EFFECT OF CAPITAL ADEQUACY, MARKET RISK, CREDIT RISK, OPERATIONAL RISK AND LIQUIDITY ON PROFITABILITY OF NEPALESE COMMERCIAL BANKS

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

By

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CERTIFICATION OF AUTHORSHIP

I hereby corroborate that I have researched and submitted the final draft of dissertation entitled “Effect of Capital Adequacy, Market Risk, Credit Risk, Operational Risk and Liquidity on Profitability of Nepalese Commercial Banks”. The work of this dissertation has not been submitted previously for the purpose of conferral of any degrees nor has it been proposed and presented as part of requirement 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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RECOMMENDATION

This is to certify that the dissertation

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"EFFECT OF CAPITAL ADEQUACY, MARKET RISK, CREDIT RISK, OPERATIONAL RISK AND LIQUIDITY ON PROFITABILITY OF NEPALESE COMMERCIAL BANK"

has been prepared as approved by this department in prescribed format of the faculty of management. This dissertation is forwarded for examination.

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REPORT OF RESEARCH COMMITTEE

Mr. Prashant Katuwal has defended research proposal entitled "Effect of Capital Adequacy, Market Risk, Credit Risk, Operational Risk and Liquidity on Profitability of Nepalese Commercial Banks" successfully. The research committee has registered the dissertation for further progress. It is recommended to carry out the work as per suggestions and guidance of supervisor Mr. Chandra Kant Sapkota and submit the thesis for evaluation and viva voce examination.

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We have examined the dissertation entitled “Effect of Capital Adequacy, Market Risk, Credit Risk, Operational Risk and Liquidity on Profitability of Nepalese Commercial Banks” presented by Mr. Prashant Katuwal for the degree of Master of Business Studies (MBS). We hereby certify that the dissertation is acceptable for the award of degree.

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It is my privilege to state that the thesis “Effect of Capital Adequacy, Market Risk, Credit Risk, Operational Risk and Liquidity on Profitability of Nepalese Commercial Banks” has been completed under the supervision of Mr. Chandra Kant Sapkota (NCC College). His proper guidance, comments, suggestions provided throughout the study are valuable to come out in this form without which this study would not have been possible. So, I would like to express my heartiest gratitude to respected advisor. I wish to express my thanks to professors, lectures, campus administration of Nepal Commerce Campus and all who has contributed during the study. I also would like to express thanks to my friends Mrs. Simran Manandhar, Mr. Sanjeev Maharjan and Mrs. Karuna Basnet for their data collection and technical supports during the course of study. Finally, I would like to thank Mr. Sandip Paudel (Branch Manager, Nic Asia Bank Ltd.) and colleague for their valuable suggestion and help while conducting the research work.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS

A.D.	Anno Domini
ATM	Automated Teller Machine
B.S.	Bikram Sambat
BAFIA	Banks and Financial Institutions Act
CAR	Capital Adequacy Ratio
ROA	Returns on assets
ROL	Return on Loans and Advances
RS.	Rupees
SBI	State Bank of India
%	Percentage
CBIL	Citizens Bank International Limited
EBL	Everest Bank Limited
MBL	Machhapuchchhre Bank Limited
NBL	Nepal Bank Limited
NICA	Nic Asia Bank Limited
PCBL	Prime Commercial Bank Limited
SANIMA	Sanima Bank Limited
SBL	Siddhartha Bank Limited
SCBL	Standard Chartered Bank Nepal Limited
CAR	Capital Adequacy Ratio
OCR	Operating Cost Ratio
MR	Market Risk
LDR	Loan-to-deposit ratio

ABSTRACT

Determining the relationship and exploring the impact of capital adequacy, credit risk, market risk, operational risk and liquidity on the Nepalese commercial bank's profitability are the specific goals of the study. Descriptive research design and causal comparative design has been chosen as research strategy and financial statements from annual reports of the banks give me access to data in recent 15 years. Stratified sampling method is used and data has only been taken from secondary sources. Furthermore, several data and information were gathered from financials posted by the banks, periodicals, economic journals and the other published and unpublished reports. The population of study comprises of twenty commercial banks. The field visit to different branches of sample commercial banks provided different information regarding financial site of banks. Statistical tools and Financial tools has been used to analyze the data. E-view 10 software package is used for calculation of Descriptive statistics, Pearson's correlation analysis, Panel regression and Hausman Specific Test. From this analysis, the finding indicate the capital adequacy and loan-to-deposit ratio are in increasing trend and have a positive and significant impact on bank profitability suggesting that well-capitalized banks and efficient utilization of deposits contribute to financial stability and performance. Conversely, market risk, credit risk, and operational risk are in Fluctuation and downward trend and exhibit a negative and significant relationship with profitability.

Keywords: Bank Risk Exposure, Net Margin, Regulatory Capital, Return on Assets (ROA), Risk-Based Capital.

CHAPTER I

INTRODUCTION

1.1 Background of the Study

The banking industry's existence is essential to the nation's economic growth as it is complexly merged into the fabric of community life and providing essential services. Bank with their licenses play a vital role by accepting and managing funds entrusted by the public. They provide loans to businesses and individuals and also receive various forms of debt securities. Siddiqa (2021) stated that banks bridge the gap between surplus and deficit funds and also facilitating payment transactions. Arseto (2022) explained that a bank is an entity that focuses and collect funds, processes them as loans and then redistributes these funds through credit or other services to enhance people's livelihoods. However, the modern role of banks goes beyond this and positioning them as the lifeblood of economic and financial capital for regions. Mendoza and Rivera (2017) also explained that banks wield substantial control over global economies and making them indispensable for economic development. Berger and DeYoung (1997) stated that regulatory requirements mandating the maintenance of a certain level of capital and evaluated through capital adequacy ratio (CAR), Core capital as well as supplementary capital ratio. Berger and DeYoung (1997) also emphasized that banking performance can be gauged through metrics such as the lending interest rate, deposit collected interest rate and overall profitability. Safitri and Geraldina (2023) explained the deposit interest rate is identified as a potential indicator of weak performance and associated issues. The research concludes that profitability stands out as the most suitable indicator for assessing a bank's performance.

Capital adequacy, market risk, credit risk, operational risk and liquidity are evaluated in this study on the "Effect of Capital Adequacy, Market Risk, Credit Risk, Operational Risk, and Liquidity on Profitability of Nepalese Commercial Bank." It also examines the relationship and effects between capital adequacy, market risk, operation risk, credit risk and bank profitability. Ahmad and Ahmad (2017) noted a safety valve to protect depositors and advance stability and efficiency in the entire financial system, capital adequacy is a critical indicator of the banking industry's

financial solvency and metric of financial performance, return on assets (ROA) was emphasized. It is computed by dividing net income by total assets, demonstrating how asset investments can yield profits.

Moreover, Uddin (2022) noted that the CAR is a critical metric expressing a capital as a percentage of risk weighted credit exposures. Datta and Mahmud (2018) found that higher capital requirements influenced bank profitability with revealing a positive correlation between bank profitability and the capital adequacy ratio. Effective capital management, as emphasized by Olalekan and Adeyinka (2013) protects against insolvency risk. The Credit Risk, defined as the potential loss of a loan due to non-repayment, involves using Non-Performing Loans (NPL) as a metric. Ahmed and Khababa (2021) argued that credit risk negatively impacts bank stability and suggest that with reserve funds covering NPL and credit risk may not significantly affect stability.

As per the NRB, all commercial banks and development banks should post the financial statement after end of every quarter for all the stakeholder and to manage timely capital and provisions. Profitability, which is measured using tools like return on assets (ROA) stands out as a critical performance indicator in the banking industry. As a financial ratio to assess a bank's overall profit-generating capacity, ROA gauges a company's ability to turn a profit from its operational activities. It also indicates that a higher ROA directs stronger position in asset management and greater profitability. Profitability, basically reflects the financial performance and many factor are there to measures the profitability. Safitri and Geraldina (2023) also noted that financial sector always focuses on profitability. It's essential to recognize that a bank's financial performance is shaped not only by internal factors but also external influences. Safitri and Geraldina (2023) stated that ROA can have both positive and negative effects on a bank's performance. the banking sector, being inherently linked to the management of public funds through credit, securities purchases, and other investments, is characterized by a susceptibility to risks. Pradnyawati and Widhiastuti (2020) explained as financial entities such as banks are complexly connected to the financial sector.

1.2 Statement of the Problem

Numerous studies have sightseen factors including legal constraints, political and financial situations, government policies along with volatile business environments and management ownership contribute to the unpredictability of risks and intersection of profitability and risks within the banking sector by focusing on Nepal.

Sawitri (2018) studied profitability determinants in the Pakistan's banking sector which reveals a negative impact of asset size on profitability. Factors such as size of the size of the bank, CAR, management as well as liquidity and quality along with management of assets were noted to significantly influence profitability. According to Siregar (2022), external factors like GDP, exchange rates, and interest rates also played a role. Abeywardhana (2017) established CAR and profitability have positive relationship in Pakistan. Rahman and Islam (2019) identified capital adequacy and Size of the bank as positively impacting a bank's profitability while liquidity had an insignificant effect on ROA. Yusuf and Abubarkar (2020) highlighted the positive and significant impact of cost of funds, capital adequacy ratio, and size of the bank on liquidity in Pakistani banks. The impact of non-performing loans on Bangladeshi banks' profitability which reveals statistically significant relationships between non-performing loan ratio, provision maintenance ratio and ROA (Patwary & Tasneem, 2019).

Akter and Roy (2017) emphasized statistically negative significant influence of NPL on net profit margin. Rahman and Islam (2019) noted between profitability and non-performing loans, there is a negative relationship. Anggriani and Muniarty (2021) explored the impact of credit risk on profitability in Ghana, revealing positive but insignificant influences. Collaku (2021) studied the negative and significant influence of credit risk, specifically non-performing loans, on the return on assets of banks in Sri Lanka. Knopf (2009) noted that there is a negative association between NPL and ROA in the Sharia rural banks of Yogyakarta.

Uddin (2022) observed a negative significant influence of operational costs on operational income on ROA in of Indonesia and Bangladesh' commercial banks. Arseto (2022) concluded that Operating Cost Ratio negatively affects ROA in Bank

BRI Syariah. Lundblad (2007) highlighted the significant influence of LDR on ROA. Niroula and Singh (2021) studied the simultaneous significant influence of loan to deposit ratio on return on assets in Indonesia's bank. Sawitri (2018) found significant influence of LDR on profitability in Indonesia's commercial banks.

Siddiqa (2021) conducted a comprehensive analysis of Nepalese commercial banks focusing on their profitability, efficiency and stability. The study explored the correlation between profitability and bank efficiency finding a positive and significant relationship and also identified a positive link between bank efficiency and stability. This research marks an innovative effort in investigating the determinants of profitability, efficiency and stability in Nepalese commercial banks.

Siregar (2022) investigated the Nepalese commercial bank's profitability, specifically analyzing ROA. It focuses on determinants such as the non-performing loans ratio, capital adequacy ratio as well as cash reserve ratio. There is a positive association between asset size and capital adequacy ratio along with return on assets as per the finding. Conversely, non-performing loan ratio as well as operating cost demonstrated negative associations with ROA.

Pradhan and Prajuli (2017) found a relationship a positive relationship between return on assets and size of the bank. This implies that larger banks tend to yield higher returns on assets. However, the study revealed negative associations between cost-income ratio, capital adequacy, total assets as well as liquidity ratio with profitability (ROA). This suggests that increases in cooperating cost ratio, capital adequacy ratio as well as total assets ratio and liquidity ratio lead to an improvement in return on assets. Poudel (2018) delved into the impact of risk including credit and market influence the financial performance of banks in Nepal. It helps to uncovered an inverse impact of various parameters on bank financial performance with the default rate identified as the most significant predictor. The research highlighted the sophisticated association among overall financial health and credit risk management of Nepalese commercial banks. To address gap and provide more current insights this research has been undertaken. To determine, analyze and explore the pattern and structure, relationship, effects and impact of market risk, capital adequacy, operational risk,

credit risk and bank's liquidity on commercial bank's profitability in Nepal are the specific objective. Therefore, this study addresses the mentioned issues within the specific context of commercial banks of Nepal:

i. What is the pattern and structure of capital adequacy, market risk, credit risk, operational risk and liquidity?

ii. What is the relationship of capital adequacy, market risk, credit risk, operational risk with return on assets in Nepalese commercial banks?

iii. What is the effect of capital adequacy, market risk, credit risk, operational risk on return on assets in Nepalese commercial banks?

1.3 Objectives of the Study

The general objective of the study is to examine the effect of capital adequacy, market risk, credit risk, operational risk and liquidity on profitability of commercial Bank of Nepal. The specific objectives are as follows:

i. To analyze the pattern and structure of capital adequacy, credit risk, market risk, operational risk and liquidity on profitability of Nepalese commercial banks.

ii. To determine the relationship of capital adequacy, credit risk, market risk, operational risk and liquidity on return on assets of Nepalese commercial banks.

iii. To explore the effect of capital adequacy, credit risk, market risk, operational risk and liquidity on return on assets of Nepalese commercial banks.

1.4 Research Hypothesis

As for the hypothesis, the study tries to achieve the following set of hypothesis based upon objectives and literature of this study.

$H_1$1: There is significant positive impact of capital adequacy ratio on ROA.

$H_1$2: There is significant negative impact of market risk on ROA.

$H_1$3: There is significant negative impact of non-performing loan on ROA.

$H_1$4: There is significant negative impact of operating cost ratio on ROA.

$H_1$5: There is significant positive impact of loan to deposit ratio on ROA.

1.5 Rationale of the Study

There are several factors affecting the profitability of banking sectors of Nepal. Financial institutions provide banking services contribute substantially to the economic development of a nation. Christaria and Kurnia (2016) explained as a key pillar of the economy, the banking sector performs crucial intermediary roles by facilitating connections between investors and diverse industries within the country. The research helps to assess the effects of capital adequacy, credit risk, market risk, operational risk, non-performance loan, loan to deposit ratio and operating cost ratio along with liquidity on commercial bank's profitability. Numerous research investigations have explored a range of financial management topics and particularly examining the impact of factors such as capital adequacy, credit risk, market risk, operational risk, non-performance loan, loan to deposit ratio, operating cost ratio and liquidity on profitability. Yang, Zheng and Huang (2018) findings indicated that variables including capital adequacy ratio, NPL, operating cost, NIM and LDR exert a significant and positive influence on ROA.

The research holds particular relevance for policymakers, managers, bankers, stock analysts, investors brokers, government officials, academics, students, and other stakeholders keen on comprehending the interplay between variables and profitability in Nepalese commercial banks. Moreover, the insights gained from this study will aid policymakers in making well- informed decisions by fully acquisitive the impact of

credit risk, capital adequacy, market risk, operational risk, non-performing loans, size of the bank, loan-to-deposit ratio, operating cost ratio as well as liquidity.

Furthermore, the study offers managers to understand the variables which applies the most significant impact on the profitability of Nepalese commercial banks. This knowledge will guide managers in making sound financial decisions to mitigate risks and enhance the firm's profitability and the study aims to serve as a comprehensive literature source for researchers delving into the association between credit risk, capital adequacy, market risk, operational risk, size of the bank, non-performing loans, loan-to-deposit ratio, operating cost ratio and bank's liquidity concerning the commercial bank's profitability.

1.6 Limitation of Study

The particular study is bounded within certain constraints or limitation as under;

i. The study is conducted within a year of time frame, which restricted the depth of data collection and analysis.

ii. The findings and result of this particular study may not eligible enough to be applicable globally as it is conducted within boundary of Kathmandu, Nepal.

iii. The limited statistical tools such as Descriptive statistic, Panel regression analysis, Multiple correlation analysis and sample size of 10 commercial banks among 20 commercial banks have been employed to find out results and facts.

iv. The study is only based on secondary research. Primary data have not been employed.

CHAPTER II

LITERATURE REVIEW

2.1 Thematic Review

The relationship between profitability of commercial bank and risk management has been a subject of extensive research in the field of banking. Capital adequacy stands out as a fundamental pillar in bank risk management as highlighted by the Basel framework. Ahmend and Khababa (2021) stated that empirical studies as demonstrated a positive association between higher capital adequacy ratios and improved profitability, indicating the critical role of capital buffers in absorbing potential losses. Market risk, encompassing interest rate, foreign exchange, and equity risks, presents another dimension of risk exposure. Research by De Jonghe (2010) underscored the complex relationship between market risk management strategies and bank profitability shedding light on the nuanced trade-offs banks face in pursuit of returns while guarding against excessive risk-taking. In the realm of credit risk, the work reveals the significance of effective credit risk assessment and provisioning practices in maintaining a healthy loan portfolio and subsequently and profitability (Degutis & Novickyte, 2014). Operational risk including technological failures along with fraud and compliance breaches has gained prominence in recent years. De Jonghe (2010) also underscored the delicate balance banks must strike between optimizing returns and ensuring adequate liquidity buffers. In summary, this thematic review aims to illuminate the multifaceted nature of risk factors and their intricate influence on the of commercial bank's profitability, thus contributing to a holistic understanding of prudent risk management strategies for sustainable financial performance.

2.1.1 Capital Adequacy Ratio

Several definitions of Capital Adequacy Ratio have been given by researchers as:

Murithi and Waweru (2020) explained the CAR is a regulatory metric of the financial that assesses a capital adequacy of banks by comparing its capital (comprising Core capital and supplementary capital) to its risk-weighted assets. It is used by banking regulators to ensure that banks have a sufficient capital buffer to absorb potential

losses and risks, thereby maintaining financial stability and protecting depositors.

