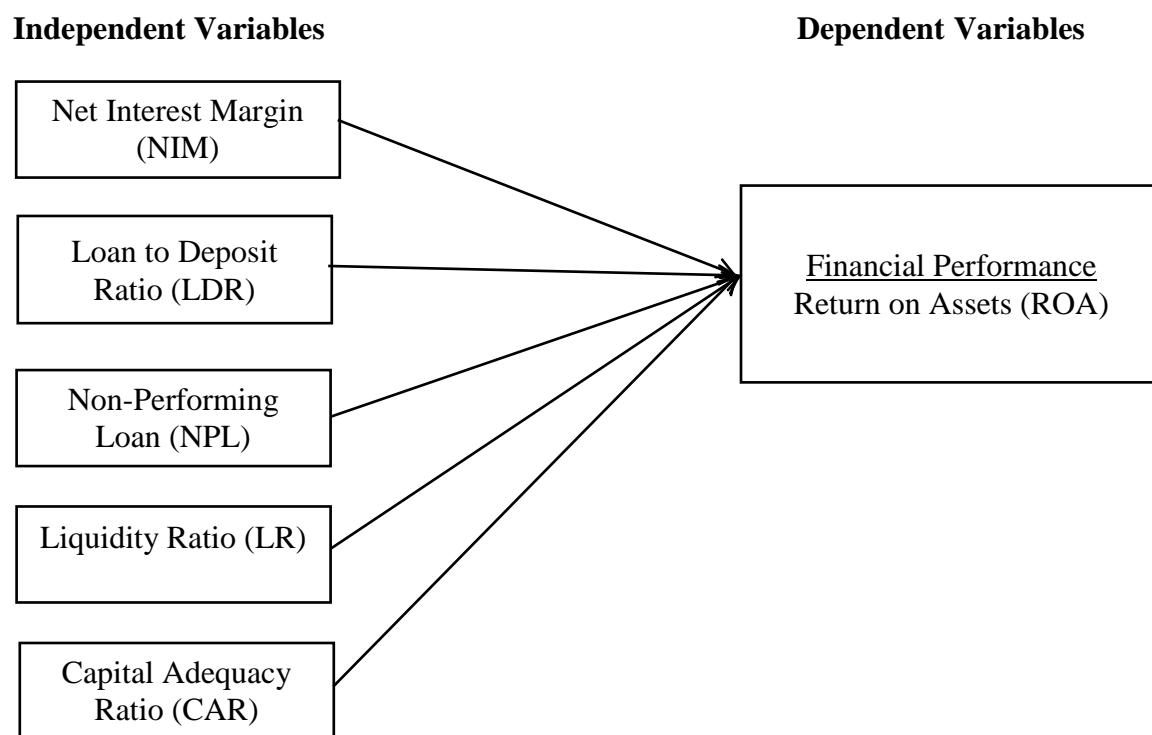


Figure: The Conceptual Framework

Source: *Shrestha and Jha (2020) and Paudel (2022)*

#### Definition of variables

##### Net Interest Margin

Net Interest Margin (NIM) is a pivotal indicator of a commercial bank's profitability, reflecting the difference between interest income generated from loans and the interest paid on deposits, relative to the bank's earning assets. Operational risk management significantly influences NIM, as inefficiencies and unforeseen operational losses can erode a bank's net interest income. A study by Bagiana et al. (2024) highlights that higher operational efficiency

ratios, indicative of increased operational costs, negatively impact NIM, emphasizing the necessity for banks to control operational expenses to maintain profitability. Furthermore, the study suggests that a higher NIM may lead banks to extend loans to riskier borrowers in pursuit of greater interest income, potentially increasing non-performing loans (NPLs) and credit risk. In the context of Nepalese commercial banks, research by Poudel et al. (2024) indicates that operational risk, measured through cost-to-income ratios and loan loss provisions, has a significant negative impact on bank profitability. This underscores the importance of robust operational risk management practices to safeguard NIM and, by extension, the overall financial performance of banks. Additionally, the European Banking Authority (2024) reports a slight decline in NIM among EU/EEA banks, attributing it to factors such as increased funding costs and competitive pressures, further illustrating the global relevance of operational risk management in sustaining NIM.

Effective operational risk management, including the implementation of stress testing and structural hedging strategies, is essential for banks to navigate interest rate fluctuations and maintain a stable NIM. For instance, UK banks have adopted structural hedging techniques to balance liabilities and smooth out revenues, thereby mitigating the impact of interest rate volatility on NIM (Financial Times, 2025). In summary, diligent operational risk management is integral to preserving NIM and ensuring the financial resilience of commercial banks in an increasingly complex and dynamic financial landscape.

$$\text{NIM} = \frac{\text{Investment Return} - \text{Interest Paid}}{\text{Average Assets}} 100\%$$

### **Loan to Deposit Ratio**

The Loan-to-Deposit Ratio (LDR) is a critical financial metric that assesses a bank's liquidity by comparing its total loans to its total deposits. A higher LDR indicates that a bank is utilizing a greater portion of its deposits for lending, which can enhance profitability through increased interest income. However, this approach also elevates operational risks, as it may compromise the bank's ability to meet withdrawal demands and increase exposure to loan defaults. Conversely, a lower LDR suggests a conservative lending strategy, potentially leading to underutilization of resources and reduced profitability. Operational risk

management plays a pivotal role in maintaining an optimal LDR. Effective risk management ensures that banks do not overextend their lending capabilities, which could lead to liquidity shortages and increased default rates. Poudel et al. (2024) analyzed data from nine Nepalese commercial banks over 15 years and found that LDR did not have a statistically significant impact on profitability metrics such as Return on Assets (ROA) and Return on Equity (ROE). This suggests that while LDR is a vital indicator of liquidity and lending practices, its direct influence on profitability may be moderated by other factors, including credit risk, operational efficiency, and market conditions.

In the broader context, banks must balance the pursuit of higher interest income through increased lending with the imperative of maintaining sufficient liquidity and managing operational risks. An optimal LDR supports this balance, contributing to sustainable financial performance and resilience against economic fluctuations. Therefore, continuous monitoring and strategic adjustment of the LDR, guided by robust operational risk management frameworks, are essential for the long-term success of commercial banks.

$$\text{LDR} = \frac{\text{Total Loan}}{\text{Total Deposit}}$$

### **Non-Performing Loan**

Non-Performing Loans (NPLs) are a critical concern for commercial banks, as they directly impact financial performance and pose significant operational risks. An NPL arises when a borrower fails to make scheduled payments for a specified period, typically 90 days or more, leading to a decline in the bank's asset quality. The management of NPLs is integral to operational risk management, as high levels of NPLs can erode profitability, strain capital adequacy, and undermine investor confidence. In the context of Nepalese commercial banks, recent studies have highlighted the adverse effects of NPLs on profitability. Shrestha and Khadka (2024) conducted an empirical analysis using panel data from 10 commercial banks over the period 2016/17 to 2022/23. Their findings indicate a significant negative relationship between NPLs and Return on Assets (ROA), suggesting that higher NPL ratios diminish bank profitability. This underscores the necessity for banks to implement robust credit appraisal and monitoring systems to mitigate the risk of loan defaults.

Operational risk management strategies are essential in addressing the challenges posed by NPLs. Effective risk management involves stringent credit assessment procedures, continuous monitoring of loan portfolios, and timely intervention in cases of potential defaults. Moreover, banks must allocate adequate provisions for loan losses to cushion the impact of NPLs on their financial statements. Failure to manage NPLs effectively can lead to increased operational costs, reduced earnings, and potential solvency issues.

In conclusion, managing NPLs is a critical component of operational risk management that directly influences the financial performance of commercial banks. Banks must adopt comprehensive risk management frameworks that encompass rigorous credit evaluation, proactive monitoring, and effective recovery strategies.

$$\text{NPL} = \frac{\text{Net Income After Tax}}{\text{Operatinng Income}}$$

### **Liquidity Ratio**

Liquidity ratios are vital indicators of a commercial bank's ability to meet its short-term obligations, reflecting the institution's financial health and operational efficiency. Effective liquidity management ensures that banks can fulfill withdrawal demands and other liabilities without incurring significant losses. In the context of operational risk management, maintaining optimal liquidity ratios is crucial, as both excessive and insufficient liquidity can adversely affect a bank's financial performance. Recent studies on Nepalese commercial banks have explored the relationship between liquidity and profitability. For instance, a study by Shrestha (2024) analyzed data from ten commercial banks over a decade and found that certain liquidity indicators, such as the cash to total assets ratio, have a positive significant relationship with return on equity (ROE), while others like the credit to deposit ratio (CDR) exhibit a negative significant relationship with return on assets (ROA). This suggests that while maintaining adequate liquidity is essential, an imbalance can lead to underutilization of resources or increased risk exposure, thereby impacting profitability.

However, challenges persist. An article from my Republica noted that despite being flush this scenario underscores the importance of not just maintaining liquidity but also ensuring its

effective deployment to generate income and mitigate operational risks. In conclusion, liquidity ratios serve as critical tools in operational risk management, directly influencing the financial performance of commercial banks. While adequate liquidity ensures stability and confidence, its mismanagement can lead to reduced profitability and increased operational risks. Therefore, banks must strive for a balanced liquidity position, aligning their strategies to optimize both safety and profitability.

$$LR = \frac{\text{Liquid Assets}}{\text{Total Deposit}}$$

### **Capital Adequacy Ratio**

The Capital Adequacy Ratio (CAR) is a pivotal metric in operational risk management, serving as a buffer against potential financial shocks and safeguarding the stability of commercial banks. CAR is calculated by dividing a bank's capital by its risk-weighted assets, encompassing both Tier 1 (core) and Tier 2 (supplementary) capital. This ratio ensures that banks maintain sufficient capital to absorb losses arising from various risks, including operational failures, credit defaults, and market fluctuations. In the context of Nepalese commercial banks, maintaining an adequate CAR is crucial for financial resilience. A study by Bhattarai (2021) revealed that both core capital ratio and total capital fund ratio positively influence return on assets (ROA) and return on equity (ROE), indicating that higher capital buffers contribute to enhanced financial performance. Similarly, Goet (2022) found a significant correlation between shareholders' equity, Tier 1 capital, and profitability metrics, underscoring the importance of robust capital structures in mitigating operational risks.

However, the relationship between CAR and profitability is nuanced. Kunjeda (2024) observed that while Nepalese banks generally maintain adequate capital positions, the correlation between CAR and profitability indicators like ROA and ROE is weak, suggesting that other factors also play significant roles in financial performance. Furthermore, Chhetri (2022) noted that while CAR has a negative and statistically insignificant impact on ROA, effective credit risk management practices are essential for enhancing financial outcomes.

$$CAR = \frac{\text{Total Assets} - \text{Total Deposit}}{\text{Total Assets}}$$

## **Return on Assets**

Return on Assets (ROA) is a critical metric in evaluating the financial performance of commercial banks, particularly in the context of operational risk management. ROA measures a bank's efficiency in utilizing its assets to generate net income, calculated by dividing net income by total assets. A higher ROA indicates more effective asset utilization, reflecting robust operational practices and risk management strategies.

Operational risk management directly influences ROA by mitigating losses arising from inadequate or failed internal processes, systems, or external events. Effective risk management ensures continuity in operations, safeguarding the bank's income-generating activities and asset base. A study by Bhattarai (2021) found that both core capital ratio and total capital fund ratio positively influence ROA, suggesting that well-capitalized banks are better equipped to manage operational risks and enhance financial performance. Moreover, Goet (2022) emphasized the significance of robust capital structures in mitigating operational risks, thereby positively impacting ROA. However, the relationship between operational risk management and ROA is complex. Kunjeda (2024) observed that while Nepalese banks generally maintain adequate capital positions, the correlation between capital adequacy and ROA is weak, indicating that other factors, including operational efficiency and risk management practices, play significant roles in financial performance. Chhetri (2022) also noted that while capital adequacy has a negative and statistically insignificant impact on ROA, effective credit risk management practices are essential for enhancing financial outcomes.

$$ROA = \frac{NPAT}{Total\ assets} \times 100$$

## CHAPTER-IV

### RESULTS AND DISCUSSION

Results and Discussion presents the key findings of a research study and interprets their significance. In this chapter, the results derived from data analysis are systematically organized, often using tables, to enhance clarity. The discussion section then connects these findings to the research objectives or hypotheses, explaining their meaning, implications, and relevance to existing theories or previous studies. It highlights patterns, relationships, or trends observed in the data and critically examines their contribution to the field. Overall, this chapter serves to both report and analyze the study's outcomes in a coherent and meaningful way.

#### 4.1 Descriptive Statistics

Descriptive statistics provide a summary of the key characteristics of the variables Net Interest Margin (NIM), Loan to Deposit Ratio (LDR), Non-Performing Loan (NPL), Liquidity Ratio (LR), Capital Adequacy Ratio (CAR), and Return on Assets (ROA). NIM measures the efficiency of a bank in managing its interest income against its interest expenses, offering insights into profitability. LDR reflects a bank's liquidity by comparing its total loans to its total deposits, indicating the institution's ability to meet withdrawal demands. NPL highlights the proportion of loans that are in default or close to default, serving as a critical measure of credit risk. LR measures the bank's ability to meet its short-term obligations, ensuring that the institution has enough liquid assets on hand.

Similarly, CAR assesses a bank's financial strength by comparing its capital to its risk-weighted assets, ensuring the bank can absorb a reasonable amount of loss. ROA, on the other hand, evaluates the profitability relative to the bank's total assets, showing how efficiently a bank utilizes its resources to generate earnings. By applying descriptive statistics such as mean, median, standard deviation, minimum, and maximum values to these variables, researchers can better understand the central tendency, variability, and overall

distribution patterns of a bank's financial health indicators. This initial analysis is crucial for drawing meaningful interpretations and identifying trends within the banking sector.

**Table 3**

*Descriptive Statistics*

	Minimum	Maximum	Mean	Std. Deviation
NIM	50.00	8.10	39.06	17.87
LDR	4.54	165.55	35.81	35.60
NPL	2.07	59.73	10.95	5.62
LR	0.23	126.32	27.96	28.21
CAR	48.32	94.16	76.22	7.48
ROA	12.12	549.62	93.31	89.77

Valid N (listwise) 50

Table 3 presents the descriptive statistics of six key financial variables: Net Interest Margin (NIM), Loan to Deposit Ratio (LDR), Non-Performing Loans (NPL), Liquidity Ratio (LR), Capital Adequacy Ratio (CAR), and Return on Assets (ROA), based on 50 observations. These statistics provide a foundational understanding of the data's central tendency, spread, and overall distribution, which is crucial for further analysis.

Starting with Net Interest Margin (NIM), the minimum value observed is 50.00, while the maximum reaches 8.10, with an overall mean of 39.06 and a standard deviation of 17.87. This result indicates that there is significant variability in the net interest margins across the sample banks. The high standard deviation relative to the mean suggests a wide dispersion of NIM values, meaning that some banks earn much higher margins than others. Interestingly, the minimum value seems higher than the maximum, which could imply a typographical error in the dataset and might require further verification.

The Loan to Deposit Ratio (LDR) ranges from 4.54 to 165.55, indicating considerable variation in how aggressively different banks are lending relative to their deposits. The mean LDR stands at 35.81, with a standard deviation of 35.60. The large spread between the minimum and maximum values, along with a relatively high standard deviation, suggests that

banks within the sample differ greatly in their lending strategies. Some banks might be highly conservative, lending only a small portion of their deposits, while others extend loans extensively, potentially increasing their risk exposure.

Non-Performing Loans (NPL) have a minimum value of 2.07 and a maximum value of 59.73, with a mean of 10.95 and a standard deviation of 5.62. The relatively smaller standard deviation compared to LDR and NIM indicates that while there is some variability in loan quality among the banks, it is not as extreme. A mean value of 10.95 suggests that, on average, banks have about 11% of their total loans categorized as non-performing, which is a considerable proportion and indicates room for improving credit risk management practices.

The Liquidity Ratio (LR) demonstrates notable dispersion as well, with a minimum of 0.23 and a maximum of 126.32. The mean LR is calculated at 27.96, and the standard deviation is 28.21, which is almost equal to the mean. This close relationship between the mean and standard deviation signifies substantial variability in liquidity management among the banks. While some banks maintain very high liquidity, others operate with significantly lower liquidity, possibly impacting their short-term financial stability and ability to meet obligations.

Capital Adequacy Ratio (CAR), the statistics show a minimum of 48.32 and a maximum of 94.16, with a mean of 76.22 and a relatively low standard deviation of 7.48. These figures suggest that capital adequacy is relatively consistent across the banks in the sample compared to the other variables. The lower standard deviation indicates that most banks maintain a stable and sufficiently high level of capital relative to their risk-weighted assets, which is vital for absorbing potential financial shocks and ensuring regulatory compliance.