Anggreni and Rahyuda (2021) underscored the Capital Adequacy Ratio (CAR) represents the financial strength and resilience of a financial institution. It measures total assets and the bank's capital and focuses on banks' ability to absorb losses.

Anggreni and Dana (2020) explained the CAR is a regulatory metric of the financial used by investors and analysts to evaluate a bank's risk profile. It provides insights into a bank's capacity to withstand economic downturns and its ability to generate profits while maintaining a sound capital structure.

2.1.2 Market Risk

Several definitions of Market Risk have been given by researchers as:

Nyabaga and Matanda (2020) underlined Market risk is the risk where investment and portfolio will decline due to adverse movements in market' s financial such as currency exchange rates changes as well as interest rates and the bond and stock price.

Tingon (2022) explained Market risk is the exposure of an asset or investment to fluctuations in market prices including the risk of losing value as a result of factors like economic events and geopolitical developments or shifts in supply and demand,

Rakatenda and Sedana (2021) underscored market risk refers to the potential for a portfolio of investments to experience losses due to broader market movements including equity market risk (related to stocks), interest rate risk (related to bonds) as well as commodity price risk (related to raw materials).

2.1.3 Non-Performing Loan

Several definitions of Non-Performing Loan have been given by researchers as:

Çollaku (2021) underlined Non-Performing Loan (NPL) is defined by regulatory authorities, such as central banks or financial supervisory agencies, as a loan that is in arrears for a specified period usually more than ninety days or equals to ninety days where EMI or interest suspense are overdue. Regulatory definitions help establish standards for reporting and managing NPLs in the banking industry.

Saleh and Winarso (2021) explained Non-Performing Loan (NPL) is a loan for which

it is highly doubtful that the financial institution will be able to collect all of the outstanding principal and interest and it may also be defined as a loan that has been classified as impaired or non-accrual, meaning that the institution does not recognize interest income on the loan until it is fully collected.

Oviatt and McDougall (2018) underlined Non-Performing Loan (NPL) represents a credit risk for the lender. It indicates that there is a significant likelihood that the borrower may default on the loan and leading to potential financial losses for the institution. Managing NPLs involves strategies for resolution or recovery which may include restructuring as well as write-offs or the sale of distressed assets.

2.1.4 Operating Cost Ratio

Several definitions of Operating cost ratio are explained as:

Aduda and Gitonga (2019) underscored Operating Cost ratio is basically being process of comparing operating expenses (such as administrative costs, overhead and salaries) to its operating income (revenue generated from core banking activities excluding non-operating items like asset or investments or sales). A lower OCR indicates better efficiency as it suggests that a bank is able to generate more income relative to its operating expenses. Isnaeni and Suhardi (2015) explained that the Operating Expenses to Operating Income Ratio assesses the efficiency of a company's operations by comparing its operating expenses to its operating income. This ratio includes all types of businesses and measures how effectively a company manages its costs in relation to the revenue it generates from its core operations. A lower OCR generally indicates better profitability and operational efficiency. Knopf (2009) explained the operating Expenses to operating income ratio evaluates the financial performance of income-producing properties such as commercial real estate or rental properties. A OCR indicates better cost management and higher profitability for the property.

2.1.5 Loan to Deposit

Several definitions of Loan to deposit have been given by researchers as:

Siregar (2022) delved The Loan-to-Deposit Ratio (LTD Ratio) is a key financial ratio used in the banking industry to measure the proportion of a bank's loans and advances

to customers (outstanding loans) relative to its total customer deposits (customer funds held. A higher LTD Ratio indicates that a banks are providing large amount of loans among the deposits.

Pattiruhu (2022) delved The Loan-to-Deposit Ratio is a measure of a financial institution's ability to originate mortgage loans based on the deposits it holds. For mortgage lenders, it represents the ratio of mortgage loans funded to the deposits available for lending purposes. This LTD ratio helps to know the lender's capacity as well to finance loan.

Sumantri (2022) underscored The Loan-to-Deposit Ratio can refer to the ratio of a bank's outstanding loans to its available deposits or cash. A higher LTD ratio may indicate a company's reliance on borrowed funds relative to its cash reserves.

2.2 Regional Context

Asian Practices

Safitri and Geraldina (2023) revealed that the primary aim of implementing risk management within banks is to proactively minimize the potential for losses, thereby enhancing competitive advantage and overall company performance. This involves a comprehensive process of identifying, measuring, monitoring, and controlling risks, with a focus on safeguarding asset values and mitigating potential hazards. Within the banking sector, risk management holds particular significance due to its role in addressing liquidity, foreign exchange, interest rate and credit-related risks.

A notable research gap in this domain related the intricate relationship between credit risk and bank performance. Tingon (2014) indicated a negative impact of credit risk others like (Buch, Dorfleitner & Wimmer, 2011) suggested a positive influence. This study offers a fresh perspective by introducing capital adequacy as a mediating factor in this relationship, as evidenced by its successful mediation between credit risk and company performance. The study's significance arises from the pressing issue of customer defaults affecting company performance, prompting the need for solutions to curtail this decline. However, Abbas, Iqbal and Aziz (2019) underscored inconsistencies exist within prior research necessitating further investigation into the phenomenon of declining company performance attributed to high credit risk and

reduced capital particularly within the distinct context of banking where customer funds contribute significantly to the loan operations and company's income.

African Practices

Garr (2013) explained that it is recognized as an emerging economic region in south Africa and a prominent player in Sub-Saharan Africa's economies holds significant potential driven by its expanding market presence in both state-owned and private financial institutions and Recent evaluations of credit ratings of South Africa as well as Fitch Ratings have bolstered its global standing. Khan and Sattar (2022) metaphorically liked the role of banks to the circulatory system of an organism emphasizing their pivotal role as primary sources of economic and financial capital for regions. Mendoza and Rivera (2017) underscored banks play a central role in economic development due to their substantial influence on global economies. Mendoza and Rivera (2017) also clarified that banks naturally manage risk rather than completely preventing it because they operate within a complex environment of risks. Almazari (2014) stated among these risks, credit risk assumes a paramount position as it underpins a significant portion of bank earnings primarily from interest accrued on credit. Credit risk materializes when borrowers fail to repay their loans or debts to the bank in a timely and complete manner. The Basel Committee on Banking Supervision highlights that credit risk largely stems from rigorous credit standards set by lenders with the nature of loans extended serving as a metric to gauge a bank's financial security and integrity. Garr (2013) explained as credit products constitute a core asset for banks and insufficient creditworthiness could render them susceptible to insolvency risks. Addressing the invasion of banks in South Africa, the Reserve Bank of Africa has established a monitoring and evaluation unit to regularly assess bank’s non-performing loans and Credit risk management is acknowledged to be intricate and demanding for financial institutions due to the complex interplay of macro and microeconomic factors affecting individual banks' credit risk profiles. The South African Reserve Bank (SARB) announced in 2015 that commercial banks failing to maintain adequate capital ratios may face closure or consolidation and a policy aimed at enhancing credit risk oversight.

Nepalese Context

The role of the banking sector is of paramount importance ensuring the smooth channeling of financial resources from savers to borrowers (Dhakal, 2023). Rakatenda and Sedana (2021) underscored that through the evaluation of profitability and it becomes straightforward to assess how effectively and efficiently a bank employs its resources within a defined time frame. Peling and Sedana (2021) explained that a bank's robust profitability not only signifies its enhanced ability to generate earnings but also highlights its significant contribution to the overall economic growth of a nation. The degree of profitability serves as a barometer for gauging a company's operational excellence, reflecting the bank's adeptness in operating efficiently (Langodai & Lutfillah, 2019). Nevertheless, the banking industry consistently grapples with the challenge of achieving sustained growth while ensuring stability. In this attempt, the maintenance of profitability remains a persistent concern for banks wherein an appropriate level of liquidity becomes pivotal in driving increased profitability. Insufficient liquidity, on the other hand, Almazari (2014) stated as a chief contributor to risks and financial losses, underscoring the significant role that liquidity risks play in shaping the profitability landscape for banks. Through this comprehensive exploration, the study aims to shed light on the multifaceted dynamics that contribute to or impede the profitability of these banks, providing valuable insights into the intricate fabric of the banking sector's financial performance.

2.3 Theoretical Review

Baumeister and Leary (1997) explained that theoretical review can be characterized as the examination and understanding of existing literature related to a particular subject or theoretical framework. This process entails combining and assessing established theories and models recognizing areas where the literature lacks coverage and suggesting novel research inquiries and hypotheses. Yang et al. (2012) explained about the primary aim of a theoretical review is to present a thorough and evaluative summary of the current body of literature elucidating the conceptual and theoretical foundations of a research subject and guiding the formulation of fresh research endeavors.

2.3.1 Resource-Based View (RBV) Theories

Saleh and Winarso (2021) stated a strategic management framework that explains a firm's sustainable competitive advantage and profitability based on its internal resources and capabilities. Said and Ali (2016) explained the external-oriented theories that emphasize market conditions and RBV focuses on the unique assets that a firm control, arguing that firm performance is primarily determined by how well it utilizes its internal resources. Peling and Sedana (2021) noted resources refer to all assets in the organization. Sumantri (2022) stated a resource to offer a sustainable competitive advantage, it must possess four critical attributes, often abbreviated as VRIN: it must be Valuable, Rare, Inimitable, and Non-substitutable. Langodai and Lutfillah (2019) underscored that the valuable resources support to implement strategies that improve opportunities as well as efficiency. Inimitable resources are difficult to replicate due to causal ambiguity, unique historical conditions, or social complexity. Non-substitutable resources cannot be replaced by equivalent resources that provide the same function. Said and Ali (2016) also stated it directly supports measures of firm performance such as Return on Assets (ROA) because it links firm-level resource utilization with profitability. Pattiruhu (2022) delved a firm with valuable and rare resources is likely to generate superior earnings from its asset base, thus improving ROA. For example, a technology firm with patented software and highly skilled developers may achieve higher returns than competitors with similar asset sizes but less unique capabilities. Additionally, RBV emphasizes strategic resource management. Organizations are encouraged to invest in developing core competencies and to protect their resources from imitation or erosion. This long-term internal focus helps firms build enduring profitability, even in dynamic or competitive industries. Garr (2013) underscores RBV also faces criticisms. It often assumes resource immobility and overlooks the role of market dynamics and competition. Furthermore, identifying VRIN resources in practice can be challenging, and the theory lacks a clear mechanism for resource development over time. In conclusion, the Resource-Based View provides a robust theoretical foundation for understanding firm performance through the lens of internal strengths. Tingon (2014) stated RBV asserts that firms achieve superior profitability and efficiency, as measured by indicators like ROA, when they effectively manage and leverage unique, valuable, and

hard-to-copy resources. This theory is particularly relevant for evaluating why some firms outperform others despite operating in similar external conditions. By focusing on internal strategic assets, RBV remains a key approach in both academic research and business strategy formulation (Buch, Dorfleitner & Wimmer, 2011).

2.3.2 Efficiency Structure Hypothesis (ESH)

Patwary and Tasneem (2019) explained that the efficiency structure hypothesis is a theory developed primarily in the context of the banking and industrial sectors to explain variations in firm profitability based on operational efficiency. The hypothesis posits that firms or banks that are more efficient in managing their resources and operations tend to achieve higher profitability than their less efficient counterparts (Jensen & Meckling, 2012). ESH challenges traditional views like the Structure-Conduct-Performance (SCP) paradigm, which attributes profitability primarily to market concentration and monopoly power. Siregar (2022) delved the ESH argues that superior performance arises from managerial efficiency rather than market structure and the theory assumes that more efficient firms can offer products at the same cost with higher quality, thereby attracting more customers, increasing market share, and improving financial performance.

In this theory, X-efficiency refers to how effectively a firm manages its inputs and operational processes. Firms that reduce waste, improve productivity, and minimize costs without sacrificing output quality are considered X-efficient. Scale-efficiency relates to economies of scale when firms reduce average costs by increasing their production scale. Siddiqa (2021) underscored the larger firms can spread fixed costs over more output units, improving cost-efficiency and profitability. ESH has been widely applied in empirical research, especially in banking studies, where metrics like Return on Assets (ROA) and Cost-to-Income Ratio are used to test efficiency and performance (Jensen & Meckling, 2012). Under ESH, it is expected that more efficient banks those with lower costs or better service delivery will have higher ROA, indicating more effective utilization of assets to generate income (Jensen,1986). The theory is relevant in competitive industries where market forces encourage efficiency. For example, in banking, institutions that adopt technology to automate processes or

improve customer service typically achieve operational efficiency, which can lead to greater returns on their asset base. As such, the ESH provides a meaningful framework for linking internal performance improvements with financial outcomes like ROA. Despite its relevance, the Efficiency Structure Hypothesis also faces some limitations. According to Montgomery (1994), it can be challenging to isolate efficiency as the sole determinant of profitability, since other factors such as market power, regulation, or macroeconomic conditions also influence performance. Moreover, differences in firm size, product offerings, and geographical presence can complicate cross-firm efficiency comparisons (Pattiruhu, 2022).

2.3.3 Basel Accords

The Basel Committee on Banking Supervision (BCBS), established under the Bank for International Settlements (BIS), plays a critical role in enhancing global banking regulation and supervisory standards. As noted by ElBannan (2017), one of its key objectives is to strengthen the quality and effectiveness of banking oversight across jurisdictions. The Committee has made consistent efforts to refine regulatory frameworks and improve the supervision of the banking industry.

Basel I Accord

Introduced in 1988 by the BCBS, Basel I was the first comprehensive framework for banking regulation and was launched from the BIS headquarters in Basel, Switzerland. Its main goal was to address the inadequacies of earlier capital-to-asset measures and to reduce the risk of bank failures by introducing a standardized approach to credit risk. To this end, Basel I implemented risk-weighted capital ratios, requiring banks to hold capital proportional to the riskiness of their assets (Basel Committee on Banking Supervision, 2011).

Basel II: The Revised Capital Framework

In 2001, the BCBS introduced Basel II as an enhancement of the 1988 Basel Accord. While Basel I focused primarily on credit risk, Basel II expanded the regulatory scope to also include market and operational risks. This updated framework was organized around three pillars: (1) minimum capital requirements, (2) supervisory review, and

(3) market discipline.

Broader Risk Assessment: Basel II's inclusion of various risk categories supports this thesis's objective of evaluating the impact of different types of risk on bank profitability. By incorporating credit, market, and operational risk, the analysis offers a more comprehensive understanding of risk management's role in financial performance.

Capital Adequacy and Risk Alignment: The framework emphasizes the need for banks to maintain capital levels that correspond to their risk exposures, aligning closely with this research's aim of examining the relationship between capital adequacy and profitability. Transparency and Market Behavior: The increased disclosure obligations introduced under Basel II are relevant to this study, as greater transparency can influence market behavior and encourage banks to uphold sound capital positions. This thesis explores how such disclosure practices and market discipline affect profitability.

Basel III: Strengthening Post-Crisis Resiliencs

Following the 2007–2008 global financial crisis, the BCBS introduced Basel III to address the regulatory shortcomings that became evident during the crisis. According to Surtikanti, Saepudin, Arizona, and Anggadini (2022), the crisis highlighted the need for reform due to key vulnerabilities such as excessive leverage (both on- and off-balance sheet), insufficient capital buffers, and poor liquidity management. These issues undermined the banking sector's ability to absorb shocks and respond to credit losses. Basel III thus aimed to enhance the resilience of financial institutions by strengthening capital requirements, introducing new liquidity standards, and placing limits on leverage (Basel Committee on Banking Supervision, 2011).

2.4 Empirical Review

An empirical review systematically evaluates past research based on observed and measured data rather than theoretical speculation. In banking sector, such reviews are essential for understanding how financial indicators influence bank profitability. A

brief international review of some related studies with their objectives, methodology with their major findings are presented in table 1.

Table 1

Review of International Studies

Study	Objective	Methodology	Key Findings/Conclusion
Bui (2020)	Identify profitability factors in Vietnamese banks	Panel data regression	GDP growth and inflation boost ROA; inefficiency reduces it.
Ghosh (2021)	Assess CAR and NPL effects on Indian banks	Dynamic panel regression	CAR enhances ROA; NPLs decrease profitability significantly.
Djalilov and Piesse (2021)	Compare profitability determinants in Eastern Europe & Central Asia	Panel regression	Institutional quality more important in Eastern Europe.
Rahman and Hasan(2021)	Investigate liquidity and NPL impact in Bangladesh	Fixed effects regression	Higher NPLs reduce ROA; low liquidity decreases profitability.
Collaku (2021)	Analyze NPLs' effect on Kosovo bank profitability	Multivariable linear regression	NPLs significantly reduce ROA; credit risk management is crucial.
Surtikanti et al. (2022)	Examine CAR and NIM impact on commercial bank profitability	Multiple linear regression	NIM positively influences ROA.
Olivia et al. (2022)	Assess financial risk and bank size effects on profitability	Panel data regression (EViews)	NIM has a positive effect on ROA.

Study	Objective	Methodology	Key Findings/Conclusion
Alam et al. (2022)	Evaluate BOPO, NIM and inflation on Islamic bank profitability	OLS regression	BOPO negatively affects ROA; NIM and inflation not significant.
Siregar (2022)	Study OCR, NIM, CAR, LDR effects on profitability	Multiple linear regression	All variables significantly influence.
Khan and Sattar (2022)	Determine Islamic banks' profitability drivers	GMM panel regression	CAR and bank size improve ROA; NPLs and inefficiency hurt it.

All international studies are explained below:

Bui (2020) stated that conducting a panel data regression analysis on Vietnamese commercial banks drives to explore profitability drivers. The study demonstrated that macroeconomic factors like GDP growth and inflation positively influence ROA while inefficiencies and high operating costs detract from profitability. These results highlight the importance of economic environment stability as well as internal cost management in bank.