Lastly, the Return on Assets (ROA) varies significantly, with a minimum value of 12.12 and a maximum value of 549.62. The mean ROA is 93.31, accompanied by a standard deviation of 89.77. The exceptionally wide range and high standard deviation highlight considerable differences in banks' ability to generate profit from their assets. While some institutions achieve extremely high profitability, others perform relatively poorly, which could be

attributed to differences in operational efficiency, management practices, and market conditions.

In conclusion, the descriptive statistics illustrate that there is substantial variability across banks in terms of profitability, lending behavior, asset quality, liquidity management, and capitalization. Among the variables, ROA, LDR, and LR exhibit the highest dispersion, indicating considerable differences in how banks manage profitability, liquidity, and loan portfolios. On the other hand, CAR shows relative stability across the sample banks, reflecting consistent regulatory compliance regarding capital adequacy. These findings suggest that while most banks maintain a solid capital base, they differ widely in operational strategies, risk management, and financial outcomes. The wide ranges and high standard deviations across several variables highlight the need for deeper analysis to understand the underlying factors driving these variations.

## **4.2 Correlation Analysis**

Correlation analysis is a statistical method used to evaluate the strength and direction of the relationship between two or more variables. It helps researchers understand whether an increase or decrease in one variable corresponds to an increase or decrease in another. The result of a correlation analysis is typically expressed through a correlation coefficient, usually ranging from -1 to +1. A positive value indicates a direct relationship, where both variables move in the same direction, while a negative value suggests an inverse relationship. A value close to zero implies no significant relationship between the variables. By examining the correlation coefficient, analysts can make initial judgments about the potential associations before conducting deeper analyses.

In practical research, correlation analysis is often used in fields like finance, social sciences, health, and marketing to explore patterns between different factors. However, it is important to note that correlation does not imply causation; even if two variables show a strong correlation, it does not necessarily mean that one causes the other. Proper interpretation requires considering external factors and potential confounding variables. Overall,

correlation analysis is a powerful tool for uncovering hidden relationships, guiding further investigations, and supporting decision-making based on observed data patterns.

**Table 4**

*Correlation Matrix*

	ROA	NIM	LDR	NPL	LR	CAR
ROA	1					
NIM	.719**	1				
LDR	.460**	.360**	1			
NPL	.442**	.442**	.250**	1		
LR	.373**	.247**	.253**	.255**	1	
CAR	.423**	.311**	.291**	.611**	.246**	1

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

Table 4 presents the correlation matrix showing the relationships among six key financial variables: Return on Assets (ROA), Net Interest Margin (NIM), Loan to Deposit Ratio (LDR), Non-Performing Loans (NPL), Liquidity Ratio (LR), and Capital Adequacy Ratio (CAR). Correlation analysis measures the strength and direction of the linear relationship between two variables, with values ranging from -1 to +1. A positive correlation indicates that as one variable increases, the other also tends to increase, while a negative correlation implies an inverse relationship. All correlations marked with two asterisks (\*\*) are significant at the 0.01 level, suggesting a very strong level of statistical confidence in these relationships.

Starting with ROA, it shows a strong positive correlation with NIM ( $r = 0.719$ ,  $p < 0.01$ ). This suggests that banks with higher net interest margins tend to achieve higher returns on

their assets. The strength of this relationship is notably high, indicating that profitability is closely tied to the efficiency of earning interest income over interest expenses. ROA also has a moderate positive correlation with LDR ( $r = 0.460$ ,  $p < 0.01$ ), implying that banks that lend more relative to their deposits tend to generate higher returns on assets. Similarly, ROA is moderately positively correlated with NPL ( $r = 0.442$ ,  $p < 0.01$ ), which at first glance may seem counterintuitive because a high level of non-performing loans usually indicates credit risk. However, this relationship might suggest that despite having a higher proportion of non-performing loans, some banks still manage to maintain profitability, perhaps due to better recovery processes or higher spreads on lending.

ROA also shows a weaker but significant positive correlation with LR ( $r = 0.373$ ,  $p < 0.01$ ). This indicates that banks with stronger liquidity positions tend to achieve better profitability, although the relationship is not very strong. A sufficient liquidity buffer likely helps banks manage unexpected cash demands and avoid costly borrowing, supporting more stable returns. Moreover, ROA is moderately positively associated with CAR ( $r = 0.423$ ,  $p < 0.01$ ). This suggests that well-capitalized banks tend to be more profitable, possibly due to their greater ability to withstand financial shocks and maintain operations under adverse conditions.

Moving to Net Interest Margin (NIM), it exhibits significant positive correlations with all other variables except ROA, which has already been discussed. NIM and LDR have a positive correlation ( $r = 0.360$ ,  $p < 0.01$ ), suggesting that banks that lend more relative to their deposits tend to realize higher interest margins. NIM is also positively associated with NPL ( $r = 0.442$ ,  $p < 0.01$ ), indicating that banks with higher interest margins might be more prone to higher credit risks, possibly due to lending to riskier borrowers. NIM shows a weaker but significant positive relationship with LR ( $r = 0.247$ ,  $p < 0.01$ ), suggesting that liquidity has a marginal influence on the ability to maintain interest margins. NIM is also positively correlated with CAR ( $r = 0.311$ ,  $p < 0.01$ ), indicating that well-capitalized banks might manage their assets more efficiently to generate higher interest spreads.

Examining LDR, it has a positive and significant correlation with NPL ( $r = 0.250$ ,  $p < 0.01$ ). This suggests that banks with higher loan-to-deposit ratios also face higher credit risks, as

aggressive lending may lead to a greater proportion of loans turning non-performing. Similarly, LDR is positively associated with LR ( $r = 0.253$ ,  $p < 0.01$ ), implying that banks with higher lending rates also maintain some liquidity, although the relationship is relatively weak. Furthermore, LDR is positively correlated with CAR ( $r = 0.291$ ,  $p < 0.01$ ), indicating that banks with more aggressive lending policies may still maintain adequate capital levels.

Regarding Non-Performing Loans (NPL), it shows a significant positive correlation with LR ( $r = 0.255$ ,  $p < 0.01$ ), implying that banks experiencing higher loan defaults might be maintaining higher liquidity, possibly as a buffer against further losses. NPL also has a strong positive correlation with CAR ( $r = 0.611$ ,  $p < 0.01$ ), the highest correlation in the table apart from ROA-NIM. This indicates that banks with higher non-performing loans tend to have stronger capital bases, possibly reflecting regulatory requirements to hold more capital against risky assets.

The Liquidity Ratio (LR) is positively correlated with CAR ( $r = 0.246$ ,  $p < 0.01$ ). Although the relationship is weak, it suggests that banks with stronger capital adequacy tend to also maintain slightly better liquidity positions. This synergy might reflect a broader strategy of financial prudence, where banks strengthen both their liquidity and capital structures to manage risks effectively.

In summary, the correlation matrix shows that most financial variables are significantly and positively related to each other at the 0.01 significance level. The strongest relationships are between ROA and NIM, and between NPL and CAR, indicating that profitability is closely linked to interest margin efficiency, and that higher levels of loan defaults are associated with stronger capital adequacy. Moderate relationships exist among lending, liquidity, and capital adequacy indicators, highlighting the interconnected nature of financial performance metrics. Overall, the results suggest that improving interest margins, maintaining a sound capital base, and managing liquidity and credit risks are essential strategies for enhancing the financial performance and stability of banks.

### **4.3 Regression Analysis**

Regression analysis is a powerful statistical tool used to explore the relationship between a dependent variable and one or more independent variables. It helps in understanding how changes in independent variables influence the dependent variable, allowing researchers to predict outcomes and identify key factors affecting results. In the context of financial analysis, regression analysis can be applied to study how variables such as Net Interest Margin (NIM), Loan to Deposit Ratio (LDR), Non-Performing Loans (NPL), Liquidity Ratio (LR), and Capital Adequacy Ratio (CAR) impact the financial performance of banks, typically measured by Return on Assets (ROA). By establishing a regression model, it becomes possible to quantify the degree to which each independent variable contributes to changes in ROA, providing valuable insights into the operational and financial dynamics of banking institutions.

Moreover, regression analysis not only measures the strength and direction of these relationships but also tests the statistical significance of each factor. For example, it can determine whether an increase in NIM leads to a significant improvement in ROA, or if a rise in NPL adversely affects bank profitability. Regression models, whether simple or multiple, allow researchers to control for several variables simultaneously, offering a clearer picture of their combined effects on the dependent variable. In the case of banking performance analysis, using regression with NIM, LDR, NPL, LR, and CAR as predictors helps in making informed strategic decisions, forecasting future profitability, and assessing risk management practices. Overall, regression analysis serves as a critical method for validating assumptions and supporting data-driven decision-making in financial research.

#### **4.3.1 The Multiple Regression of ROA**

The regression analysis examines the impact of operational risk management on financial performance, including Net Interest Margin (NIM), Loan to Deposit Ratio (LDR), Non-Performing Loan (NPL), Liquidity Ratio (LR) and Capital Adequacy Ratio (CAR), on the changes in Return on Assets (ROA) concerning the impact of operational risk management

on financial performance of Nepalese commercial banks. The regression results are presented and the equation for this regression model is expressed as follow:

$$ROA = a_1 + \beta_1 NIM + \beta_2 LDR + \beta_3 NPL + \beta_4 LR + \beta_5 CAR \dots\dots\dots (i)$$

Where, ROE= Return on Equity,  
 $a_1$  = Constant,  $\beta_1$ ,  $\beta_2$ ,  $\beta_3$ ,  $\beta_4$  and  
 $\beta_5$  = Regression Coefficient.

**Table 5**

*Model Summary of ROA*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.620	0.385	0.365	3.29076

a. Predictors: (Constant), NIM, LDR, NPL, LR and CAR

b. Dependent Variable: ROA

Table 5 presented an overview of the regression analysis conducted to predict Return on Assets (ROA) using five independent variables: Net Interest Margin (NIM), Loan to Deposit Ratio (LDR), Non-Performing Loans (NPL), Liquidity Ratio (LR), and Capital Adequacy Ratio (CAR). The value of R, which represents the correlation between the observed and predicted values of ROA, is 0.620. This indicates a moderate positive relationship between the combination of the predictor variables and the dependent variable. A higher R value closer to 1 would have indicated a stronger relationship, but an R of 0.620 still suggests a meaningful connection.

The R Square value, also known as the coefficient of determination, is 0.385. This means that approximately 38.5% of the variation in ROA can be explained by the five independent variables included in the model. In other words, the combined effects of NIM, LDR, NPL, LR, and CAR account for just over one-third of the variability in ROA among the sampled observations. The Adjusted R Square, which adjusts for the number of predictors in the model and provides a more accurate measure for multiple regressions, is slightly lower at

0.365. This indicates that after considering the number of independent variables used, around 36.5% of the variation in ROA is explained by the model, reinforcing the moderate strength of the model's explanatory power.

The Standard Error of the Estimate is reported as 3.29076, which measures the average distance that the observed values fall from the regression line. A lower standard error would have indicated that the predictions are closer to the actual values. While the given standard error suggests some level of variability around the predicted values, it remains acceptable for financial data, which often experiences inherent fluctuations due to external market and operational factors.

Overall, the model summary highlights that NIM, LDR, NPL, LR, and CAR together have a moderate and statistically meaningful impact on the Return on Assets (ROA) of the institutions analyzed. Although the model does not account for all variations in ROA, the explanatory power of nearly 38.5% is significant enough to suggest that these financial indicators play an important role in shaping profitability. Further improvements could be made by exploring additional variables or by refining the model specifications.

**Table 6**

*Analysis of Variance (ANOVA) of ROA*

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1050.690	5	210.138	19.405	0.000
	Residual	1678.515	44	10.829		
	Total	2729.205	49			

a. Dependent Variable: ROA

b. Predictors: (Constant), NIM, LDR, NPL, LR and CAR

Table 6 presented The Analysis of Variance (ANOVA) the overall significance of the regression model developed to predict Return on Assets (ROA) based on five independent variables: Net Interest Margin (NIM), Loan to Deposit Ratio (LDR), Non-Performing Loans (NPL), Liquidity Ratio (LR), and Capital Adequacy Ratio (CAR). The regression sum of

squares is 1050.690, which measures the variation in ROA explained by the regression model. This relatively large sum indicates that a considerable portion of the total variance in ROA is accounted for by the selected independent variables. The residual sum of squares, which represents the variation not explained by the model, is 1678.515. The total sum of squares, combining both explained and unexplained variations, stands at 2729.205, showing the overall variability in the dataset.

The degrees of freedom (df) associated with the regression are 5, corresponding to the five independent predictors included in the model, while the degrees of freedom for the residual are 44, calculated as the total number of observations minus the number of predictors and one. The mean square for the regression, derived by dividing the regression sum of squares by its degrees of freedom, is 210.138. Meanwhile, the mean square for the residuals is 10.829, obtained similarly from the residual sum of squares. The F-value, calculated by dividing the regression mean square by the residual mean square, is 19.405. This high F-value suggests that the model provides a good fit for the data and that the independent variables collectively have a significant impact on predicting ROA.

The significance level (Sig.) for the F-test is reported as 0.000, which is less than the conventional threshold of 0.01. This indicates that the regression model is statistically significant at the 1% level, implying a very low probability that the observed relationship between the dependent and independent variables occurred by chance. Thus, it can be concluded with high confidence that NIM, LDR, NPL, LR, and CAR together significantly contribute to explaining variations in Return on Assets.

Overall, the ANOVA table clearly demonstrates that the constructed regression model is statistically significant and reliable. The combination of the five independent financial variables has a meaningful influence on the financial performance of the institutions measured through ROA. This strengthens the findings from the model summary and confirms that the selected predictors play a crucial role in determining profitability outcomes.

**Table 7**  
*Regression Coefficient*

Model		Unstandardized Coefficients		Standardized	t-value	Sig.
		B	Std. Error	Coefficients		
1	(Constant)	6.155	1.589		4.356	0.000
	NIM	0.114	0.091	0.092	1.250	0.213
	LDR	0.331	0.080	0.288	4.123	0.000
	NPL	0.243	0.108	0.190	2.239	0.027
	LR	0.198	0.109	0.148	1.820	0.071
	CAR	0.277	0.096	0.193	2.878	0.005

a. Dependent Variable: ROA

Table 7 presented the regression coefficient offers detailed insights into how each independent variable Net Interest Margin (NIM), Loan to Deposit Ratio (LDR), Non-Performing Loans (NPL), Liquidity Ratio (LR), and Capital Adequacy Ratio (CAR) individually influences the dependent variable, Return on Assets (ROA). The constant (intercept) value is 6.155 with a standard error of 1.589, and it is statistically significant with a t-value of 4.356 and a p-value (Sig.) of 0.000. This indicates that when all independent variables are held at zero, the baseline value of ROA would be approximately 6.155. The high significance level of the constant suggests that even in the absence of the predictors, ROA maintains a positive value in the model.

Examining the individual coefficients, the unstandardized coefficient (B) for NIM is 0.114 with a standard error of 0.091. The t-value for NIM is 1.250, and the p-value is 0.213, which is greater than the commonly accepted significance levels of 0.05 or 0.01. This suggests that, while NIM has a positive relationship with ROA, its contribution is not statistically significant in this model. The standardized beta coefficient for NIM is 0.092, indicating a relatively weak influence compared to other predictors.

Loan to Deposit Ratio (LDR) shows a strong and statistically significant impact on ROA. The unstandardized coefficient for LDR is 0.331 with a standard error of 0.080, and it has a t-value of 4.123 with a highly significant p-value of 0.000. The standardized beta coefficient of

0.288 further supports that LDR exerts a strong positive influence on ROA. This finding implies that an increase in the LDR improves the profitability of banks as measured by ROA, making it one of the critical determinants in the model.

The Non-Performing Loans (NPL) variable also demonstrates a significant positive effect on ROA, with an unstandardized coefficient of 0.243 and a standard error of 0.108. The t-value associated with NPL is 2.239 and the corresponding p-value is 0.027, indicating statistical significance at the 5% level. The standardized beta coefficient of 0.190 shows that although NPL's effect is positive, its relative strength compared to LDR is slightly lower. This result may seem counterintuitive, as non-performing loans are typically expected to negatively affect profitability, suggesting that further investigation might be needed or that specific bank practices might mitigate NPL effects in the sample under study.

The Liquidity Ratio (LR) displays a positive but marginally insignificant relationship with ROA. The unstandardized coefficient for LR is 0.198 with a standard error of 0.109. The t-value is 1.820, and the p-value is 0.071, slightly above the 0.05 threshold. While the standardized beta coefficient is 0.148, indicating a moderate positive influence, the lack of statistical significance suggests that liquidity may not independently drive ROA in a meaningful way, although it could still play an important role when considered alongside other factors.

Lastly, the Capital Adequacy Ratio (CAR) is found to have a significant and positive impact on ROA. The unstandardized coefficient is 0.277 with a standard error of 0.096, and its t-value is 2.878 with a p-value of 0.005, well within the significance range. The standardized beta coefficient is 0.193, highlighting a moderately strong positive relationship. This suggests that higher capital adequacy not only strengthens the financial stability of banks but also positively influences their profitability, affirming the importance of robust capital management practices.