Ghosh (2021) underscored that using dynamic panel regression, Indian banks to assess the CAR impact and NPL. The results reaffirmed that CAR positively enhances ROA, while increased NPLs substantially reduce it. This study validates the critical roles of capital adequacy and credit quality in maximizing bank financial performance.

Djalilov and Piesse (2021) explained that comparing banks in Eastern Europe and Central Asia across 25 countries, this panel regression analysis found that institutional quality influences profitability more strongly in Eastern Europe, whereas bank-specific factors have greater relevance in Central Asia. The study highlights the importance of macro-institutional environments alongside internal bank characteristics in explaining profitability variations across regions.

Rahman (2021) underscored investigating Bangladeshi banks, Rahman and colleagues applied fixed effects panel regression to measure how liquidity and NPLs impact profitability. Their results indicated that higher NPL ratios significantly reduce ROA,

while inadequate liquidity also decreases profitability. This study underscores the importance of maintaining asset quality and robust liquidity for sustainable banking performance.

Collaku (2021) stated that how Non-Performing Loans (NPLs) affect profitability through multivariable linear regression. Results showed that elevated NPL levels significantly reduce ROA. The evidential negative relationship between credit risk exposure and profitability underscores the necessity for stronger credit risk management strategies to sustain bank financial health.

Surtikanti et al. (2022) explored how CAR and NIM influence the ROA of Indonesian commercial banks. Using multiple linear regression on bank data from 2011 to 2015, the analysis revealed that NIM had a significant positive effect on Return on Assets (ROA). The results indicate that an increase in lending activities expands interest income, thereby enhancing profitability. This emphasizes the critical role of interest income management in bank performance.

Olivia et al. (2022) examined the role of credit risk and size of the bank on bank's profitability, employing panel data regression techniques using EViews software. Their findings underscored that NIM positively affects ROA. Moreover, they suggested that including CAR alongside NIM could improve the explanatory power of profitability models. This study highlights the interplay between financial risk metrics and bank scale in profitability determination.

Alam et al. (2022) stated an investigation of Islamic banks in Indonesia applied ordinary least squares (OLS) regression to study the impact of operational cost to operating income ratio (OCR), NIM, and inflation on profitability. They found OCR negatively affects ROA while NIM and inflation were statistically insignificant. This suggests operational efficiency has a more direct impact on Islamic bank profitability than market variables.

Siregar (2022) underscored multiple linear regression to analyze the effects of OCR, NIM, CAR, and Loan-to-Deposit Ratio (LDR) on bank profitability in Indonesia. All four variables were significant determinants of ROA, with the model explaining approximately 76.8% of variance in profitability. The findings highlight how combined cost control, capital adequacy, and liquidity management contribute decisively to bank performance.

Khan and Sattar (2022) explained about Islamic banks, employed the Generalized Method of Moments (GMM) panel regression to identify profitability determinants. CAR and size of the bank emerged as significant positive influences on ROA, whereas NPLs and operational inefficiencies negatively impacted profitability. Recommends that Islamic banks prioritize capital adequacy and credit risk control to enhance earnings.

A brief Nepalese review of some related studies with their objectives, Methodology with their major findings.

Table 2

Review of Nepalese Studies

Study	Objective	Methodology	Key Findings/Conclusion
Tan and Floros (2018)	Explore profitability factors in Nepalese banks	Dynamic GMM	CAR improves ROA; BOPO and NPLs reduce it.
Aduda and Gitonga, (2019)	Examine operational efficiency effects in Nepalese banks	OLS regression	BOPO negatively affects ROA; cost control is essential.
Rahman and Islam (2019)	Analyze interest rate spread and CAR in Nepal	Panel ARDL model	Both interest spread and CAR positively impact ROA.
Mensah and Frimpong (2020)	Identify key drivers in Nepalese commercial bank profitability	Fixed effects panel regression	Liquidity and credit risk reduce ROA; larger size improves it.
Muriithi and Waweru (2020)	Analyze credit risk impact on Nepalese banks	Panel regression	High NPLs significantly decrease ROA.
Trinugroho et al. (2020)	Assess bank-specific factors in Nepalese banking	Panel regression	BOPO, CAR, and size significantly affect profitability.

Yusuf and Abubakar (2020)	Investigate bank-specific factors in Nepal	Dynamic GMM panel model	NIM and CAR positively relate to ROA; poor loans lower it.
Ahmed and Khababa (2021)	Evaluate macroeconomic effects on Nepalese bank's profitability	Time series regression	NPLs and BOPO reduce ROA; oil price shocks significant.
Lestari and Putri (2021)	Study profitability drivers in Nepal regional banks	Panel regression analysis	CAR and NIM enhance ROA; BOPO and NPLs hinder profitability.
(Wanjiru, 2024)	Assess market risk and profitability in Nepal	Multiple regression	NIM and exchange rate risk increase ROA.

All Nepalese studies are explained below:

Tan and Floros (2018) stated that using dynamic GMM estimation on Nepalese banks, it is found that CAR positively influences ROA, whereas OCR and NPLs have detrimental effects. The results underscore the importance of operational efficiency and prudent credit risk management in sustaining profitability amidst changing regulatory landscapes.

Aduda and Gitonga (2019) stated that ordinary least squares (OLS) regression was used to study operational efficiency's effect on profitability regarding study of Nepalese commercial banks. The analysis showed that a higher OCR ratio significantly and negatively affects ROA signaling that controlling operational costs is vital for improving bank profitability in emerging markets.

Rahman and Islam (2019) stated that a panel Auto-Regressive Distributed Lag (ARDL) model was used, Rahman and Islam (2019) studied Nepalese's Bank profitability factors. Both interest rate spread and CAR showed positive and significant effects on ROA, emphasizing that maintaining a healthy net interest margin alongside regulatory capital buffers supports bank earnings.

Mensah and Frimpong (2020) stated that employing fixed effects panel regression on Nepalese bank, identified liquidity and credit risk as significant negative drivers of

ROA, while size of the bank positively influenced profitability. The findings reinforce the need for balancing prudent liquidity management and loan performance to ensure steady earnings growth.

Muriithi and Waweru (2020) stated that Analyzing Nepalese banks through panel regression, this study found that elevated NPL levels significantly reduce ROA. The authors highlight the necessity of efficient credit screening and recovery processes to mitigate risks and preserve profitability in the banking sector.

Trinugroho et al. (2020) stated that panel regression study across ASEAN countries like Nepal identified that BOPO(OCR), CAR and size of the bank significantly affect profitability. Larger, more efficient, and well-capitalized banks demonstrated superior financial performance, indicating the broader applicability of these determinants across regional banking systems.

Yusuf and Abubakar (2020) stated that dynamic GMM panel model was used to analyze Nepalese banks revealing that higher NIM and CAR positively correlate with ROA, whereas poor loan quality reduces profits. The study emphasizes strengthening capital base and interest income as key strategies for profitability among Nigerian banks.

Ahmed and Khababa (2021) underscored utilizing time series regression, this research examined commercial bank's profitability determinants in Nepal. It found that increases in NPLs and BOPO ratios negatively influence ROA, while external shocks like oil price fluctuations also significantly affect bank performance. The findings illustrate the intertwined effects of internal efficiency and macroeconomic volatility.

Lestari and Putri (2021) underscored examining few banks in Nepal via panel regression, this study confirmed that CAR and NIM significantly enhance ROA, while BOPO and NPLs impede it. These findings advocate for balanced capital management, maintaining strong net interest margins, and controlling operational costs to optimize bank profitability.

Wanjiru (2024) stated that multiple regression applied to Nepalese commercial banks to assess market risk. Results demonstrated that both NIM and exchange rate risk positively impact ROA, suggesting that banks adept at managing market risks and sustaining interest margins see improved profitability.

2.5 Policy Review

Policies formulated by various regulatory bodies such as Ministry of Finance and Nepal Rastra Bank and Government of Nepal are discussed in this section. Various policies are formulated and implemented for a particular situation and that has been agreed by all licensed bank and financial institution. A policy evaluation would aid in comprehending the guiding concepts of the adopted study topic. Mainly, policies adopted by central bank of Nepal as main regulatory body has been tried to highlighted more in this section.

2.5.1 Credit Policy 2023/2024

The Nepal Rastra Bank (NRB), is a central bank responsible for issuing policy and prepared policy functions to control the circulation of money supply as well as credit within the economy. Its key objectives include stimulating economic growth and upholding stable prices. The principal features of Nepal's credit policy encompass the subsequent points:

a) Interest Rates: Within the credit policy, the NRB defines interest rates applicable to loans and deposits in the banking sector. This strategic employment of interest rates influences the conduct of banks and plays a role in managing inflation. The policy's core intention revolves around maintaining a steady interest rate structure that promotes borrowing and investment across the economy.

b) Reserve Mandates: The NRB necessitates that banks reserve a specific proportion of their deposits as reserves. These reserved funds serve as a protective cushion against unforeseen withdrawals thereby contributing to the stability of the banking system.

c) Credit Objectives: The credit policy outlines benchmarks for the growth of bank credit, thereby bolstering economic advancement. It encourages financial institutions to augment lending to sectors of priority like agriculture, tourism and infrastructure development.

d) Credit Assurance Fund: For the facilitation of credit access to sectors such as small and medium enterprises (SMEs) and other significant areas, the NRB has instituted a Credit Guarantee Fund. This fund offers partial guarantees to banks for loans extended to qualifying borrowers.

e) Prudent Regulations: Embedded within the credit policy are prudent regulations intended for banks, ensuring the robustness and security of the banking system. Adherence to these regulations compels banks to maintain suitable capital reserves, adeptly manage risks, and adhere to regulatory mandates.

In summary, Nepal's credit policy endeavors to cultivate financial stability and invigorate economic growth by establishing an environment conducive to lending and investment and the policy strives to strike a harmonious equilibrium between boosting credit expansion and upholding financial prudence within the banking landscape.

2.5.2 Basel Accord

In terms of regulations pertaining to share capital, the Basel Accords primarily center on the adequacy and nature of capital that banks should possess to guarantee their financial resilience and capacity to absorb losses. Although the specifics surrounding share capital can differ among various iterations of the Basel Accords, the fundamental principles remain consistent.

Crucial aspects concerning share capital within the Basel Accords encompass:

1. Core Capital (Tier 1 Capital): This category encompasses the most fundamental and enduring forms of bank capital. Regular shares and declared reserves are typical constituents of core capital.

2. Supplementary Capital (Tier 2 Capital): While not solely linked to share capital, supplementary capital can involve items like particular subordinated debts and hybrid instruments. These represent less enduring capital forms, providing a secondary level of loss absorption.

3. Common Equity Capital: This constitutes a subgroup of core capital that concentrates on common equity encompassing common shares and retained earnings.

4. Risk-Weighted Assets: The Basel Accords define a mechanism for assigning risk weights to diverse asset types based on their level of risk. Share capital, particularly common equity, often obtains favorable risk weights due to its enduring and loss-absorbing nature.

8. Leverage Ratio: Alongside risk-based capital requirements, Basel III presents a

leverage ratio that confines a bank's capital-to-exposure ratio. This is a non-risk-based metric intended to prevent excessive leverage. The specific handling of share capital and capital requisites can vary among different editions of the Basel Accords. For example, Basel III places increased emphasis on common equity and introduces more stringent standards for the quality and quantity of capital.

2.5.3 Bank and Financial Institution Act (BAFIA 2073)

The Bank and Financial Institution Act, 2073 (2016) of Nepal encompasses regulations concerning non-performing loans (NPLs).

According to Section 82 of the Act, banks and financial institutions are obligated to set aside provisions for NPLs. This provision is determined based on factors like amount of the loan, risk level associated with the loan and the collateral's value. The Act mandates that these provisions be maintained on a quarterly basis, with a minimum requirement of 1.1% of the total outstanding loans as if it is in Pass Category. However, the Nepal Rastra Bank (NRB) retains the authority to elevate this provision requirement to a maximum of 5% when deemed necessary.

In addition to the general provision for NPLs, Section 83 of the Act necessitates banks and financial institutions to establish a distinct provision for NPLs. This distinct provision is aimed at loans that have been categorized as "loss" or "doubtful" according to the classification criteria outlined by the NRB. The requirement for this special provision amounts to 100% of the outstanding loan for those classified as "loss," and 50% of the outstanding loan for those categorized as "doubtful."

Section 85 permits banks and financial institutions to offload NPLs to other banks, financial entities, or authorized individuals or entities as sanctioned by the NRB. However, the sale process must be carried out through a public auction or a tender process, with prior notification to the NRB.

Overall, the Bank and Financial Institution Act, 2073 encompasses provisions intended to govern the management of NPLs, ensuring the stability and integrity of the banking system while fostering financial security.

2.6 Research Gap

The study aims to identity association between capital adequacy, risk as well as liquidity and commercial bank's profitability of Nepal. While the existing body of literature has examined into the individual impact of these risk factors on bank profitability, there is a noticeable research gap in comprehensively investigating their combined influence within the dynamic and evolving landscape of the banking industry. Most research to date has focused on individual risk factors and effects on bank profitability. For instance, studies have examined the link between credit risk and profitability (Pattiruhu ,2021). Sylvanus (2022) explained about the association of market risk and bank performance and the impact of liquidity on bank earnings. Additionally, capital adequacy's impact on bank profitability has often been approached from a regulatory standpoint (Hussain, Musa & Omran,2019). However, there is limited empirical exploration of how these risk dimensions collectively interact to shape the profitability of commercial banks.

The rapidly changing financial landscape, regulatory advancements and technological disruptions have introduced new dynamics that can influence the risk-profitability relationship in banks. Thus, a research gap emerges in understanding how the integration of these multidimensional risks impacts the bottom line of commercial banks in contemporary contexts. By bridging this gap, the study provide valuable insights into how commercial banks can strategically manage multiple risk dimensions to optimize their profitability in today's sophisticated banking environment.

CHAPTER III

RESEARCH METHODOLOGY

3.1 Research Design

This study utilizes both descriptive research design and causal comparative research design to address key issues related to the impact of independent variables on the dependent variables of selected commercial banks in Nepal. The descriptive research design is employed to gather factual information and causal comparative research explore the effects and cause of capital adequacy, market risk, credit risk, operational risk, and liquidity risk on the of commercial bank's profitability. This design involves systematically collecting and presenting data to provide a clear understanding of the situation. Descriptive statistics are focused to variables such as the impact of capital adequacy, credit risk, market risk, operational risk as well as liquidity risk on the return on assets of commercial banks.

Additionally, the study focuses causal comparative research design to analyze the effects of capital adequacy, credit risk, market risk, operational risk and liquidity on the profitability of Nepalese commercial banks. This design helps establish cause and effect relationships between different all independent variables and dependent variables. It is adopted to identify and comprehend the directions, magnitudes, and forms of the observed effects of capital adequacy, market risk, credit risk, operational risk, and liquidity risk on return on assets of Nepalese commercial banks.

3.2 Population and Sample

To examine the impact of Capital Adequacy, Market Risk, Credit Risk, Operational Risk and Liquidity on Profitability of Nepalese Commercial Banks, a sample of 10 Commercial banks has been taken out of 20 commercial banks based on market capitalization whose respective data are collected from the time period of 2007/2008 to 2021/2022 leading to a total of 150 observations. Moreover, in selecting the banks for the study due care has been given to include the mixture of public banks, joint venture and private banks, best performers as well as average performer. Stratified random

sampling method has been used in this study and Table 3, presents the list of banks being selected for the study along with the number of observations and study period.

Table 3

List of selected banks

S. N.	Name of the banks	Study period	Observations
Public Banks			
1	Nepal Bank Limited	2007/2008 - 2021/2022	15
Joint Venture Banks			
2	NMB Bank Limited	2007/2008 - 2021/2022	15
3	Everest Bank Limited	2007/2008 - 2021/2022	15
4	Standard Chartered Bank Nepal Limited	2007/2008 - 2021/2022	15
Private Banks			
5	NIC Asia Bank Limited	2007/2008 - 2021/2022	15
6	Prime Commercial Bank Limited	2007/2008 - 2021/2022	15
7	Siddhartha Bank Limited	2007/2008 - 2021/2022	15
8	Sanima Bank Limited	2007/2008 - 2021/2022	15
9	Citizens Bank International Limited	2007/2008 - 2021/2022	15
10	Machhapuchchhre Bank Limited	2007/2008 - 2021/2022	15
Total number of observations			150

3.3 Nature and Sources of the Data

The study is based on secondary data which are gathered from 10 commercial banks in Nepal, out of 20 commercial banks. Secondary data is collected for the period of 15 years from 2007/2008 to 2021/2022. Capital adequacy ratio, market risk, non-performing loan, operating cost ratio, loan to deposit ratio are the independent variables while return on assets are the dependent variables. The secondary data used are of annual in nature collected from the Banking and Financial Statistics and bank supervision report published by Nepal Rastra Bank and annual reports of the selected commercial banks. In addition to these, reports, books, different published articles and magazines are also analyzed to gather data. The data regarding the dependent and independent variables of the sample banks are collected and coded with unique code for each sample banks so that the data could be easily identified and assessed. Overall, the period covered in the study with respect to bank specific variables ranges from fiscal year. The selected commercial banks for study are based on size of the bank measure in terms of total assets.

3.4 Method of the Data Analysis

The main purpose of data analysis in the study is to examine effect of capital adequacy, market risk, credit risk, operational risk, liquidity risk on return on assets of selected commercial banks in context of Nepal. Therefore, this section deals with statistical models for the purpose of analysis of secondary data. Descriptive, correlation and stationarity methods of analysis are used in the study.