Overall, the regression coefficient table reveals that among the five predictors, LDR, NPL, and CAR have statistically significant positive impacts on ROA, while NIM and LR show positive but statistically insignificant relationships. The findings indicate that efficient loan

management, control over non-performing assets, and maintaining strong capital buffers are crucial drivers of profitability for banks. These results support the idea that multiple financial health indicators must be simultaneously managed to enhance overall performance, and offer valuable directions for strategic financial planning in the banking sector.

#### **4.4 Discussion**

Operational risk management plays a crucial role in safeguarding and enhancing the financial performance of Nepalese commercial banks. Operational risks, including internal process failures, system breakdowns, human errors, and external events, can significantly affect a bank's profitability, reputation, and sustainability if not properly controlled. In the context of Nepalese banks, where the financial system is still growing and adapting to global standards, effective operational risk management helps ensure smooth daily operations, minimizes unexpected losses, and enhances overall trust among stakeholders. Banks that invest in robust internal controls, staff training, technology upgrades, and compliance systems are better positioned to reduce operational disruptions. Consequently, strong operational risk frameworks contribute to a more stable and predictable financial environment, allowing banks to achieve better financial outcomes, including higher return on assets (ROA) and return on equity (ROE).

Furthermore, the proactive management of operational risks directly influences a bank's long-term competitiveness and resilience. In Nepal, commercial banks face unique challenges such as limited technological infrastructure in rural areas, regulatory changes, and exposure to natural disasters. Proper risk management practices such as conducting regular risk assessments, building disaster recovery systems, and establishing clear accountability lines enable banks to handle these uncertainties more effectively. As a result, banks that prioritize operational risk management often experience fewer financial losses, maintain stronger customer relationships, and demonstrate more consistent growth. Overall, operational risk management is not merely a regulatory requirement but a strategic tool that significantly enhances the financial performance and sustainability of Nepalese commercial banks in an increasingly competitive and dynamic market.

The descriptive statistics illustrate that there is substantial variability across banks in terms of profitability, lending behavior, asset quality, liquidity management, and capitalization. Among the variables, ROA, LDR, and LR exhibit the highest dispersion, indicating considerable differences in how banks manage profitability, liquidity, and loan portfolios. On the other hand, CAR shows relative stability across the sample banks, reflecting consistent regulatory compliance regarding capital adequacy. These findings suggest that while most banks maintain a solid capital base, they differ widely in operational strategies, risk management, and financial outcomes. The wide ranges and high standard deviations across several variables highlight the need for deeper analysis to understand the underlying factors driving these variations.

The correlation matrix shows that most financial variables are significantly and positively related to each other at the 0.01 significance level. The strongest relationships are between ROA and NIM, and between NPL and CAR, indicating that profitability is closely linked to interest margin efficiency, and that higher levels of loan defaults are associated with stronger capital adequacy. Moderate relationships exist among lending, liquidity, and capital adequacy indicators, highlighting the interconnected nature of financial performance metrics. Overall, the results suggest that improving interest margins, maintaining a sound capital base, and managing liquidity and credit risks are essential strategies for enhancing the financial performance and stability of banks.

The regression coefficient table reveals that among the five predictors, LDR, NPL, and CAR have statistically significant positive impacts on ROA, while NIM and LR show positive but statistically insignificant relationships. The findings indicate that efficient loan management, control over non-performing assets, and maintaining strong capital buffers are crucial drivers of profitability for banks. These results support the idea that multiple financial health indicators must be simultaneously managed to enhance overall performance, and offer valuable directions for strategic financial planning in the banking sector.

The findings revealed that NIM had an insignificant effect on ROA. This outcome aligns with the studies conducted by Hajisaaaid (2020), Raman, Sharker, and Uddinj (2019), and Ajibola et al. (2018), but it differs from the results reported by Cornwell et al. (2023),

Budianto and Dewi (2023), Altaf (2022), and Bashyal and Bhandari (2023). Additionally, the regression analysis indicated that TDR has a negative and statistically significant influence on ROA, whereas ETTA exhibits a positive and statistically significant relationship with ROA. On the other hand, company size was found to have a positive but statistically insignificant effect on ROA.

The findings revealed a significant relationship between Loan to Deposit Ratio (LDR) and Return on Assets (ROA). This result aligns with the studies of Chalise and Adhikari (2022), Chhetri (2021), and Timilsina (2020), but contradicts the findings of Shrestha (2018), Budianto and Dewi (2023), and Altaf (2022), suggesting that a rise in non-performing loans leads to a decline in Return on Equity (ROE). Additionally, operating efficiency exhibits a negative effect on both ROA and ROE, implying that improvements in operating efficiency result in a decrease in the return on assets and equity for Nepalese commercial banks.

The findings revealed a positive and significant relationship between Non-Performing Loans (NPL) and Return on Assets (ROA), consistent with the studies of Hajisaaid (2020), Raman, Sharker, and Uddinj (2019), and Ajibola et al. (2018). However, this contradicts the results of Budianto and Dewi (2023), Altaf (2022), and Bashyal and Bhandari (2023). Additionally, the analysis shows that risk management strategies, such as the debt-to-equity ratio, are negatively associated with both ROA and Earnings Per Share (EPS). Conversely, it indicates that both ROA and EPS increase as the size of the bank (measured by total assets) grows. These findings support the implementation of senior equity capital in the risk management strategies of Nepalese commercial banks.

The results indicated that the Loan Ratio (LR) does not have a significant impact on Return on Assets (ROA), which is consistent with the findings of Adhikari (2022), Chhetri (2021), and Timilsina (2020). However, this contrasts with the studies of Shrestha (2018), Budianto and Dewi (2023), and Altaf (2022). Furthermore, the Capital Adequacy Ratio (CAR) and Bank Size (BS) showed a negative and statistically insignificant effect on financial performance (ROA). While the Credit to Deposit Ratio (CDR) exhibited a positive but insignificant relationship with financial performance (ROA), the study concluded that the

Management Quality Ratio (MQR) has a positive and significant impact on the financial performance (ROA) of Nepalese commercial banks.

The findings revealed a positive and significant effect of the Capital Adequacy Ratio (CAR) on Return on Assets (ROA), aligning with the studies of Hajisaaid (2020), Raman, Sharker, and Uddinj (2019), and Ajibola et al. (2018). However, this contradicts the results of Cornwell et al. (2023), Budianto and Dewi (2023), Altaf (2022), and Bashyal and Bhandari (2023). The regression analysis further indicates that the Total Debt Ratio (TDR) has a negative and statistically significant effect on ROA, while CAR shows a positive and statistically significant relationship with ROA. In contrast, company size is found to have a positive but statistically insignificant impact on ROA.

Managing operational risks on financial performance of Nepalese commercial banks, is vital for preserving the sector's stability and credibility. Strong operational risk management practices help banks recognize, evaluate, and address risks stemming from internal procedures, employee mistakes, fraudulent activities, and external factors. As the financial environment becomes more intricate due to rapid technological changes and shifting regulatory demands, the capacity to manage such risks proactively is crucial for upholding customer confidence and adhering to legal requirements. An effective operational risk management system not only safeguards a bank's resources and reputation but also boosts overall efficiency, allowing institutions to react quickly and effectively to unexpected challenges.

In addition, focusing on operational risk management helps cultivate a culture of risk awareness and responsibility within commercial banks, resulting in better decision-making and more effective strategic planning. As Nepal's banking industry advances, it is essential for banks to invest in advanced risk management tools, employee development programs, and technological upgrades to successfully manage new and emerging risks. By giving priority to operational risk management, commercial banks in Nepal can better equip themselves to face the evolving challenges of the financial sector while promoting long-term growth and maintaining profitability.

## CHAPTER-V

### SUMMARY AND CONCLUSION

Summary and Conclusion provide a comprehensive closure to a research study by revisiting its main objectives, key findings, and overall contributions. The summary briefly highlights the research problem, methodology, significant results, and major interpretations, offering a condensed version of the entire work. Meanwhile, the conclusion interprets these findings in a broader context, emphasizing their implications, limitations, and potential areas for future research. Together, they ensure that readers clearly understand the essence of the study, the knowledge gained, and how it advances understanding within the particular field.

#### 5.1 Summary

This study has been conducted with the aim of identifying the operational risk management on financial services of Nepalese commercial banks. The main objectives of this study are to assess operational risk management and financial performance of Nepalese commercial banks, to examine the relationship between operational risk management and financial performance of Nepalese commercial banks and to analyze the impact of operational risk management and financial performance of Nepalese commercial banks. The limitations of this study are this study has concentrated only in the operational risk management and financial performance of Nepalese commercial banks of ADBL, GBIME, NIMB, SBL and SBI among 20 Nepalese commercial banks because these banks are top level of commercial banks in Nepal and the data is used from the secondary sources because of accessibility, cost effectiveness, historical perspectives, large sample size and comparative analysis. To fulfill the objectives of this research, a combination of descriptive, causal, and comparative research designs has been employed. The descriptive research design was utilized to gather factual data and obtain sufficient information. Only ten years of data taken from 2013/14 to 2023/24. Statistical tools i.e descriptive, correlation and multiple regression are used to present data. Net interest margin, loan to deposit ratio, non-performing loan, liquidity ratio, and capital adequacy ratio are independent variables and Return on Assets is dependent variable of this study.

The descriptive statistics illustrate that there is substantial variability across banks in terms of profitability, lending behavior, asset quality, liquidity management, and capitalization. Among the variables, ROA, LDR, and LR exhibit the highest dispersion, indicating considerable differences in how banks manage profitability, liquidity, and loan portfolios. On the other hand, CAR shows relative stability across the sample banks, reflecting consistent regulatory compliance regarding capital adequacy. These findings suggest that while most banks maintain a solid capital base, they differ widely in operational strategies, risk management, and financial outcomes.

The correlation matrix shows that most financial variables are significantly and positively related to each other at the 0.01 significance level. The strongest relationships are between ROA and NIM, and between NPL and CAR, indicating that profitability is closely linked to interest margin efficiency, and that higher levels of loan defaults are associated with stronger capital adequacy. Moderate relationships exist among lending, liquidity, and capital adequacy indicators, highlighting the interconnected nature of financial performance metrics. Overall, the results suggest that improving interest margins, maintaining a sound capital base, and managing liquidity and credit risks are essential strategies for enhancing the financial performance and stability of banks.

The regression coefficient table reveals that among the five predictors, LDR, NPL, and CAR have statistically significant positive impacts on ROA, while NIM and LR show positive but statistically insignificant relationships. The findings indicate that efficient loan management, control over non-performing assets, and maintaining strong capital buffers are crucial drivers of profitability for banks. These results support the idea that multiple financial health indicators must be simultaneously managed to enhance overall performance, and offer valuable directions for strategic financial planning in the banking sector.

## **5.2 Conclusion**

Operational risk management is a critical factor influencing the financial performance of Nepalese commercial banks. Effectively managing risks related to internal processes, system failures, human errors, and external events is essential for ensuring financial stability and

achieving improved outcomes. Key variables such as the Loan to Deposit Ratio (LDR), Non-Performing Loans (NPL), and Capital Adequacy Ratio (CAR) were found to significantly impact financial indicators like Return on Assets (ROA) and Return on Equity (ROE). Proper risk management not only helps minimize unexpected losses but also enhances profitability and strengthens resilience in a competitive financial environment. While some risk indicators show a positive relationship with financial performance, others demonstrate negative or insignificant effects, highlighting the need for a more strategic approach. Strengthening internal controls, improving management quality, and effectively utilizing equity capital are necessary steps. Moreover, investing in advanced risk assessment tools, staff training, and ensuring regulatory compliance will support long-term financial health. Overall, robust operational risk management is vital for sustainable growth and the long-term success of commercial banks in Nepal.

The model summary highlights that NIM, LDR, NPL, LR, and CAR together have a moderate and statistically meaningful impact on the Return on Assets (ROA) of the institutions analyzed. Although the model does not account for all variations in ROA, the explanatory power of nearly 38.5% is significant enough to suggest that these financial indicators play an important role in shaping profitability. Further improvements could be made by exploring additional variables or by refining the model specifications

The ANOVA table clearly demonstrates that the constructed regression model is statistically significant and reliable. The combination of the five independent financial variables has a meaningful influence on the financial performance of the institutions measured through ROA. This strengthens the findings from the model summary and confirms that the selected predictors play a crucial role in determining profitability outcomes. The significance level (Sig.) for the F-test is reported as 0.000, which is well below the conventional threshold of 0.01, indicating that the regression model is statistically significant at the 1% level and suggesting a very low likelihood that the observed relationship between the dependent and independent variables occurred by chance. This allows for a high level of confidence in concluding that the independent variables Net Interest Margin (NIM), Loan to Deposit Ratio (LDR), Non-Performing Loans (NPL), Liquidity Ratio (LR), and Capital Adequacy Ratio (CAR) collectively have a significant impact on Return on Assets (ROA). The ANOVA table

reinforces this conclusion by clearly demonstrating the overall significance and reliability of the constructed regression model.

The regression coefficient table reveals that among the five predictors, LDR, NPL, and CAR have statistically significant positive impacts on ROA, while NIM and LR show positive but statistically insignificant relationships. The findings indicate that efficient loan management, control over non-performing assets, and maintaining strong capital buffers are crucial drivers of profitability for banks. These results support the idea that multiple financial health indicators must be simultaneously managed to enhance overall performance, and offer valuable directions for strategic financial planning in the banking sector.

The study underscores that operational risk management plays a vital role in influencing the financial performance of Nepalese commercial banks. Effectively addressing risks associated with internal processes, systems, human resources, and external factors is critical for maintaining profitability and financial stability. The analysis reveals that variables such as the Loan to Deposit Ratio (LDR), Non-Performing Loans (NPL), and Capital Adequacy Ratio (CAR) are strongly linked to Return on Assets (ROA), indicating that operational efficiency and robust risk controls have a direct effect on financial outcomes. In contrast, liquidity ratios and certain other operational indicators show mixed or insignificant relationships, highlighting the complexities involved in managing operational risks within the banking sector. Therefore, enhancing operational risk management is crucial for strengthening the financial resilience and overall performance of commercial banks in Nepal. This requires implementing comprehensive strategies that focus on improving credit quality, ensuring adequate capital levels, reinforcing internal controls, and effectively managing liquidity risks.

### **5.3 Implications**

The study's findings carry significant implications for the management and strategic direction of Nepalese commercial banks. It is evident that operational risk management directly influences financial performance, making it a crucial area for banks to prioritize. Strengthening internal controls, enhancing the quality of loan portfolios, improving system

reliability, and minimizing human errors are essential steps that banks must take to boost profitability and ensure stability. The results suggest that operational risks should be viewed as an integral component of the overall risk management strategy, rather than being addressed in isolation. Incorporating operational risk management into day-to-day decision-making processes can help banks achieve more consistent financial outcomes and reduce vulnerability to unexpected losses.

Additionally, these findings underline the importance of regulatory bodies encouraging banks to adopt more advanced risk management frameworks. Policymakers should promote initiatives that support better training, technological upgrades, and robust internal audit systems within banks. For banking executives, investing in risk assessment tools and fostering a risk-aware culture can lead to more sustainable growth. By proactively managing operational risks, Nepalese commercial banks can enhance not only their individual financial performance but also contribute to building a stronger and more resilient financial sector in Nepal.

The correlation matrix reveals that most financial variables are significantly and positively correlated at the 0.01 significance level. The strongest associations are observed between ROA and NIM, and between NPL and CAR, suggesting that bank profitability is closely tied to the efficiency of interest margin management, while higher default rates are linked to stronger capital adequacy. Additionally, moderate correlations are found among lending, liquidity, and capitalization measures, reflecting the interconnectedness of key financial performance indicators. Overall, the findings emphasize that enhancing interest margin efficiency, maintaining a robust capital structure, and effectively managing liquidity and credit risks are critical for improving the financial strength and stability of banks.

The regression coefficient table indicates that out of the five predictors analyzed, LDR, NPL, and CAR have a statistically significant positive effect on ROA, whereas NIM and LR display positive but statistically insignificant relationships. These results highlight that effective loan portfolio management, minimizing non-performing loans, and sustaining robust capital reserves are key factors in driving bank profitability. The findings reinforce the notion that multiple aspects of financial health need to be managed collectively to improve

overall performance, providing important insights for strategic financial decision-making within the banking industry.