The method of data analysis in this study is divided into three subsections. The first section deals with the methods of secondary data analysis. This includes descriptive statistics. Descriptive statistics are used to present quantitative data in a manageable form. It helps us to simplify large amounts of data in a sensible way (like mean, standard deviations, minimum and maximum values of variables which used to explain the characteristics of sample firms) during the period 2007/2008 to 2021/22. The second section deals with the correlation analysis. Along with this, the third section deals with the stationarity analysis. Stationarity analysis has the property that the mean, variance and autocorrelation structure do not change over time. It explains the different statistical

tests of significance for validation of model like Fixed Effect and Random Effect. All models are tested for individual effects by running using statistical package EViews 10 software. Detailed analysis of models and statistical test of significance have been allocated in the following sections

Model Specification

The theoretical statement of this model is that effect of capital adequacy, market risk, credit risk, operational risk, liquidity risk on return on assets in Nepalese commercial banks the following regression model is used in the study to examine the empirical relationship of capital adequacy, market risk, credit risk, operational risk, liquidity risk on return on assets of Commercial banks. Therefore, the following model equation is designed to test the hypothesis.

$$Profitability = f\ (CAR, MR, NPL,\ OCR and\ LDR)$$

Model I

In this model, the dependent variable is return on assets indicated as ratio of net income and total assets of the banks. capital adequacy, market risk, non- performing loan, OCR, loan to deposit ratio are independent variables which are tested on return on assets. The model is presented as follows:

$$ROA_{it} = \beta_0 + \beta_1\ CAR_{it} + \beta_2\ MR_{it} + \beta_3\ NPL_{it} + \beta_4\ OCR_{it} + \beta_5 LDR_{it} + eit$$

Where,

ROA_{it} = Return on assets as measured by the ratio of net income to total assets, in percentage of the firm (i) for period (t).

CAR_{it}= Capital adequacy ratio as measured by the ratio of total capital to total risk weighted exposure, in percentage of the firm (i) for period (t).

MR_{it} = Market risk as measured as market risk to total risk weighted exposure, in percentage of the firm (i) for period (t).

NPL_{it}= Non - performing loan as measured by non-performing loan to total loan, in percentage of the firm (i) for period (t).

OCR_{it}= Operating cost ratio as measured by operating expenses to operating income

of the firm (i) for period (t).

LDR_{it}= Loan to deposit ratio as measured by total loan to total deposit of the firm (i) for period (t).

e_{it} = Error term

β_0 is the constant term and β_1, β_2, β_3, β_4, β_5, β_6 and β_7 are the beta coefficients of variables.

Multiple Regression Analysis

In multiple regression analysis, the relationship between one dependent variable and several independent variables are analyzed. The regression equation takes the form, Symbolically,

$$Y = b_0 + b_1x_1 + b_2x_2 \ldots + e$$

Where,

Y = the dependent variable,

b's = the regression coefficients for the corresponding x (independent) terms,

b_0 = a constant or intercept, and

e = the error term reflected in the residuals.

The parameters of the regression equation are estimated using the ordinary least squares method (OLS).

In general, there are two approaches to analyzing panel data.

- The method of pooled ordinary least squares (OLS).
- Model with fixed or random effects. However random effects model is used.

Fixed Effects

In regression analysis, fixed effects refer to a method of accounting for individual-specific or time-specific characteristics that do not vary over time or across entities. These characteristics are assumed to be constant within each entity or individual. (Bell, 2019) explained that the fixed effects model is particularly useful when dealing with panel data or longitudinal data, where observations are collected over time for multiple

entities or individuals. The fixed effects model introduces dummy variables for each entity or individual, capturing the unique and unchanging attributes associated with them.

Let's consider a simple linear regression model with fixed effects for individual i:

$$y_i = \beta_0 + \alpha + \beta_1 X_{1,\,it} + \beta_2 X_{2,i} + \epsilon_{it}$$

Where the (i) denotes individuals and the subscript (t) denotes time. Therefore, y_{it} is the outcome value for individual i and time t. Suppose x_{it} is some variable of interest, and so an estimate for β_1 is of great interest. The variable X_2, i does not have a t subscript on it. This is a variable for individual I that does not change with time. The parameter α_i denotes any and all time-invariant variables for an individual i, measurable or not, conceivable or not, that influence the value for their outcome variable. Allowing for such a variable in the model significantly reduces the potential for omitted variable bias. The term α_i is often called the individual fixed effect or the unobserved individual effect. Kanakriyah (2020) also underscores the error term "ϵit" captures the unexplained portion of the outcome variable, and includes the effects of any non-time-invariant omitted variables.

Estimation techniques, such as the least squares dummy variable (LSDV) method or the within-groups estimator, are commonly used to estimate the parameters in fixed effects models. These methods effectively remove the individual-specific effects, enabling researchers to focus on the relationship of interest while accounting for individual-specific characteristics.

Random Effects

Random effects can be accompanied by a various new term potentially causing confusion even for those familiar with the concept. It focuses on sample from larger population and conclusion applied to reference population. It also forms the foundation of hierarchical models and a term that may take on various meanings. An explicit hierarchical model demonstrated by a state space model involves separately modeling observations in a system. Gelman and Hill (2006) explains about the term "hierarchical models" is sometimes interchangeable with "multi-level models," which may not necessarily be a state space model but involves modeling random effects coefficients in subsequent levels. Despite the intricate vocabulary, it is crucial to understand that terms

like hierarchical, multi-level, random effects, mixed effects, and varying coefficients models might refer to similar or distinct models. In this text, the simpler terminology of a mixed model is adopted when both random and fixed effects are present, and the term random effects model is used when all effects in the model are random effects.

While the terminology around random effects may be challenging to navigate, the concept of hierarchy is prevalent in nature. Understanding random effects and the hierarchy they describe reveals their applicability in various situations. The incorporation of random effects into mixed- or random effects models aims to enhance the realism of the models, providing a more accurate representation of the system under study.

The random effects model can be written as: -

$y_{it} = \alpha + x0_{it}\beta + z0_{i\gamma} + v_{it}$

3.5 Research Framework

Grant and Osanioo (2014) explained the theoretical context serves as the foundation for a research study's theory and provides a framework and blueprint for the investigation within this theoretical structure and the hypothesis is articulated aiming to clarify the reasons behind the occurrence of the research issue under scrutiny. Oviatt and McDougall (2018) underscored his section focuses on the theoretical framework of the study. The theoretical framework section discusses the theory; Resource-Based View (RBV) Theories, Efficiency Structure Hypothesis (ESH) and Basel Accords Theory.

Saleh and Winarso (2021) stated a strategic management framework that explains a firm’s sustainable competitive advantage and profitability based on its internal resources and capabilities. Said and Ali (2016) explained the external-oriented theories that emphasize market conditions and RBV focuses on the unique assets that a firm control, arguing that firm performance is primarily determined by how well it utilizes its internal resources. Peling and Sedana (2021) noted resources refer to all assets, capabilities, organizational processes, firm attributes as well as information. The Patwary and Tasneem (2019) explained that the Efficiency Structure Hypothesis (ESH) is a theory developed primarily in the context of the banking and industrial sectors to explain variations in firm profitability based on operational efficiency. The hypothesis posits that firms or banks that are more efficient in managing their resources and

operations tend to achieve higher profitability than their less efficient counterparts (Jensen & Meckling, 2012). ElBannan (2017) also delved the ESH argues that superior performance arises from managerial efficiency rather than market structure and the theory assumes that more efficient firms can offer products at the same cost with higher quality, thereby attracting more customers, increasing market share, and improving financial performance.

Looking at all these theories, Basel Accords Theory is the most suitable for this research. So, Basel Accords Theory is employed in this study. ElBannan (2017) discusses the significance of the Basel Committee on Banking Supervision's successive accords - Basel I, Basel II, and Basel III - in enhancing the quality of global banking supervision and regulations. The author underscores how each accord addresses specific challenges within the banking sector and contributes to the stability and soundness of the international financial system.

3.5.1 Conceptual Framework

A conceptual framework serves as a versatile analytical tool with various applications and contexts. In the context of this study, the conceptual framework outlines a systematic explanation of the relationships among dependent and independent variables to understand the impact of capital adequacy, market risk, credit risk, operational risk, and liquidity on the profitability of commercial banks in Nepal. After reviewing the all theories and conceptual framework for the different literature; Resource-Based View (RBV) Theories, Efficiency Structure Hypothesis (ESH) and Basel Accords Theory. Based on the review, the researcher has determined required knowledge of different indicators in connection to the conceptual framework developed by different scholars in the field of commercial banks. As this paper is based on Basel Accord theory, several studies conducted under Basel Accords theory are taken into consideration. The Basel Accord, commonly known as Basel I, was introduced by the Basel Committee on Banking Supervision, a body operating under the Bank for International Settlements (BIS) in Basel, Switzerland. Initially implemented to address bank failures and improve upon the simplistic capital-to-assets ratio by focusing on credit risk, the Accord proposed the adoption of risk-based capital ratios for banks Basel Committee on Banking Supervision (2011). In 2001, Basel II, an extension of the 1988 Basel Accord, was introduced to broaden the regulatory framework by incorporating market and

operational risks in addition to credit risk. The conceptual frameworks used in the study that describe the independent and dependent variables are shown below.

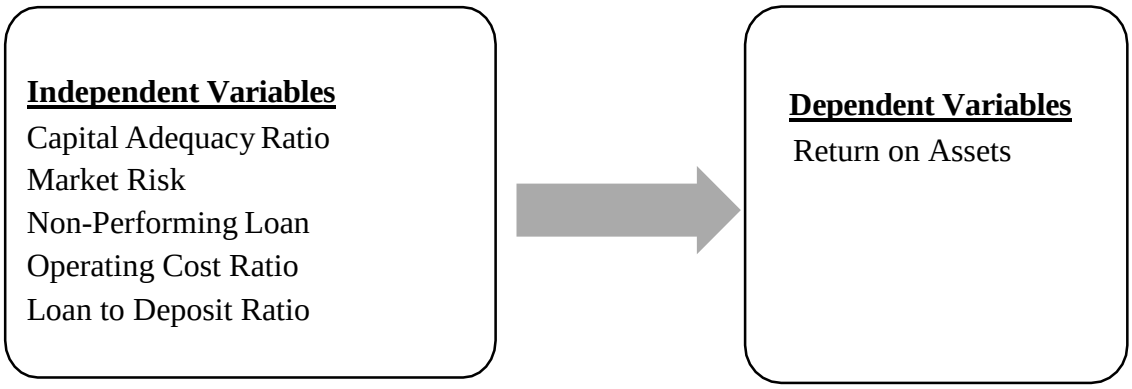

Figure 1. Conceptual framework

Source: Modified from Maniagi (2018)

3.5.2 Variable and Its Definition

This section deals with the operational definition of the variables that have been used in this study. The study attempts to measure or investigate the effect of capital adequacy, market risk, credit risk, operational risk, non-performing loan, operating cost ratio, loan to deposit ratio and liquidity on profitability of commercial Bank of Nepal. The brief discussion on how these variables have been used or interpreted in this study is as bellow:

3.5.2.1 Dependent Variables

Return on Assets

Many studies employ Return on Assets (ROA) as a key metric for assessing bank profitability. ROA, a financial ratio, indicates the percentage of profit a company generates relative to its overall resources. Sawitri (2018) emphasized that ROA is particularly useful for evaluating the earnings of banking companies as it gauges their effectiveness in managing assets to generate profits. The calculation of ROA takes into account factors such as the loan-to-deposit ratio, capital adequacy ratio, non-performing loans, operating costs, and operating income. Maniagi (2018) stated that a higher ROA reflects superior company performance, indicating a greater return on investment.

3.5.1.2 Independent Variables

Capital Adequacy Ratio

Capital adequacy ratio is measured as capital adequacy ratio defined as bank capital divided by total risk weight. Surtikanti et al. (2022) found that capital adequacy ratio has positive effect on profitability. Similarly, Arseto (2022) revealed that capital adequacy ratio and profitability have positive effect on profitability. Sylvanus (2022) found that there is a positive, yet statistically insignificant relationship between the capital adequacy ratio (CAR) and the Return on Assets (ROA). Al-Sharkas and Al-Sharkas (2022) found that there is positive relationship between capital adequacy ratio and return on assets.

Market Risk

Market risk is a situation that occurs outside the company's control. Market risk is the risk of loss reflected in the Bank's on-off balance sheet positions due to changes in prices or bank assets, interest rates, foreign exchange rates, market volatility, and market liquidity. Fahrul and Rusliati (2016) found that there is a negative association between market risk and profitability. Sondakh, Tulung and Karamoy (2021) stated that market risk had significant negative effect on profitability. Grant and Osanloo (2014) investigated the impact of risk management on non- performing loan and profitability of banking sector of Pakistan.

Non-Performing Loan

Non-performing loans are measured as the percentage of non-performing loans to total loans. It reflects the credit risk of the bank. Alexandri and Santoso (2015) underscored the level of a credit crunch is usually proxies by the ratio of bank’s non - performing loans (NPL). Safitri and Geraldina (2023) examined the role of interest rates on the effect of non-performing loans and capital adequacy ratios on banking profitability case study on conventional commercial banks listed on the Indonesia stock exchange. The study found that NPL has a negative and significant effect on ROA. Likewise, Anggriani and Muniarty (2020) stressed that banks should lower the level of non-

performing loan to increase return on assets suggesting a negative relationship between non-performing loan and profitability.

Operating Cost Ratio

Operating Cost ratio is the ratio of the ratio between operational cost and operating income. It reflects the operational risk of the bank. Kusumastuti and Alam (2019) analyzed the impact of CAR, NPF, OCR on profitability of Islamic banks (Year 2018-2017). The study found that there is a negative and significant relationship between operating cost ratio and ROA. Similarly, Sitompul and Nasution (2019) investigated the effect of CAR, BOPO, NPF, and FDR on profitability of Sharia Commercial Banks in Indonesia. The study concluded that operational cost of operational income had a significant negative effect on Return on Assets. Alam, Setyowati, Wiguna and Nizam (2022) investigated the analysis of the influence of BOPO, NIM and inflation on the profitability of Bank BRI Syariah in 2013-2020. Alam et al. (2022) investigated the analysis of the influence of BOPO, NIM and Inflation on the Profitability of Bank BRI Syariah in 2013-2020. The study concluded that OCR negatively affects return on assets.

Loan to Deposit Ratio

Loan to deposit ratio measures the total loan divided by total deposit. It reflects the liquidity of the bank. Anggari and Dana (2020) investigated the effect of capital adequacy ratio (CAR), third party fund and loan to deposit ratio (LDR) and size of the bank to Profitability. Sari and Widia (2017) found that loan to deposit ratio (LDR) partially has a positive but not significant effect on return on assets (ROA) in conventional commercial banking companies. Moreover, Sari and Widia (2020) also found that there is positive relationship between loan to deposit and profitability. Likewise, Saleh and Winarso (2021) fond that loan to deposit affect the profitability.

Variables and Their Measurement

The description of dependent and independent variables used in the study with their definition and measurement are shown in Table 4.

Table 4

Variables and measurement of variables

Variables	Notion	Measurement
Dependent variables		
Return on assets (In percentage)	ROA	Ratio of net income to total assets
Independent variables		
Capital adequacy ratio (In percentage)	CAR	Capital adequacy ratio as measured by the ratio of (Tier 1 capital + Tier 2 capital)/ Risk weighted assets
Market risk (percentage)	MR	Market risk as measured by market risk to total risk weighted exposure.
Non-performing loans (In percentage)	NPL	Non-performing loan as measured by the ratio of non-performing loans to total loans
Operating Cost ratio (percentage)	OCR	Money supply as measured by operating expenses to operating income
Loan to deposit ratio (percentage)	LDR	Loan to deposit ratio measured as total loan to total deposit

Source: Annual reports of NRB bank supervision.

CHAPTER IV

RESULT AND DISCUSSION

4.1 Pattern and Structure Analysis

This section deals with the pattern and structure of capital adequacy, market risk, credit risk (Non-performing loan), operational risk (Operating cost ratio), liquidity (Loan to deposit ratio), profitability (ROA) for the period of 2007/08 to 2021/22. The structure has been shown year-wise along with the average value and standard deviation. The structure of dependent variable, return on assets and independent variables, capital adequacy ratio, market risk, non-performing loan, operating cost ratio, loan to deposit ratio are included in this section.

4.1.1 Pattern and Structure of Return on Assets (NI/TA)

The ratio of return on assets has been computed for the selected commercial banks from the year 2007/08 to 2021/22. The computed variables are presented in the Table 5.