Recommendations for the future research are as follows:

- This study was carried out for academic purposes, and as a result, it utilized a relatively small sample size of selected commercial banks to draw meaningful conclusions. Future researchers are encouraged to increase the sample size to minimize errors and achieve more accurate and reliable results. Additionally, expanding the study to include development banks, microfinance institutions, manufacturing companies, and other organizations could provide broader insights and enhance the generalizability of the findings.
- To strengthen operational risk management in the financial sector, commercial banks should prioritize the optimization of key indicators such as NIM, LDR, NPL, LR, and CAR. Managing Net Interest Margin (NIM) through careful interest rate strategies is essential to maintain profitability without exposing the bank to unnecessary risks. Effective reduction of Non-Performing Loans (NPL) through rigorous credit evaluations and efficient recovery mechanisms is necessary to protect financial performance. Building strong liquidity reserves (LR) helps banks meet their short-term liabilities, while maintaining a robust Capital Adequacy Ratio (CAR) enhances overall stability and shields against operational risks.
- This study was conducted on quantitative approach. Others approaches such as qualitative, mixed approach can be used by further researchers.
- The analysis of the study was done through correlation, regression and ANOVA analysis. Others statistical methods such as Structural Equation Modeling, Factors Analysis etc. can be used for further research.

## REFERENCES

- Ajibola, A., Wisdom, O., & Qudus, O. L. (2018). Operational Risk Management and financial performance of listed manufacturing firms in Nigeria. *Journal of Research in International Business and Management*, 5(1), 81-89.
- Akerlof, G. A. (1970). The market for lemons: Quality uncertainty and the market mechanism. *The Quarterly Journal of Economics*, 84(3), 488-500.
- Alexander, K. (2020). Impact of Operational Risk Events on Business Continuity and Financial Stability *Global Approaches and New Opportunities*, 9(3), 121-177.
- Ali, A., & Faisal, S. (2020). Operational Risk Management and financial performance: A case of Saudi petrochemical industry. *The Journal of Asian Finance, Economics and Business*. 7(7), 105-112.
- Altaf, K., Ayub, H., Shabbir, M. S., & Usman, M. (2022). Do operational risk and corporate governance affect the banking industry of Pakistan? *Review of Economics and Political Science*, 7(2), 108-123.
- Bagiana, I. K., Putra, I. G. C., Dewi, K. I. K., Mirayani, L. P. M., & Rengganis, R. R. M. Y. (2024). Operational Efficiency and Non-Performing Loans: The Mediating Role of Net Interest Margin. *Atlantis Press*.
- Basel Committee on Banking Supervision. (2001). Operational risk management. Bank for International Settlements. *International Business and Management*. 3(1), 41-52.
- Bashyal, J., & Bhandari, N. Effect of operational risk management on financial performance of insurance companies in Nepal. *International Journal of Finance and Commerce*. 5(2), 35-42.
- Beasley, M. S., Branson, B. C., & Hancock, B. (2010). The role of risk management in corporate governance. Deloitte Development LLC.
- Bebchuk, L., & Fried, J. (2004). Pay without performance: The unfulfilled promise of executive compensation. Harvard University Press.
- Bessis, S. (2022). Operational Risks in Addition to Credit and Market Risks. *Investment Management*, 10(3), 709-848.
- Bhatt, T. K., Ahmed, N., Iqbal, M. B., & Ullah, M. (2023). Examining the determinants of credit risk management and their relationship with the performance of commercial banks in Nepal. *Journal of risk and financial management*, 16(4), 235.

- Bhattacharai, B. P. (2017). Effects of risk management on financial performance of insurance companies in Nepal. *International Journal of Accounting and Financial Reporting*, 10(3), 35-43
- Bhattacharai, Y. (2021). *Impact of Capital Adequacy on Financial Performance of Nepalese Commercial Banks*. The University Journal, Volume 5, Issue 1, pp. 45-58.
- Bhattacharai, Y. (2021). *Impact of Capital Adequacy on Financial Performance of Nepalese Commercial Banks*. The University Journal, Volume 5, Issue 1, pp. 45-58.
- Bholat, D. (2020). New Risk Landscapes Requiring Sophisticated Approaches to Risk Management. *Digital Scholarship in the Humanities*, 35(4), 776-796.
- Brenner, S. N. (2007). The influence of organizational culture on risk management. *Journal of Risk Management*, 9(3), 5-25.
- Brown, A. G. (2021). Financial Institutions have Reinforced Cyber Security Protocols and Incident Response Strategies to Minimize Potential Breaches and Their Effects. *Astronomy & Astrophysics*, 649, A1.
- Budianto, E. W. H., & Dewi, N. D. T. (2023). Mapping Research Topics on Operational Risk in the Sharia and Conventional Financial Industry: *Risk Management*, 7(3), 15-25
- Burns, T., & Stalker, G. M. (1961). *The management of innovation*. Tavistock.
- Chalise, D. R., & Adhikari, N. R. (2022). The Impact of Risk management and Firm Size on Financial Performance of Commercial Banks in Nepal. *The EFFORTS, Journal of Education and Research*. 4(1), 102-111.
- Chapman, R. J. (2006). *Simple tools and techniques for enterprise risk management*. Wiley.
- Chernobai, F., Jorion, W. S., & Yu, A. (2022). Are the largest banking organizations operationally more risky? *Journal of Money, Credit and Banking*, 54(5), 1223-1259.
- Chhetri, G. R. (2021). Effect of credit risk management on financial performance of Nepalese commercial banks. *Journal of Balkumari College*, 10(1), 19-30.
- Chhetri, R. (2022). *The Effect of Capital Adequacy Ratio on the Financial Performance of Commercial Banks in Nepal*. Journal of Business and Knowledge Creation, Volume 3, Issue 1, pp. 15-27.
- Chhetri, R. (2022). *The Effect of Capital Adequacy Ratio on the Financial Performance of Commercial Banks in Nepal*. Journal of Business and Knowledge Creation, Volume 3, Issue 1, pp. 15-27.

- Chorafas, GN. (2021). Operational Risks Arise From Inadequate or Failed Internal Processes. *Business Management*, 10(3), 275-283.
- Clark, J. P., Feldstein, S. B., & Lee, S. (2023). Financial Institutions' Social and Environmental Responsibilities Play a Crucial Role in their Risk Profiles. *Business Research*, 50(15), 223-235.
- Core, J. E., Guay, W. R., & Larcker, D. F. (2003). Executive equity compensation and incentives: A survey. *Economic Policy Review*, 9(1), 27-50.
- Cornwell, N., Bilson, C., Gepp, A., Stern, S., & Vanstone, B. J. (2023). The role of data analytics within operational risk management: A systematic review from the financial services and energy sectors. *Journal of the Operational Research Society*, 74(1), 374-402.
- Cristea, M. A. (2021). Operational risk management in banking activity. *Journal of Eastern Europe Research in Business and Economics*, 7, 1-16.
- Daft, R. L. (2010). *Organization theory and design* (10th ed.). Cengage Learning.
- Darlami, S. (2023). Impact of credit risk, operational risk and liquidity risk on the profitability of Nepalese commercial banks. *Perspectives in Nepalese Management*, 107.
- Davis, J. H., Schoorman, F. D., & Donaldson, L. (1997). Toward a stewardship theory of management. *Academy of Management Review*, 22(1), 20-47.
- De Bandt, O., Drumetz, F., & Pfister, C. (2020). Regulators Increasingly Expect Financial Institutions to not only Identify Potential Risk. *Management*, 7(3), 12-23.
- Dhital, A., Phuldel, A., Bishwas, A., Timalsina, B., Shrestha, D., Pangeni, D., & Pradhan, R. S. (2024). The Effect of Corporate Governance Attributes on Risk Management Practices of Nepalese Commercial Banks. *Nepalese Journal of Finance*, 11(2), 1-17.
- Dhodary, S. (2018). Determinants of risk management on trading and manufacturing enterprises: A case of Nepal. *NCC Journal*. 4(1), 163-170.
- Doherty, M. (2020). Evolving to Incorporate ESG Factors Alongside Traditional Operational Risk Factors: *Journal of the International Business*, 23(4), 54-89.
- Donaldson, L. (2001). *The contingency theory of organizations*. Sage.
- Donaldson, L., & Davis, J. H. (1991). Stewardship theory or agency theory: CEO governance and shareholder returns. *Australian Journal of Management*, 16(1), 49-64.

- Drazin, R., & Van de Ven, A. H. (1985). Alternative forms of fit in contingency theory. *Administrative Science Quarterly*, 30(4), 514-539.
- Eisenhardt, K. M. (1989). Agency theory: An assessment and review. *Academy of Management Review*, 14(1), 57-74.
- Eptimehin, F. M., & Obafemi, F. (2015). Operational risk management and the financial sector development: An overview. *International Journal of Economics, Commerce and Management*, 3(3), 1-11.
- Fadun, O. S., & Oye, D. (2020). Impacts of operational risk management on financial performance: a case of commercial banks in Nigeria. *International Journal of Finance & Banking Studies*, 9(1), 22-35.
- Fadun, O. S., & Oye, D. (2020). Impacts of operational risk management on financial performance: sa case of commercial banks in Nigeria. *International Journal of Finance & Banking Studies*, 9(1), 22-35.
- Falih, F. S., Kasim, R., Yaseen, M. H., Sabah, M. I. A., & Kadhim, K. G. (2020). The relationship of operational risk management and competitive advantages in enhancing the Iraqi banking sector. *Solid State Technology*, 63(6), 2426-2438.
- Fama, E. F., & Jensen, M. C. (1983). Separation of ownership and control. *Journal of Law and Economics*, 26(2), 301-325.
- Fiedler, F. E. (1964). A contingency model of leadership effectiveness. *Advances in Experimental Social Psychology*, 1(5), 149-190.
- Financial NoticesLimbu, D. (2024). *Excess Liquidity and Mounting Defaults: Nepal's Banking Sector Faces Looming Crisis*. My Republica.
- Financial Times. (2025). 'The caterpillar': British banks' £50bn answer to falling rates.
- Fiscal Nepal. (2024, December 1). Rising overdue interest in Nepal's banks: A growing concern for financial stability.
- Fraser, J., & Simkins, B. (2024). What's Wrong with Enterprise Risk Management?. *Journal of Risk and Financial Management*, 17(7), 274-289.
- Friego, M. L., & Anderson, R. J. (2011). Strategic risk management: A framework for aligning risk management with strategy. *Strategic Finance*, 92(2), 25-34.
- Galbraith, J. R. (1973). *Designing complex organizations*. Addison-Wesley.

- Giddens, A. (1991). *Modernity and self-identity: Self and society in the late modern age*. Stanford University Press.
- Goet, R. (2022). *Capital Structure and Profitability of Commercial Banks in Nepal*. *Dristikon: A Multidisciplinary Journal*, Volume 12, Issue 2, pp. 33-47.
- Goet, R. (2022). *Capital Structure and Profitability of Commercial Banks in Nepal*. *Dristikon: A Multidisciplinary Journal*, Volume 12, Issue 2, pp. 33-47.
- Gordon, L. A., & Loeb, M. P. (2002). The economics of information security investment. *ACM Transactions on Information and System Security (TISSEC)*, 5(4), 438-457.
- Gordon, L. A., Loeb, M. P., & Tseng, C. Y. (2009). Enterprise risk management and firm performance: A contingency perspective. *Journal of Accounting and Public Policy*, 28(4), 301-319.
- Hajisaaid, A. M. S. A. (2020). The effect of risk management on profitability of basic materials Saudi Arabia firms. *Journal of Mathematical Finance*. 10(4), 631-647.
- Haldane, V. (2021). Traditional Risk Management by Focusing on an Institution's Ability to Maintain Critical Operations During and After a Disruption. *Business and Risk*, 27(6), 964-980.
- Harmantzis, F. (2018). Operational risk management in financial services and the New Basel Accord. *Management*, 9(2), 57-93.
- Hermalin, B. E., & Weisbach, M. S. (1998). Endogenously chosen boards of directors and their monitoring of the CEO. *American Economic Review*, 88(1), 96-118.
- Hiles, A. (2009). *The definitive handbook of business continuity management*. Wiley.
- Hillson, D., & Murray-Webster, R. (2007). *Understanding and managing risk attitude*. CRC Press.
- Holmstrom, B. (1979). Moral hazard and observability. *Bell Journal of Economics*, 10(1), 74-91.
- IIA, (2013). *The three lines of defense in effective risk management and control*. IIA.
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs, and ownership structure. *Journal of Financial Economics*, 3(4), 305-360.
- Jorion, P. (2021). *Financial risk manager handbook (5th ed.)*. Wiley.
- Kaplan, R. S., & Mikes, A. (2022). Managing risks: A new framework. *Harvard Business Review*, 90(6), 48-60.

- Kirkpatrick, G., & Mayer, R. (2012). The role of culture in risk management. *International Journal of Risk Management*, 15(2), 45-58.
- kiyumi, R. K., AL-hattali, Z. N., & Ahmed, E. R. (2021). Operational Risk Management and Customer Complaints in Omani Banks. *Journal of Governance and Integrity*, 5(1), 200-210.
- Kunjeda, S. (2024). *Impact of Capital Adequacy and Bank Operational Efficiency on Profitability of Nepalese Commercial Banks*. ResearchGate.
- Kunjeda, S. (2024). *Impact of Capital Adequacy and Bank Operational Efficiency on Profitability of Nepalese Commercial Banks*. Research Gate.
- Lawrence, P. R., & Lorsch, J. W. (1967). Organization and environment: Managing differentiation and integration. Harvard University Press.
- Liu, J., Liu, Y., Xia, H., Zou, J., Weaver, S. C., Swanson, K. A., & Shi, P. Y. (2021). Many Financial Institutions now use Machine Learning algorithms to Monitor Risk Indicators and Predict Potential Disruptions. *Nature*, 596(7871), 273-275.
- Mahat, N., Pandey, S., & Thapa, B. S. (2023). Enterprise Risk Management and Institutional Performance of Life Insurance Companies in Nepal. *The Batuk*, 9(1), 10-23.
- McNeil, A. J., Frey, R., & Embrechts, P. (2005). Quantitative risk management: Concepts, techniques, and tools. Princeton University Press.
- Mikes, A. (2009). Risk management and calculative cultures. *Management Accounting Research*, 20(1), 18-40.
- Mintzberg, H. (1979). The structuring of organizations. Prentice-Hall.
- Muhammad, M., Wahdi, W. S. A., & Warokka, A. (2019). Foreign penetration, competition, and credit risk in banking. *Borsa Istanbul Review*. 19(3), 249-257.
- Paine, L. S. (2007). Managing for organizational integrity. *Harvard Business Review*, 85(12), 106-114.
- Paudel, G. P. (2021). Risk Management and Efficiency of Cooperatives: A Study of Nepalese Cooperative Societies. *International Journal of Scientific & Engineering Research*, 12(12), 274-288.
- Poudel, S. R., Kunwar, B., Kharel, T. R., Dahal, S., & Panthi, R. (2024). Impact of Credit Risk, Liquidity Risk, and Operational Risk on Commercial Bank's Profitability. *Journal of Nepalese Business Studies*, 17(1), 117-128.

- Power, M. (2021). The risk management of everything: Rethinking the politics of uncertainty. Demos.
- Rahman, S., Sharker, Y., & Uddinj., J. (2019). *Risk management and Profitability of Manufacturing and Hydro Companies in Nepal* (Doctoral dissertation, Faculty of Management).
- Ross, S. A. (1973). The economic theory of agency: The principal's problem. *American Economic Review*, 63(2), 134-139.
- Schein, E. H. (2010). *Organizational culture and leadership*. Jossey-Bass.
- Shah, M., & Vongbusin, V. (2019). Credit Risk Management and Profitability: A Study from Nepalese Commercial Bank. *Nepalese Journal of Management Science and Research*, 2(1), 42-47.
- Sheldon, C. A., & Ramamoorti, S. (2023). Leading to Heightened Emphasis on Cyber Security within ORM Frameworks. *Journal of Emerging Technologies in Accounting*, 20(2), 29-53.
- Shleifer, A., & Vishny, R. W. (1997). A survey of corporate governance. *The Journal of Finance*, 52(2), 737-783.
- Shrestha, N., (2018). The Working Capital Management of a Dairy Development Company. *Cochrane Database of Systematic Reviews*. 22(6), 72-86.
- Shrestha, P. M., & Khadka, K. K. (2024). Impact of Non-Performing Loan on Profitability of Nepalese Commercial Banks. *Researcher CAB: A Journal for Research and Development*, 3(1), 62–75.
- Shrestha, S. (2024). *Impact of Liquidity on Profitability of Commercial Banks in Nepal*. Tribhuvan University Central Library.
- Spencer, J. (2009). Enterprise risk management and the integration of risk management with strategy. *Journal of Risk Management*, 7(3), 55-70.
- Timilsina, L. P. (2020). Determinants of risk management in Nepalese commercial banks. *International Research Journal of MMC (IRJMMC)*. 1(1), 50-70.4
- Tirole, J. (2001). Corporate governance. *Econometrical*, 69(1), 1-35.
- Woodward, J. (1965). *Industrial organization: Theory and practice*. Oxford University Press.

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**IMPACT OF OPERATIONAL RISK MANAGEMENT ON FINANCIAL PERFORMANCE OF NEPALESE COMMERCIAL BANKS**

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WORD COUNT

**24429 Words**

CHARACTER COUNT

**149187 Characters**

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**79 Pages**

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