Table 5

Pattern and structure of return on assets

Bank	CBIL	EBL	MBL	NBL	NICA	NMB	PCBL	SANIMA	SBL	SCBL	Mean	SD
2007/08	0.75	1.66	0.68	0.57	1.60	0.82	0.44	0.37	1.23	2.46	0.96	0.67
2008/09	0.74	1.73	0.70	1.88	1.69	0.40	1.06	0.99	1.22	2.53	1.18	0.65
2009/10	1.17	2.01	0.35	0.56	2.21	1.21	1.61	1.18	1.06	2.70	1.28	0.73
2010/11	1.18	2.01	0.05	0.25	2.24	1.44	1.63	1.66	1.28	2.55	1.30	0.80
2011/12	1.12	1.95	0.16	0.30	1.53	0.31	0.99	0.89	1.12	2.80	1.02	0.82
2012/13	1.59	2.24	0.49	1.07	1.38	1.43	1.47	1.39	1.43	2.67	1.38	0.59
2013/14	1.55	2.20	1.12	0.92	1.61	1.44	1.46	1.46	1.74	2.51	1.46	0.47
2014/15	1.74	1.59	1.26	0.55	1.12	1.21	1.63	1.55	1.51	1.99	1.29	0.40
2015/16	1.96	1.59	1.50	2.40	1.28	1.41	2.05	1.77	1.65	1.98	1.60	0.34
2016/17	1.65	1.81	1.82	1.34	1.32	1.60	1.90	1.98	1.53	1.98	1.54	0.24
2017/18	1.59	1.78	1.47	2.41	0.78	1.65	1.82	1.85	1.47	2.64	1.59	0.51
2018/19	1.62	1.80	1.61	1.51	1.39	1.67	2.15	2.07	1.47	2.61	1.63	0.38

2019/20	1.08	1.36	1.02	1.22	1.24	0.95	1.48	1.41	1.26	1.71	1.16	0.23
2020/21	1.07	0.92	1.02	1.33	0.94	1.17	1.71	1.44	1.25	1.22	1.10	0.24
2021/22	1.03	1.10	0.94	1.12	1.18	1.29	1.33	1.09	1.10	1.83	1.09	0.25
Mean	1.32	1.72	0.95	1.16	1.43	1.20	1.52	1.41	1.35	2.28		
SD	0.37	0.37	0.54	0.68	0.41	0.42	0.44	0.45	0.21	0.46		

Source: Annual reports of commercial banks.

Table 5 shows that the ROA varies widely in different commercial banks. The average return on assets is 0.96% in 2007/08 and it is 1.09% in 2021/22. As indicated in the table the average change in banks return on assets varies widely within individual banks also. It has decreased from 1.66 % in 2007/08 to 1.10 percent in 2021/22 for EBL, from 1.60 % in 2007/08 to 1.18 % in 2021/22 for NICA, from 1.23 % in 2007/08 to 1.10 % in 2021/22 for SBL, from 2.46 p% in 2007/08 to 1.83 % in 2021/22 for SCBL and so on.

Whereas, banks return on assets increased from 0.75 percent in 2007/08 to 1.03 % in 2021/22 for CBIL, from 0.68 % in 2007/08 to 0.94 % in 2021/22 for MBL, from 0.57 % in 2007/08 to 0.94 % in 2021/22 for NBL, from 0.82 % in 2007/08 to 1.29 % in 2021/22 for NMB, from 0.44 % t in 2007/08 to 1.33 % in 2021/22 for PCBL, from 0.37 % in 2007/08 to 1.09 % in 2021/22 for SANIMA.

The average return on assets computed across the years has fluctuated widely over a period of time. It is found that the average return on assets in financial year 2007/08 is 0.97%, in 2008/09 is 1.18%, in 2009/10 is 1.28%, in 2010/11 is 1.30%, 2011/12 is 1.02 %, in 2012/13 is 1.38%, 2013/14 is 1.46, in 2014/15 is 1.29%, in 2015/16 is 1.60%, in 2016/2017 is 1.54%, in 2017/18 is 1.59%, 2018/19 is1.63%, 2019/20 is 1.16%, 2020/21 is 1.10% and 2021/22 is 1.09% respectively.

In this variation in return on assets is indicated by standard deviation is lowest at SBL followed by PCBL, SANIMA, NICA, MPBL, NMB, MBL, CBIL, EBL, SCBL, and highest in NBL. When return on assets is compared over the period of time for the individual banks, it can be seen that the return on assets has been fluctuating trend in the majority of banks over the study periods.

The pattern of average of return on assets of selected Nepalese commercial banks for

the period 2014/15 to 2020/21 presented in Figure 2.

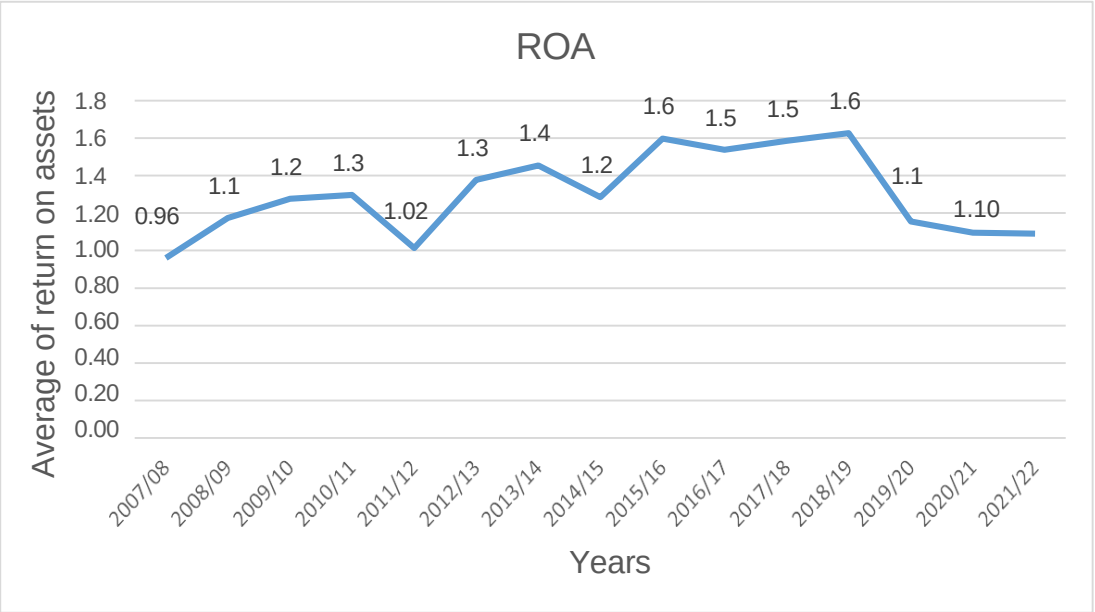

Figure 2. The pattern of average of return on assets.

The average return on assets exhibits a fluctuating trend over the years, indicating both upward and downward movements. Starting from a relatively low point of 0.96 percent in the financial year 2007/08, there is a noticeable upward trend in subsequent years, reaching a peak of 1.60 percent in 2016/17. This period reflects a positive trajectory suggesting improved profitability or asset utilization. However, a subsequent decline is observed in the years that follow, with a dip to 1.09 percent in 2021/22. The fluctuation suggests a dynamic economic environment where factors influencing return on assets have varied over time, possibly influenced by external economic conditions, industry dynamics, or organizational changes. The overall pattern indicates a degree of volatility in the financial performance of the entity emphasizing the importance of adaptability and strategic management in navigating changing market conditions.

4.1.2 Pattern and Structure of Capital Adequacy Ratio

The capital adequacy ratio computed for the selected commercial banks from the year 2007/08 to 20221/22. The computed are shown in Table 6.

Table 6

Pattern and Structure of capital adequacy ratio

Bank	CBIL	EBL	MBL	NBL	NICA	NMB	PCBL	SANIMA	SBL	SCBL	Mean	SD
2007/08	10.41	11.44	10.52	27.55	13.11	35.35	13.82	11.26	10.35	13.15	14.27	8.59
2008/09	11.65	10.55	11.84	13.94	12.42	20.41	12.40	16.01	10.69	14.70	12.24	3.00
2009/10	11.40	10.77	11.25	11.13	12.92	18.44	10.67	16.50	10.04	14.60	11.61	2.83
2010/11	16.31	10.43	15.04	10.15	12.89	16.39	16.48	29.12	10.78	14.22	13.80	5.50
2011/12	14.47	11.02	10.79	5.82	11.01	14.84	14.85	20.79	11.03	13.93	11.69	3.92
2012/13	11.89	11.59	12.54	0.59	13.17	11.74	13.82	14.87	11.70	12.54	10.40	3.96
2013/14	12.99	11.15	10.63	4.55	14.05	10.75	12.40	12.54	11.39	12.27	10.25	2.59
2014/15	13.27	13.33	12.24	7.49	12.49	11.13	12.16	11.08	11.10	13.10	10.67	1.73
2015/16	12.40	12.66	12.36	10.20	12.44	10.98	11.60	12.36	11.25	16.38	11.15	1.65
2016/17	16.88	14.54	16.82	14.47	13.83	13.61	13.28	15.57	12.74	21.08	13.89	2.48
2017/18	13.84	14.20	15.36	11.27	12.24	15.75	12.24	12.41	12.12	22.99	12.95	3.41
2018/19	14.37	13.74	12.79	16.80	13.32	15.43	12.76	13.19	12.70	19.69	13.16	2.26
2019/20	15.14	13.38	13.00	17.01	13.50	15.08	13.84	13.00	13.17	18.51	13.24	1.89
2020/21	13.70	12.48	12.00	16.80	12.47	15.08	14.82	13.57	13.36	17.17	12.86	1.79
2021/22	12.69	11.89	13.36	15.05	13.38	13.59	13.12	13.36	13.00	15.95	12.31	1.16
Mean	13.43	12.21	12.70	12.19	12.88	15.90	13.22	15.04	11.69	16.02		
SD	1.81	1.37	1.82	6.46	0.75	6.03	1.46	4.61	1.08	3.27		

Source: Annual reports of commercial banks.

Table 6 indicates that the capital adequacy ratio varies widely with in different commercial banks. The average capital adequacy ratio is 14.27% in 2007/08 and it is 12.31% in 2021/22. As indicated in the table the average change in banks capital adequacy ratio varies widely within individual banks also. It has decreased from 27.55 % in 2007/08 to 15.05 % in 2021/22 for NBL, from 13.82 % in 2007/08 to 13.12 % in 2021/22 for PCBL.

Whereas, banks capital adequacy ratio increased from 10.41 % in 2007/08 to 12.69 % in 2021/22 for CBIL, from 11.44 % in 2007/08 to 11.89 % in 2021/22 for EBL, from 10.52

% in 2007/08 to 13.36 % in 2021/22 for MBL, from 13.11 % t in 2007/08 to 13.38 % in 2021/22 for NICA, from 11.26 % in 2007/08 to 13.36 % in 2021/22 for SANIMA, from 10.35 % in 2007/08 to 13% in 2021/22 for SBL, from 13.15% in 2007/08 to 15.95 % in 2021/22 for SCBL.

The average capital adequacy ratio computed across the years has fluctuated widely over a period of time. It is found that the average capital adequacy ratio in financial year 2007/08, 14.27% in 2008/09, 12.24% in 2009/10, 11.61% in 2010/11, 13.80 % in 2011/12, 11.69 % in 2012/13, 10.40% in 2013/14, 10.25 % in 2014/15, 10.67 % in 2015/16, 11.15 % in 2016/17, 13.89 % in 2017/18, 12.95 % in 2018/19, 13.16 % in 2019/20, 13.24 % in 2020/21, 12.86 % and 2021/22 12.31 %.

In this variation in capital adequacy ratio is indicated by standard deviation is lowest at NICA followed by PCBL, SANIMA, NICA, MPBL, NMB, MBL, CBIL, EBL, SBL, SCBL and highest in NBL. When capital adequacy ratio is compared over the period of time for the individual banks, it can be seen that the capital adequacy ratio has been fluctuating trend in the majority of banks over the study periods.

The pattern of average of capital adequacy ratio of selected Nepalese commercial banks for the period 2007/08 to 2021/22presented in Figure 3.

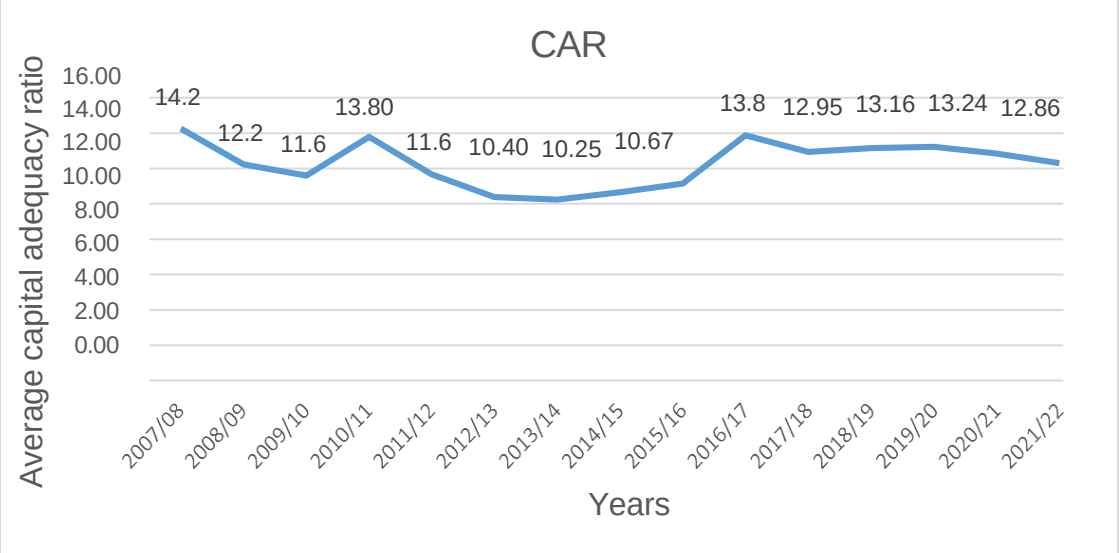

Figure 3. Pattern of average of capital adequacy ratio

The average capital adequacy ratio has exhibited a fluctuating pattern over the years, indicating both upward and downward trends. Beginning at 14.27 percent in the financial year 2007/08, there is an initial decline observed in the subsequent years,

reaching a low point of 10.25 percent in 2014/15. This period suggests potential challenges in maintaining adequate capital relative to risk-weighted assets. However, a recovery is noticeable in the following years, with an upward trend reaching 13.89 percent in 2017/18. The subsequent years show a degree of stability with fluctuations, hovering around the 12 to 13 percent range. The variations in the capital adequacy ratio highlight the dynamic nature of financial institutions capital positions, possibly influenced by regulatory changes, economic conditions, or risk management strategies. The overall pattern emphasizes the importance of monitoring and managing capital adequacy to ensure the financial health and stability of the institution.

4.1.3 Pattern and Structure of Market Risk

The market risk computed for the selected commercial banks from the year 2007/08 to 2021/22. The computed are shown in Table 7.

Table 7

Pattern and Structure of market risk

Bank	CBIL	EBL	MBL	NBL	NICA	NMB	PCBL	SANIMA	SBL	SCBL	Mean	SD
2007/08	0.09	0.44	0.32	0.00	0.68	0.15	0.11	0.08	0.16	0.13	0.20	0.21
2008/09	0.07	0.45	0.38	3.47	0.46	0.18	0.28	0.06	0.04	1.17	0.60	1.04
2009/10	0.13	1.14	0.27	2.96	0.56	0.45	0.38	0.34	0.37	1.43	0.73	0.86
2010/11	0.39	0.34	0.18	2.56	0.32	0.10	0.63	0.02	0.13	0.41	0.46	0.74
2011/12	0.34	0.21	0.17	2.57	0.28	1.24	1.77	0.09	0.09	0.47	0.66	0.85
2012/13	4.03	0.40	0.23	1.83	0.55	1.14	1.68	2.06	0.09	0.63	1.15	1.20
2013/14	0.32	0.48	0.23	1.77	0.33	1.28	1.29	1.40	0.11	0.29	0.68	0.61
2014/15	0.02	0.54	0.03	0.95	0.32	1.56	0.72	1.78	0.19	1.34	0.68	0.64
2015/16	0.10	0.36	0.06	0.37	0.29	1.07	0.29	1.73	0.12	2.43	0.62	0.81
2016/17	0.10	0.62	0.16	2.03	0.02	1.37	0.20	2.04	0.16	2.34	0.82	0.94
2017/18	0.17	0.58	0.04	1.62	0.94	1.96	0.11	1.69	0.06	2.27	0.86	0.87
2018/19	0.05	0.77	0.11	2.10	0.07	1.79	0.13	1.64	0.20	2.02	0.81	0.89
2019/20	0.75	0.56	0.06	2.10	0.09	1.86	0.12	1.59	0.08	1.65	0.81	0.83
2020/21	0.11	0.76	0.02	0.23	1.06	1.80	0.08	1.25	1.21	2.30	0.80	0.79
2021/22	0.74	0.35	0.37	0.07	0.06	0.09	0.11	0.03	0.07	0.47	0.21	0.24
Mean	0.49	0.53	0.18	1.64	0.40	1.07	0.53	1.05	0.20	1.29		
SD	1.00	0.23	0.12	1.09	0.31	0.70	0.58	0.83	0.29	0.84		

Source: Annual reports of commercial banks.

Table 7 indicates that the market risk varies widely with in different commercial banks. The average market risk is 0.20% in 2007/08 and it is 0.21% in 2021/22. As indicated in the table the average change in banks market risk varies widely within individual banks also. It has decreased from 0.44 % in 2007/08 to 0.35 % in 2021/22 for EBL, from 0.68 % in 2007/08 to 0.06 % in 2021/22 for NICA, from 0.15 % in 2007/08 to 0.09 % for NMB, from 0.08 % in 2007/08 to 0.03 % in 2021/22 for SANIMA, from 0.16 % in 2007/08 to 0.07 % in 2021/22 for SBL.

Whereas, banks market risk increased from 0.09% in 2007/08 to 0.74% in 2021/22 for CBIL, from 0.32 % in 2007/08 to 0.37 % in 2021/22 for MBL, from 0 % in 2007/08 to 0.07 % in 2021/22 for NBL, from 0.13 % in 2007/08 to 0.47 % in 2021/22 for SCBL.

The average market risk computed across the years has fluctuated widely over a period of time. It is found that the average market risk in financial year 2007/08, 0.20 percent in 2008/09, 0.60 % in 2009/10, 0.73 % in 2010/11, 0.46 percent in 2011/12, 0.66 % in 2012/13, 1.15% in 2013/14, 0.68 % in 2014/15, 0.68 % in 2015/16, 0.62 % in 2016/17, 0.82 % in 2017/18, 0.86% in 2018/19 & 2019/20, 0.81 % in 2019/20 to 2020/21 and 2021/22 is 0.21 %

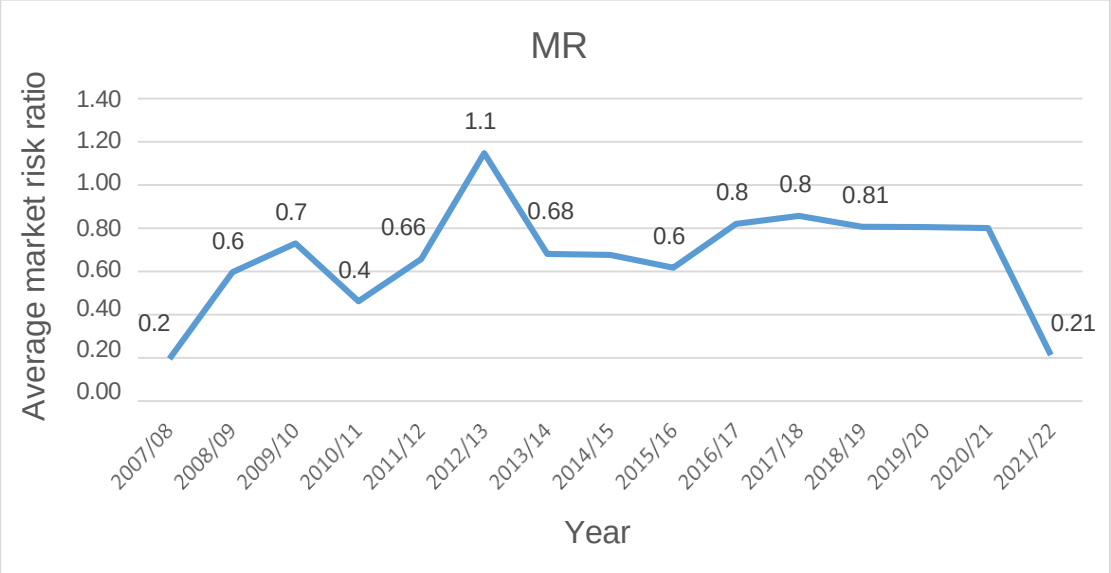

Figure 4. Pattern and Structure of average market risk

The average market risk has displayed a fluctuating trend over the analyzed period, demonstrating both upward and downward movements. Beginning at 0.20 % in the financial year 2007/08, there is a noticeable increase in subsequent years, peaking at

1.15 % in 2013/14. This upward trajectory suggests a heightened level of market risk during that period. However, a subsequent decline is evident in the following years, reaching a low point of 0.21 % in 2021/22. The variations in market risk may be indicative of changing market conditions, economic factors, or adjustments in risk management strategies. The relatively lower levels in recent years suggest a potential effort to mitigate market risk or a period of reduced volatility in the financial markets. The overall pattern underscores the importance of vigilant risk management and adaptability to navigate the dynamic nature of market conditions.

4.1.4 Pattern and Structure of Non-Performing Loan Ratio

The non- performing loan ratio computed for the selected commercial banks from the year 2007/08 to 2021/22. The computed variables are shown in Table 8.

Table 8

Pattern and Structure of non- performing loan ratio

Bank	CBIL	EBL	MBL	NBL	NICA	NMB	PCBL	SANIMA	SBL	SCBL	Mean	SD
2007/08	0.07	0.68	3.56	12.8	0.25	1.52	0.81	1.51	1.10	0.92	2.07	3.68
2008/09	0.12	0.48	2.33	5.91	0.34	0.51	0.79	0.18	0.82	0.66	1.10	1.76
2009/10	0.31	0.45	2.32	4.98	0.19	0.70	0.68	0.08	0.76	0.61	1.01	1.50
2010/11	1.17	0.34	4.17	5.29	0.06	0.27	0.57	0.00	0.79	0.62	1.21	1.84
2011/12	2.01	0.84	2.84	5.23	0.13	2.45	0.76	0.48	1.52	0.78	1.55	1.52
2012/13	2.01	0.62	2.84	5.24	0.67	1.80	2.23	0.03	2.39	0.77	1.69	1.50
2013/14	3.40	0.97	1.78	5.12	0.68	0.55	2.43	0.02	2.75	0.48	1.65	1.61
2014/15	1.53	0.66	0.64	3.98	0.41	0.42	1.83	0.07	1.80	0.34	1.06	1.18
2015/16	1.38	0.38	0.55	3.11	0.11	1.81	1.23	0.02	1.47	0.32	0.94	0.96
2016/17	2.02	0.25	0.38	3.32	0.04	1.68	0.88	0.01	1.30	0.19	0.92	1.08
2017/18	1.48	0.20	0.44	3.37	0.01	0.88	0.85	0.03	1.09	0.18	0.78	1.01
2018/19	1.19	0.16	0.37	2.64	0.23	0.82	1.00	0.08	0.75	0.15	0.67	0.77
2019/20	1.55	0.22	0.52	2.47	0.27	2.68	1.48	0.45	1.38	0.44	1.04	0.91
2020/21	1.64	0.12	0.62	2.05	0.24	2.27	0.99	0.12	1.00	0.96	0.91	0.77
2021/22	2.22	0.12	1.04	1.83	0.07	1.45	1.77	0.33	1.07	0.59	0.95	0.76
Mean	1.47	0.43	1.63	4.46	0.25	1.32	1.22	0.23	1.33	0.53		
SD	0.87	0.27	1.29	2.56	0.21	0.79	0.59	0.39	0.59	0.26		

Source: Annual reports of commercial banks.

Table 8 indicates that the Non-performing loan varies widely with in different commercial banks. The average Non performing loan is 2.07 % in 2007/08 and it is 0.95 % in 2021/22. As indicated in the table the average change in banks Non performing loan varies widely within individual banks also. It has decreased from 0.68 % in 2007/08 to 0.12 % in 2021/22 for EBL, from 3.56 % in 2007/08 to 1.04 % in 2021/22 for MBL, from 12.38 % in 2007/08 to 1.83 % for NBL, from 0.25 % in 2007/08 to 0.07 % in 2021/22 for NICA, from 1.52 % in 2007/08 to 1.45 % in 2021/22 for NMB, from 1.51 % in 2007/08 to 0.33 % in 2021/22 for SANIMA, from 1.10 % in 2007/08 to 1.07% in 2021/22, from 0.92 % in 2007/08 to 0.59 % in 2021/22 for SCBL.

Whereas, banks Non performing loan increased from 0.07 % in 2007/08 to 2.22 % in 2021/22 for CBIL, from 0.81 % in 2007/08 to 1.77 % in 2021/22 for PCBL. The average Non performing loan computed across the years has fluctuated widely over a period of time. It is found that the average Non performing loan in financial year 2007/08, 2.07 % in 2008/09, 1.10 % in 2009/10, 1.01 % in 2010/11, 1.21 % in 2011/12, 1.55 % in 2012/13, 1.69 % in 2013/14, 1.65 % in 2014/15, 1.06% in 2015/16, 0.94 % in 2016/17, 0.92 % in 2017/18, 0.78 percent in 2018/19, 0.67 % in 2019/20, 1.04 % in 2020/21, 0.91 % and 2021/22 is 0.95 %.

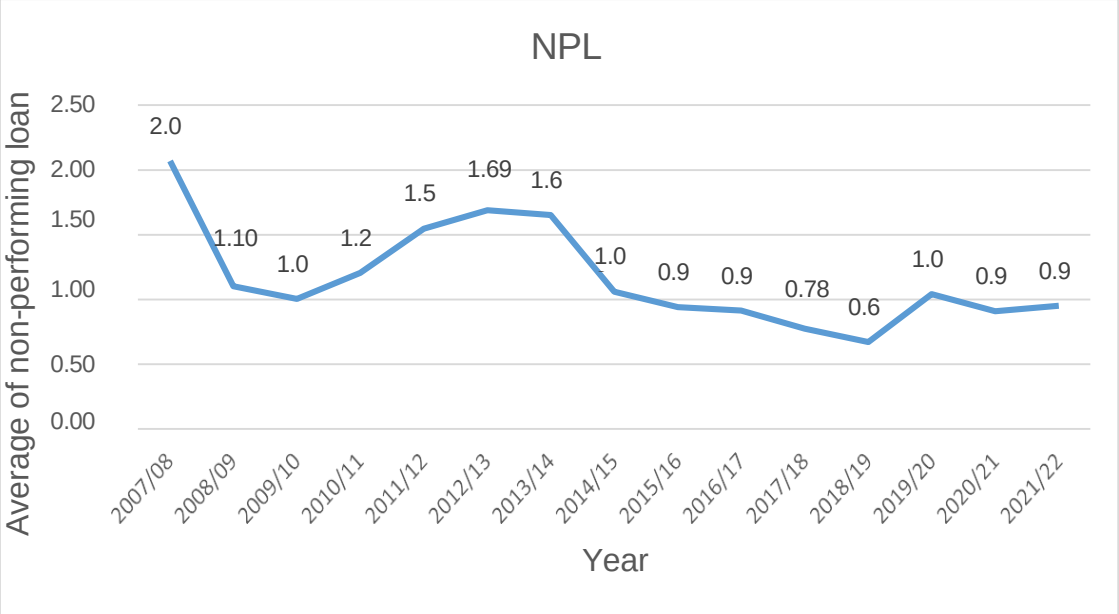

Figure 4. Pattern and structure of average of non- performing loan ratio.

The average non-performing loans (NPL) exhibit a fluctuating pattern over the years, illustrating both upward and downward trends. Starting at 2.07 % in the financial year

2007/08, there is a consistent decline in subsequent years, reaching a low of 0.67 % in 2018/19. This downward trend suggests effective credit management and a healthier loan portfolio during that period. However, there is a subsequent increase in NPL, with a peak of 1.04 % in 2020/21, indicating potential challenges or increased risk in loan performance. The following year, 2021/22, shows a slight decrease to 0.95%. The fluctuations in NPL may be reflective of economic conditions, changes in lending practices, or variations in borrower creditworthiness. The overall trend underscores the importance of proactive risk management and monitoring to maintain a sound and stable loan portfolio in the face of changing economic dynamics.

4.1.5 Pattern and Structure of Operating Cost Ratio

The operating expenses to operating income for the selected commercial banks from the year 2007/08 to 2021/22. The computed variables are shown in Table 9.

Table 9

Pattern and Structure of Operating Cost ratio

Bank	CBIL	EBL	MBL	NBL	NICA	NMB	PCBL	SANIMA	SBL	SCBL	Mean	SD
2007/08	43.18	32.38	39.16	21.57	71.94	29.03	34.64	44.72	29.24	25.69	33.78	14.30
2008/09	41.69	31.00	44.42	80.15	73.01	51.47	25.86	38.71	34.10	25.30	40.52	18.80
2009/10	35.08	30.03	53.88	118.22	72.30	36.77	22.82	42.81	38.95	26.47	43.39	28.63
2010/11	38.94	30.84	64.68	75.56	29.18	37.52	25.70	35.45	45.10	27.27	37.29	16.61
2011/12	45.30	31.40	80.34	98.23	37.04	42.61	30.87	48.90	43.66	27.90	44.20	22.89
2012/13	32.70	28.80	50.66	78.37	30.45	34.18	25.58	33.34	37.53	28.96	34.60	15.75
2013/14	31.02	29.75	47.28	92.67	34.12	37.20	25.86	31.24	37.38	29.18	35.97	19.59
2014/15	31.25	33.96	44.65	77.86	41.56	4.21	23.23	30.46	39.45	31.17	32.53	18.63
2015/16	40.71	31.50	39.07	53.91	40.30	36.72	21.28	26.68	31.09	31.99	32.11	9.01
2016/17	40.71	32.96	33.53	45.20	42.06	37.39	20.35	26.26	33.82	31.69	31.27	7.44
2017/18	37.30	34.73	38.57	61.97	70.67	39.29	26.61	31.16	33.87	33.38	37.05	14.12

2018/19	39.03	34.02	43.57	33.96	50.83	37.17	26.91	33.14	40.63	30.89	33.65	6.86
2019/20	37.98	36.22	47.25	40.35	48.46	37.42	28.03	34.17	43.20	32.87	35.09	6.39
2020/21	37.79	44.01	45.73	38.67	50.15	39.69	28.10	36.02	39.00	38.85	36.18	5.95
2021/22	41.34	38.75	47.54	40.14	42.41	42.47	27.96	31.55	39.96	33.94	35.10	5.83
Mean	38.27	33.36	48.02	63.79	48.97	36.21	26.25	34.97	37.80	30.37		
SD	4.24	3.95	11.56	27.59	15.69	10.07	3.62	6.42	4.62	3.65		

Source: Annual reports of commercial banks.

Table 9 indicates the OCR ratio has decrease from 43.18 % in 2007/08 to 41.34 % in 2021/22 for CBIL, from 71.94 % in 2007/08 to 42.41 % in 2021/22 for NICA, from 34.64 % in 2007/08 to 27.96 % for PCBL, from 44.72 % in 2007/08 to 31.55 % in 2021/22 for SANIMA.

Whereas, banks OCR ratio increased from 32.38 % in 2007/08 to 38.75 % in 2021/22 for EBL, from 39.16 % in 2007/08 to 47.54 % in 2021/22 for MBL, from 21.57 % in 2007/08 to 40.14 % in 2021/22 for NBL, from 29.03 % t in 2007/08 to 42.47 % in 2021/22 for NMB, from 29.24 % in 2007/08 to 39.96 % in 2021/22 for SBL, from 25.69 % in 2007/08 to 33.94 % in 2021/22 for SCBL.

The average OCR ratio computed across the years has fluctuated widely over a period of time. It is found that the average operating cost ratio in financial year 2007/08, 33.78 % in 2008/09, 40.52 % in 2009/10, 43.39 % in 2010/11, 37.29 % in 2011/12, 44.20 % in 2012/13, 34.60 % in 2013/14, 35.97 % in 2014/15, 32.53 % in 2015/16, 32.11 % in 2016/17, 31.27 % in 2017/18, 37.05 % in 2018/19, 33.65 % in 2019/20, 35.09 % in 2020/21, 36.18 % and 2021/22 is 35.10 %.

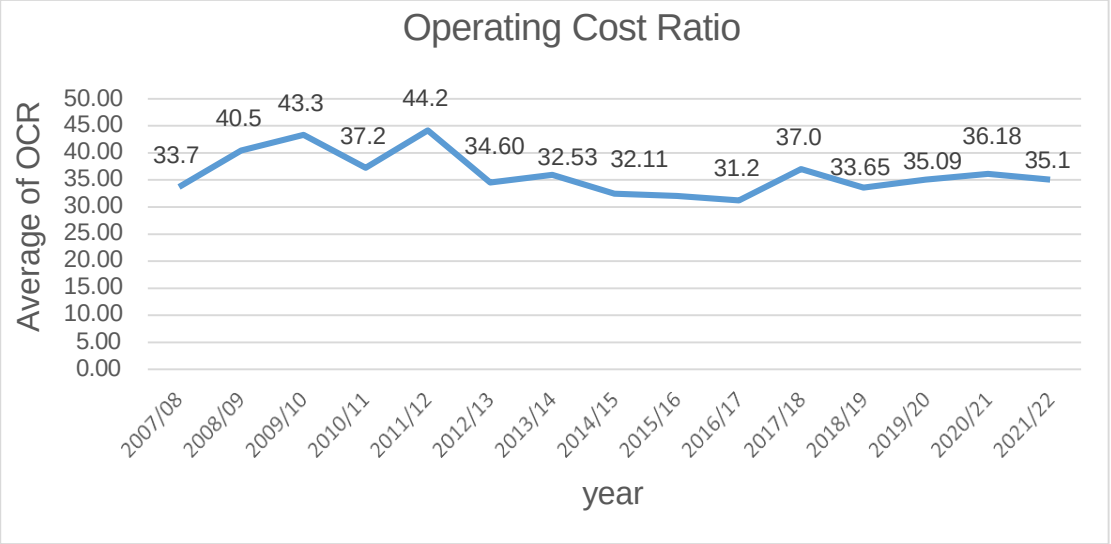

Figure 5. The pattern of average of operating cost ratio

The average Bank Operating Profit to Operating Income (OCR) ratio has displayed a fluctuating trend over the examined period, showcasing both upward and downward movements. Beginning at 33.78 % in the financial year 2007/08, there is an upward trajectory in subsequent years, reaching a peak of 44.20 % in 2012/13. This suggests a period of increasing operating profit relative to operating income. However, a subsequent decline is observed in the following years, reaching a low of 31.27 % in 2017/18. The ratio then sees an upward trend in the subsequent years, reaching 36.18 % in 2020/21, indicating improved profitability. However, in 2021/22, there is a slight decrease to 35.10 %. The variations in the OCR ratio may be indicative of changes in operational efficiency, cost management, or shifts in revenue streams. The overall pattern highlights the dynamic nature of a financial institution's operating performance and the importance of adaptive financial management strategies to navigate changing economic conditions.

4.1.6 Pattern and Structure of Loan to Deposit Ratio

The percentage of loan to deposit has been computed for the selected commercial banks from the year 2007/08 to 2021/22. The computed variables are presented in Table 10.

Table 10

Pattern and Structure of loan to deposit ratio (LDR)

Bank	CBIL	EBL	MBL	NBL	NICA	NMB	PCBL	SANIMA	SBL	SCBL	Mean	SD
2007/08	78.15	78.56	81.00	37.69	87.62	74.78	96.75	87.94	93.03	46.95	69.32	19.28
2008/09	71.24	73.43	80.74	43.28	89.32	75.52	83.45	91.39	85.18	38.70	66.57	18.23
2009/10	76.86	76.23	83.25	58.42	80.97	78.44	78.86	89.33	83.65	45.98	68.36	13.05
2010/11	92.85	76.98	89.77	57.05	82.45	88.16	89.07	101.25	86.43	49.11	73.92	16.27
2011/12	83.06	73.22	74.62	52.98	79.25	78.00	79.34	86.25	79.42	55.13	67.39	11.22
2012/13	78.97	76.57	79.79	60.48	81.23	74.31	73.62	85.72	83.55	58.63	68.44	9.12
2013/14	82.87	78.01	79.56	56.43	82.93	74.31	79.94	82.90	79.02	56.87	68.44	10.17
2014/15	81.60	66.63	78.77	68.45	81.03	75.32	81.63	83.97	83.04	48.92	68.12	10.94
2015/16	85.59	75.14	84.59	71.05	85.62	84.07	85.00	88.10	87.02	56.88	73.01	9.88
2016/17	91.89	84.05	88.74	79.17	82.76	85.50	89.12	89.03	88.40	62.20	76.44	8.55
2017/18	92.75	81.86	89.78	75.68	80.51	90.46	87.53	87.45	86.08	66.45	76.23	7.99
2018/19	88.76	87.01	87.00	78.14	83.15	94.61	89.15	90.42	89.65	70.11	78.00	7.06
2019/20	89.76	83.52	88.99	72.25	82.40	92.31	88.97	85.10	89.04	56.75	75.37	10.80
2020/21	87.52	85.30	85.19	86.76	88.21	96.69	89.23	94.11	90.60	71.27	79.53	6.79
2021/22	89.08	90.77	86.32	90.09	89.85	97.68	91.79	89.18	96.08	87.91	82.61	3.52
Mean	84.73	79.15	83.87	65.86	83.82	84.01	85.56	88.81	86.68	58.12		
SD	6.47	6.25	4.65	15.22	3.43	8.78	6.03	4.50	4.69	12.30		

Source: Annual report of commercial banks.

Table 10 indicates that the loan to deposit ratio vary widely with in different commercial banks. The average loan to deposit ratio is 69.32 % in 2007/08 and 82.61 % in 2021/22. As indicated in the table the average change in bank's loan to deposit ratio varies widely within individual banks also. It has decrease from 96.75 % in 2007/08 to 91.79 %in 2021/22 for PCBL, from 71.94 % in 2007/08 to 42.41 % in 2021/22 for NICA, from 34.64 % in 2007/08 to 27.96 % for PCBL, from 44.72 % in 2007/08 to 31.55 % in 2021/22 for SANIMA, Whereas, banks loan to deposit ratio increased from 78.15 % in 2007/08 to 89.08 percent in 2021/22 for CBIL, from 78.56 % in 2007/08 to 90.77

percent in 2021/22 for EBL, from 81 % in 2007/08 to 86.32 % in 2021/22 for MBL, from 37.69 % in 2007/08 to 90.09 % in 2021/22 for NBL, from 87.62 % in 2007/08 to 89.85 % in 2021/22 for NICA, from 74.78 % in 2007/08 to 97.68 % in 2021/22 for NMB. from 87.94% in 2007/08 to 89.18% in 2021/22 for SANIMA, from 93.03 % in 2007/08 to 96.08 % for SBL, from 46.95 % in 2007/08 to 87.91 % in 2021/22 for SCBL.

The average loan to deposit ratio computed across the years has fluctuated widely over a period of time. It is found that the average loan to deposit ratio in financial year 2007/08, 69.32 % in 2008/09, 66.57 % in 2009/10, 66.57 %in 2010/11, 68.36 % in 2011/12, 73.92 % in 2012/13, 67.39 % in 2013/14, 68.44 % in 2014/15, 68.12 % in 2015/16, 73.01 % in 2016/17, 76.44 % in 2017/18, 76.23 % in 2018/19, 78 % in 2019/20, 75.37 % in 2020/21,79.53 percent and 2021/22 82.61 percent.

The pattern of average of loan to deposit ratio for selected Nepalese commercial banks for the period 2007/08 to 2021/22 presented in Figure 6.

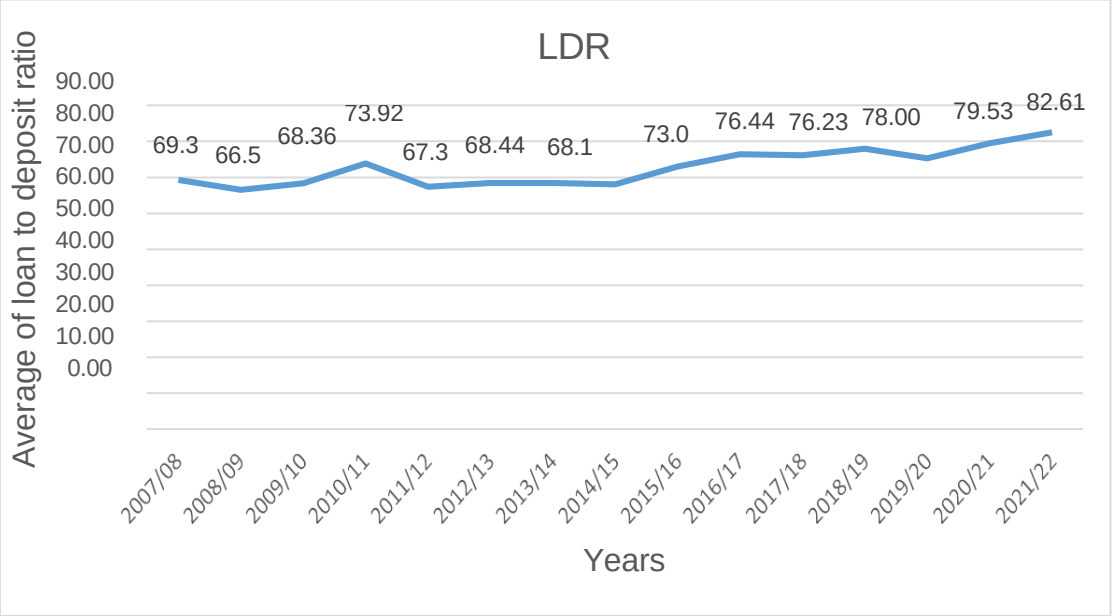

Figure 6. Pattern and structure of average of loan to deposit ratio

The average loan to deposit ratio has demonstrated a fluctuating pattern over the analyzed period, reflecting both upward and downward trends. Commencing at 69.32 % in the financial year 2007/08, there is a period of stability in subsequent years, followed by an upward trend reaching 73.92 % in 2012/13. This suggests an increase in loans relative to deposits, potentially indicating an expansion of lending activities.

However, a subsequent decline is noticeable in the following years, reaching a low of 68.12 % in 2015/16. The ratio then sees a notable increase in the subsequent years, reaching 82.61 % in 2021/22. This upward trend suggests a surge in lending relative to deposits, possibly driven by increased demand for loans or changes in the institution's lending strategy.

4.2 Descriptive Statistics

The descriptive statistics used in this study consists of minimum, maximum, mean, standard deviation, skewness, and kurtosis associated with variables under consideration. Therefore, descriptive statistics enables to present the data in a more meaningful way, which allows simpler interpretation of the data. Table 11 presents the descriptive statistics of selected dependent and independent variables during the period 2007/08 to 2021/22.

Table 11

Descriptive statistics

Variables	OCR	CAR	LD	MR	NPL	ROA
Mean	39.80%	13.53%	80.06%	0.74%	1.29%	1.43%
Median	37.18%	13%	83.11%	0.37%	0.79%	1.44%
Maximum	118.22%	35.35%	101.25%	4.03%	12.38%	2.80%
Minimum	4.21%	0.59%	37.69%	0%	0%	0.05%
Std. Dev.	15.41%	3.71%	12.33%	0.81%	1.54%	0.56%
Skewness	2.13	2.06	-1.44	1.39	3.3	0.05
Kurtosis	9.18	13.82	4.86	4.52	20.31	3.1
J-B test	352.22	838.22	73.07	62.61	2144.55	0.12
Observations	150	150	150	150	150	150

Source: Author's calculation from EViews 10

The provided descriptive statistics offer a comprehensive overview of seven key financial variables measured across 10 Commercial banks over a 15-year period

spanning from 2007/08 to 2021/22. The variable taken into study are interpreted individually:

Operating Cost Ratio (OCR)

The mean operating cost ratio is 39.8%, indicating that on average banks have maintained a substantial portion of their revenue as operating costs. The significant standard deviation of 15.41% suggests notable variability among banks, with a maximum operating cost ratio reaching 118.22%. The highly positively skewed distribution (skewness = 2.13) and elevated kurtosis (kurtosis = 9.18) highlight a right-skewed distribution with a potential presence of outliers on the higher end.

Capital Adequacy Ratio (CAR)

The mean CAR is 13.53%, reflecting a moderate level of capital adequacy across the sampled banks. The standard deviation of 3.71% indicates relatively lower variability compared to other variables. The distribution is highly positively skewed (skewness = 2.06) with a heavy tail, as evidenced by the high kurtosis (kurtosis = 13.82) suggesting potential outliers on the higher end.

Loan to Deposit Ratio (LDR)

With a mean of 80.06%, banks have, on average, maintained a considerable loan to deposit ratio over the 15-year period. The positively skewed distribution (skewness = -1.44) indicates a leftward skew, suggesting a tendency for lower values. The kurtosis (kurtosis = 4.86) indicates a distribution with moderate tails and potential outliers.

Market Risk (MR)

The mean market risk is 0.74%, reflecting a relatively low level of market risk across the sampled banks. The positively skewed distribution (skewness = 1.39) and moderate kurtosis (kurtosis = 4.52) suggest a right-skewed distribution with potential outliers.

Non-Performing Loan (NPL)

The mean NPL is 1.29%, indicating a modest level of non-performing loans across the sampled banks. The highly positively skewed distribution (skewness = 3.30) and exceptionally high kurtosis (kurtosis = 20.31) suggest a heavily right-skewed distribution with a substantial presence of outliers on the higher end.

Return on Assets (ROA)

The mean ROA is 1.43%, suggesting that, on average, banks have achieved a reasonable return on their assets over the years. The distribution has a slight positive skew (skewness = 0.05) and moderate kurtosis (kurtosis = 3.10), indicating a distribution with relatively normal tail.

4.3 Multiple Correlation Analysis

Having indicated the descriptive statistics, Pearson's correlation coefficients are computed and the results are presented in Table 12 to observe the magnitude and direction of relationship between and among the variables such as return on assets, capital adequacy ratio, market risk, non -performing loan, operating cost ratio and loan to deposit ratio. Pearson's correlation coefficient processes linear correlation between two variables which as ranging from -1 to +1, where 1 is total positive correlation, 0 is no correlation and -1 is negative correlation.

Table 12

Pearson's correlation coefficients matrix

Variables	OCR	CAR	LD	MR	NPL	ROA
OCR	1					
CAR	-0.304*	1				
	.000					
LDR	-0.159*	0.028*	1			
	.026	.02				
MR	0.219*	-0.018*	-0.369*	1		
	.007	.001	.000			
NPL	0.414*	-0.051*	-0.385*	0.214*	1	
	.000	.03	.008	.008		
ROA	-0.445*	0.068*	0.230*	-0.094*	-0.359*	1
	.000	.04	.004	.000	.000	

*. Correlation is significant at the 0.05 level

Source: Author's calculation from EViews 10

The table 12 demonstrate the Pearson's correlation analysis among variables incorporated in this study. The direction and movement of the variable identification have been observed.

Relationship between Operating Cost Ratio and Dependent Variable

The correlation coefficient between operating cost ratio and ROA is -0.45* which indicates there is negative association between OCR and ROA. The corresponding p-value is 0.000 which is less than level of significance. Therefore, there is significant negative relationship between OCR and dependent variables. Thus, alternative hypothesis (H_14), There is significant negative impact of operating cost ratio on ROA is accepted. These negative correlations also suggest that as the operating cost ratio increases, there is a tendency for ROA to decrease.

Relationship between Capital Adequacy Ratio and Dependent Variable

The correlation coefficient between capital adequacy ratio and ROA is 0.06* which indicates there is positive association between CAR and ROA. The corresponding p-value is 0.04 which is less than level of significance. Therefore, there is significant positive relationship between CAR and dependent variable. Thus, alternative hypothesis (H_11), "There is significant positive impact of capital adequacy ratio on ROA" is accepted. These correlations also suggest that higher capital adequacy ratios are associated with a slight increase in ROA.

Relationship between Loan to Deposit Ratio and Dependent Variable

The correlation coefficient between loan to deposit ratio and ROA is 0.23* which indicates there is positive association between LDR and ROA. The corresponding p-value is 0.004 which is less than level of significance. Therefore, there is significant positive relationship between LDR and dependent variable. Thus, alternative hypothesis (H_15), "There is significant positive impact of loan to deposit ratio on ROA" is accepted.

Relationship between Market Risk and Dependent Variable

The correlation coefficient between market risk and ROA is -0.094* which indicates there is negative association between market risk and ROA. The corresponding p-value is 0.000 which is less than level of significance. Therefore, there is significant negative relationship between market risk and dependent variable. Thus, alternative hypothesis

(H_12), "There is significant negative impact of market risk on ROA" is accepted.

Relationship between Non-Performing Loan and Dependent Variable

The correlation coefficient between non-performing loan and ROA is -0.359* which indicates there is negative association between non-performing loan and ROA. The corresponding p-value is 0.000 which is less than level of significance. Therefore, there is significant negative relationship between non-performing loan and dependent variable. Thus, alternative hypothesis (H_13), "There is significant negative impact of non-performing loan on ROA" is accepted.

4.4 Regression Analysis

$$ROA_{it} = \beta_0 + \beta_1 CAR_{it} + \beta_2 MR_{it} + \beta_3 NPL_{it} + \beta_4 OCR_{it} + \beta_5 LDR_{it} + eit \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (I)$$

Table 13

Panel regression results (ROA)

Dependent Variable: ROA				
Method: Panel EGLS				
(Cross-section random effects)				
Date: 05/01/24 Time: 20:57				
Sample: 2008 2022				
Periods included: 15				
Cross-sections included: 10				
Total panel (balanced) observations: 150				
Swamy and Arora estimator of component variances				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
OCR	-0.0143	0.002541	-5.62707	0
CAR	0.00867	0.009512	0.911485	0.0363
LD	0.017793	0.003104	5.7331	0
MR	-0.079026	0.044983	-1.75678	0.0411
NPL	-0.135195	0.025541	-5.2933	0
C	3.660174	0.318803	11.48098	0
	Effects Specification		S.D.	Rho
Cross-section random			36.0254	0.038
Idiosyncratic random			48.3658	0.8796

	Weighted Statistics		
R-squared	0.583727	Mean dependent	1.433532
Adjusted R-squared	0.578312	S.D. dependent var	0.556223
S.E. of regression	0.434984	Sum squared resid	27.23383
F-statistic	19.94909	Durbin-Watson stat	1.67716
Prob(F-statistic)	0		
	Unweighted Statistics		
R-squared	0.40922	Mean dependent	1.433532
Sum squared resid	27.23393	Durbin-Watson stat	1.7845

Source: Author's calculations from EViews 10

The Panel regression analysis was conducted to explore the determinants of Return on Assets across 10 different cross-sections over the 15-year period from 2008 to 2022. The key coefficients and statistical information for the independent variables are presented below.

The variable "operating cost ratio" demonstrates a negative coefficient of -0.0143 with a standard error of 0.002541, resulting in a t-statistic of -5.627074 and a statistically significant p-value of 0 which is less than significance level 0.05. Thus, Alternative hypothesis $H_1$4, "There is significant negative impact of operating cost ratio on ROA" is accepted and this indicates a significant negative relationship between the operating cost ratio and bank profitability. In other words, as the proportion of operating costs to operating income increases and the return on assets tends to decrease.

Conversely, the "CAR" (Capital Adequacy Ratio) exhibits a positive coefficient of 0.00867 with a standard error of 0.009512. While the t-statistic is 0.911485, The corresponding P-Value is 0.03 which is less than significance level 0.05. Thus, Alternative hypothesis ($H_1$1), "There is significant positive impact of capital adequacy ratio on ROA is accepted and this suggesting a marginally significant positive relationship between CAR and bank profitability. This implies that higher levels of capital adequacy may have a positive impact on ROA. This finding is consistent with the findings of (Anggreni & rahyuda, 2021).

The "loan to deposit ratio" variable is associated with a positively coefficient of 0.017793 and a standard error of 0.003104, resulting in a t-statistic of 5.7331 and a statistically significant p-value of 0 which is less than significance level 0.05. Thus, Alternative hypothesis ($H_1$5), “There is significant positive impact of loan to deposit ratio on ROA” is accepted and this indicates a significant positive relationship between the loan to deposit ratio and bank profitability. In other words, firms with higher loan to deposit ratios tend to have higher returns on assets. This finding is similar to the findings of (Sumantri ,2022).

Market risk is characterized by a negative coefficient of -0.079026 with a standard error of 0.044983. Although the t-statistic is -1.756783, the p-value is 0.0411 which is less than significance level 0.05. Thus, Alternative hypothesis ($H_1$2), “: There is significant negative impact of market risk on ROA” is accepted and this suggesting a statistically significant relationship. This finding is similar to the findings of (Said & Ali,2016).

The "non-performing loan" variable displays a negative coefficient of -0.135195 with a standard error of 0.025541, resulting in a t-statistic of -5.2933 and a statistically significant p-value of 0 which is less than significance level 0.05. Thus, Alternative hypothesis ($H_1$3), “There is significant negative impact of non-performing loan on ROA” is accepted and this indicates a significant negative relationship between the proportion of non-performing loans and bank profitability, suggesting that higher levels of non- performing loans are associated with lower returns on assets. This finding is consistent with the findings of (Akter & roy, 2017).

The random effects specification reveals that cross-section random effects have a standard deviation (S.D.) of 36.0254 and a correlation coefficient (Rho) of 0.038, indicating variability across cross-sections. Idiosyncratic random effects have an S.D. of 48.3658 and Rho of 0.8796, highlighting substantial unobserved variability not accounted for by the included variables. The overall model fit is reasonably strong, with an R-squared of 0.583727, indicating that the included variables explain approximately 58.37% of the variability in ROA. The adjusted R-squared is 0.578312, considering the number of variables and observations.

In conclusion, the Panel EGLS regression provides valuable insights into the factors influencing ROA in the specified sample. The statistically significant coefficients and random effects specifications enhance our understanding of the complex relationships

between financial metrics and return on assets across diverse cross-sections over the examined period. The negative associations with the operating cost ratio, market risk and non-performing loans underscore the importance of cost management and credit risk mitigation for achieving higher returns on assets. The positive association with the Capital Adequacy Ratio and Loan to deposit ratio suggests that maintaining adequate capital levels and lending deposits may positively influence ROA.

4.5 Hausman Specific Test

The Hausman Test equation is used to test the presence of correlated random effects in a panel data regression model. Moreover, it compares the estimates from a model with random effects.

Table 14

Hausman Specific Test

Correlated Random Effects - Hausman Test				
Equation: Untitled				
Test cross-section random effects				
Test Summary		Chi-Sq Statistic	Chi-Sq.d.f.	Prob.
Cross-section random		5.316881	5	0.255
Cross-section random effects test comparisons				
Variable	Fixed	Random	Var(Diff.)	Prob.
OCR	-0.015044	-0.0143	2.399273	0.3854
CAR	0.013925	0.00867	1.576825	0.2801
LD	-0.00173	-0.017793	0.335788	0
MR	-0.049432	-0.079026	0.000704	0.2646
NPL	-0.102827	-0.135195	0.000804	0.2537

Source: Author's calculation from EViews 10

Table 14 states the p-value is 0.255 which is greater than the level of significance 5% (0.05). Therefore, the null hypothesis (H0) is accepted as per the result concludes. The result of the above data suggests that there is strong evidence to conclude that correlated random effects are present. In other words, it indicates that using random effects in the model is significantly different from using fixed effects. Hence, the Hausman test

results provide strong evidence to suggest that correlated random effects are present in the panel data regression model. Additionally, the test does indicate significant differences between the coefficients estimated under the fixed and random effects models for the specific variables tested. Hence, Random effect is selected.

4.6 Major Findings

1. The average return on assets is highest in the year 2018/19 (1.63 %) and lowest in the year 2007/8 (0.96 %). It has been observed that the average return on assets of commercial banks computed across the year is in fluctuating trend.
2. The capital adequacy ratio is highest in the year 2007/08 (14.27 %) and lowest (10.25 %) in 2013/14 with an average CAR of Nepalese. Further, it has been observed that the CAR of Nepalese banking follows a fluctuating trend.
3. The annual market risk is highest in the financial year 2012/13 (1.15 %) and lowest of 0.20 % in the year 2007/08. Further, it has been found that the average market risk in the Nepalese banking is fluctuating trend.
4. The non-performing loan is highest in the year 2007/08 (2.07 %) and lowest of 0.67 % in the financial year 2018/19 with an average non- performing loan in the Nepalese. In addition, it has been observed that the volume of non-performing loan of Nepalese banking follows a downward trend.
5. The Operating cost ratio is highest in the year 2011/12 (44.20 %) and the lowest of (31.27 %) in 2016/17. Further, it has been observed that the OCR ratio in Nepalese banking sector follows fluctuating trend.
6. The LDR is higher in the year 2021/22 (82.61 %) and the lowest of (66.57 %) in year 2008/09. Further, it has been observed that the LDR in Nepalese banking sector follows the increasing trend.
7. The descriptive analysis shows that the average return on assets is 1.43 percent in Nepalese commercial banks ranging from minimum of 0.05 percent to maximum of 2.8 percent.
8. Besides, the analysis indicates that the average CAR is 13.53 percent,

average market risk is 0.74 percent, average non- performing loan is 1.29 percent.

9. Additionally, the analysis also states that the average of operating cost ratio is 39.8 percent whereas the average loan to deposit ratio (LDR) is 80.06 percent.

10. The Pearson's correlation coefficients matrix reveals the correlation coefficient between operating cost ratio and ROA is -0.45* which indicates there is negative correlation between OCR and ROA and the corresponding p-value is 0.000 which is less than level of significance. Therefore, there is significant negative relationship between OCR and bank's profitability.

11. The Pearson's correlation coefficients matrix reveals the correlation coefficient between capital adequacy ratio and ROA is 0.06* which indicates there is positive correlation between CAR and ROA and the corresponding p-value is 0.04 which is less than level of significance. Therefore, there is significant positive relationship between CAR and bank's profitability.

12. The Pearson's correlation coefficients matrix reveals the correlation coefficient between loan to deposit ratio and ROA is 0.23* which indicates there is positive correlation between LDR and ROA and the corresponding p-value is 0.004 which is less than level of significance. Therefore, there is significant negative relationship between LDR and bank profitability.

13. The Pearson's correlation coefficients matrix reveals the correlation coefficient between market risk and ROA is -0.094* which indicates there is negative correlation between market risk and ROA. The corresponding p-value is 0.000 which is less than level of significance. Therefore, there is significant negative relationship between market risk and bank profitability.

14. The Pearson's correlation coefficients matrix reveals the correlation coefficient between non-performing loan and ROA is -0.359* which indicates there is negative correlation between non-performing loan and ROA. The corresponding p-value is 0.000 which is less than level of significance. Therefore, there is significant negative relationship between non-performing loan and bank profitability.

15. As per panel data regression analysis, the coefficient of CAR and LDR

found to be positive reveals that having positive significant effect at the level of 5%. Whereas, the coefficient of OCR, MR and NPL is found to have negative significant effect on return on asset (ROA) at the level of 5%. The result of the above data indicates that 1% change in CAR, will results 0.08% change in ROA. Whereas, 1% increase in OCR, MR and NPL will result 0.0143%, 0.0178%, 0.079% and 0.13% decrease in ROA.

4.7 Discussion

The findings of this study offer critical insights into the profitability and financial stability of Nepalese commercial banks by examining key indicators such as Return on Assets (ROA), Capital Adequacy Ratio (CAR), Market Risk (MR), Non-Performing Loans (NPL), Operating Cost Ratio (OCR), and Loan to Deposit Ratio (LDR). These findings align with, contradict and in some cases extend the existing body of literature. The study reveals that SCBL exhibited the highest ROA indicating superior performance in resource utilization and shareholder value creation while MBI. consistently reported the lowest. These variations are supported by Aduda and Gitonga (2019) who emphasized operational efficiency as a major determinant of bank profitability. Similarly, Alam et al. (2022) and Ahmed and Khababa (2021) noted that banks with sound financial management practices generally report higher profitability ratios, confirming the observed disparities between SCBL and MBL.

The fluctuating trend in ROA over time align with the findings of (Ahmed & Ahmad, 2017). It also suggests that macroeconomic factors and internal inefficiencies affect bank profitability in emerging markets. These trends might reflect changing regulatory frameworks, increasing competition or shifts in the macro-financial environment.

The analysis found that CAR has a positive and significant effect on ROA and a pattern mirrored in the findings of (Olalekan & Adevinka.2013) and (Abbas et al. 2019). The downward trend in NPL is a favorable development and supports the observations by Poudel (2018) and Patwary and Tasneem (2019) as well as Abeywardhana, (2017), who link lower NPLs to improved asset quality and profitability. However, the negative but insignificant relationship between NPL and ROA in this study partially contradicts. Akter and Roy (2017) who found a strong negative impact of NPLs on bank profitability in the Dhaka stock exchange context. This discrepancy may be due to differences in credit risk management practices and regulatory oversight between Nepal and other

South Asian countries.

In terms of Market Risk (MR) and Operating Cost Ratio (OCR), both variables showed a negative but insignificant relationship with profitability measures. These findings echo those of Olivia (2022) and Adiatmayani and Panji (2021), who stress that operational and market risks can undermine profitability but their effects may be moderated by other factors such as size of the bank or capital adequacy. This is consistent with the moderating role proposed in studies by (Peling & Sedana,2021). Pattiruhu (2022) stated that there is positive and significant relationship of LDR with ROA suggests that higher lending activity relative to deposits contributes to profitability. A higher LDR reflects efficient use of customer deposits to generate income provided credit risk is well-managed.

The panel regression results reinforce the observed relationships especially the positive impact of CAR and LDR on ROA, extending the findings of Wanjiru (2024) by quantifying the impact in the Nepalese context. However, the regression also confirms the negative and significant effects of OCR, MR, and NPL on ROA, supporting the notion that these risks, while important, may be offset by other profitability drivers or strategic management decisions as discussed by (Manne & Berle, 2023) and (Setiawan & Nupus, 2022).

In summary, this study supports existing literature in recognizing CAR and LDR as key positive influencers of bank profitability while contradicting some earlier works by showing insignificant effects of NPL and MR.

CHAPTER V

SUMMARY AND CONCLUSION

5.1 Summary

Banks play a major role in distribution of financial sources to fund demanding units in the economy. The primary objective of this study is to investigate the impact of capital adequacy, market risk, credit risk, operational risk, and liquidity on the profitability of Nepalese commercial banks. Specifically, the study aims to analyze the structural patterns and relationships of these factors with a key profitability indicator: return on assets (ROA). It also seeks to identify the most significant factors influencing profitability within the Nepalese banking sector. To achieve these objectives, the study adopts a descriptive and causal-comparative research design. The analysis is based on secondary data collected from 10 commercial banks in Nepal including one public sector bank, three joint venture banks, and six private banks, covering the 15-year period from 2007/08 to 2021/22. Stratified sampling was used to select the sample banks from a population of 20. The data were obtained from annual reports of the banks and Nepal Rastra Bank publications. EViews 10 software was used to conduct descriptive statistics, correlation analysis, and panel data regression to assess the relationships between variables.

The results show significant variations and trends in financial indicators among the sampled banks. SCBL exhibited the highest average ROA (2.28%) while MBL had the lowest (ROA of 0.95%) suggesting performance discrepancies. The average CAR stood at 13.53%, showing a fluctuating trend over the years, while the LDR showed a rising pattern, reaching 82.61% in 2021/22. Market risk, NPLs, and OCR fluctuated across the years, with MR peaking in 2012/13 (1.15%) and NPL showing a declining trend from 2.07% in 2007/08 to 0.67% in 2018/19. The average OCR was 39.8%, with the highest ratio observed in 2011/12. Descriptive statistics further revealed that the average ROA among Nepalese commercial

banks was 1.43%.

The correlation analysis found a positive and significant relationship between CAR and ROA, indicating that higher capital adequacy enhances asset returns. LDR showed a positive and significant correlation with both ROA, suggesting that effective utilization of deposits contributes to profitability. Conversely, NPL, OCR, and MR were found to have significant negative correlations with ROA, implying that increased risk levels and inefficiencies may dampen profitability. The panel regression analysis confirmed that CAR and LDR have a positive and significant impact on ROA at the 5% level. In contrast, OCR, MR, and NPL showed a significant negative impact on ROA.

In conclusion, the study highlights that capital adequacy and loan-to-deposit ratio are key drivers of profitability in Nepalese commercial banks, enhancing ROA. Conversely, market risk, credit risk, and operational inefficiencies negatively influence profitability, and their effects are statistically significant. These findings suggest the need for strong risk management practices and adequate capital buffers to support financial stability and performance in the Nepalese banking sector.

5.2 Conclusion

Commercial banks serve as key financial intermediaries and play a crucial role in the economic development of a country. They mobilize funds from surplus units and allocate them to deficit units, earning a profit through this intermediation process. However, these activities expose banks to significant risks, including loan defaults and challenges in fulfilling depositor obligations. Such risks may stem from factors like political instability, economic uncertainty, or internal banking issues some of which may be uncontrollable. These risks can adversely affect profitability and, in turn, the overall stability of the banking sector. To mitigate these challenges, it is essential for commercial banks to evaluate the determinants of their profitability and develop strategies to minimize potential negative impacts. The findings of this study highlight that both the Capital Adequacy Ratio (CAR) and the Loan to Deposit Ratio (LDR) have statistically significant and positive

relationships with the profitability of Nepalese commercial banks. Specifically, the study demonstrates that an increase in CAR contributes to a higher Return on Assets (ROA), indicating improved financial strength and risk-bearing capacity.

On the other hand, Market Risk is found to have a negative effect on ROA, suggesting that greater exposure to market fluctuations can diminish bank profitability. Similarly, a rise in Non-Performing Loans (NPLs) negatively affects ROA, reflecting the adverse consequences of poor asset quality. Operating Efficiency, measured through the ratio of Operating Expenses to Operating Income, also shows a negative impact on ROA, implying that higher costs relative to income reduce overall profitability. Conversely, the LDR is positively associated with ROA, indicating that increased lending activities, relative to deposits, can enhance returns.

Overall, the study concludes that the Capital Adequacy Ratio is the most influential variable in explaining changes in ROA, underscoring its importance in maintaining the financial health and profitability of Nepalese commercial banks. Basically, the finding indicates the capital adequacy in fluctuating trend and loan-to-deposit ratio are in increasing trend and have a positive and significant impact on bank profitability suggesting that well-capitalized banks and efficient utilization of deposits contribute to financial stability and performance. Conversely, market risk, credit risk, and operational risk are in Fluctuation and downward trend and exhibit a negative and significant relationship with profitability. Highlighting that increased exposure to these risks undermines a bank's financial outcomes. These results also underscore the importance of strong risk management practices and maintaining adequate capital buffers to enhance the resilience and profitability of banks in a dynamic financial environment.

5.3 Implications

Based on the findings of the study, the following implications have been forwarded:

Implication to Policy Makers

i. Helps in setting balanced capital adequacy requirements that support both financial stability and profitability.

ii. Informs the development of risk-sensitive regulations targeting credit, market and operational risks.

iii. Supports liquidity management policies by showing how loan-to-deposit ratios influence bank performance.

iv. Aids in designing early warning systems based on risk indicators that affect profitability.

v. Provides a foundation for evidence-based banking policies tailored to local or national financial systems.

Implication to Grading Literature

i. Contributes to filling empirical gaps on how multiple risk factors and capital levels jointly affect bank profitability.

ii. Offers a comprehensive model that improves upon earlier studies with isolated variables.

iii. Validates or challenges previous findings, providing contextual relevance in the current banking environment.

iv. Enriches the literature with up-to-date data and practical insights from the banking sector.

v. Encourages systematic comparison and re-evaluation of existing theoretical models on financial performance.

Implication to Academic Community

i. Adds to the body of knowledge in banking, risk management, and financial performance research.

ii. Provides a data-driven empirical framework useful for academic teaching and case studies.

iii. Encourages interdisciplinary research across finance, economics, and public policy.

iv. Inspires future academic work on risk-return dynamics in the banking

sector.

v. Serves as a reference point for students and researchers working on similar topics.

Implications to Branch Managers

i. Highlights the need to monitor key risk indicators (credit, market, operational) to safeguard profitability.

ii. Assists in balancing loans and deposits efficiently to optimize return without increasing liquidity risk.

iii. Encourages proactive capital management to meet regulatory and performance targets.

iv. Reinforces the importance of compliance with risk thresholds at the operational level.

v. Promotes a culture of risk-informed decision-making for sustainable branch performance.

Scope of Future Research

i. Explore the impact of macroeconomic variables (GDP, inflation, interest rates) on profitability.

ii. Conduct comparative studies across different countries, size of the bank, or types (Islamic vs. conventional).

iii. Investigate non-linear relationships or mediating effects between risk factors and profitability.

iv. Include technological and cyber risk as emerging operational challenges affecting bank performance.

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Appendix

Name of the banks	Years	ROA	CAR	MR	NPL	OCR	LDR
CBIL	2007/08	0.75	10.41	0.09	0.07	43.18	78.15
	2008/09	0.74	11.65	0.07	0.12	41.69	71.24
	2009/10	1.17	11.40	0.13	0.31	35.08	76.86
	2010/11	1.18	16.31	0.39	1.17	38.94	92.85
	2011/12	1.12	14.47	0.34	2.01	45.30	83.06
	2012/13	1.59	11.89	4.03	2.01	32.70	78.97
	2013/14	1.55	12.99	0.32	3.40	31.02	82.87
	2014/15	1.74	13.27	0.02	1.53	31.25	81.60
	2015/16	1.96	12.40	0.10	1.38	40.71	85.59
	2016/17	1.65	16.88	0.10	2.02	40.71	91.89
	2017/18	1.59	13.84	0.17	1.48	37.30	92.75
	2018/19	1.62	14.37	0.05	1.19	39.03	88.76
	2019/20	1.08	15.14	0.75	1.55	37.98	89.76
	2020/21	1.07	13.70	0.11	1.64	37.79	87.52
	2021/22	1.03	12.69	0.74	2.22	41.34	89.08
EBL	2007/08	1.66	11.44	0.44	0.68	32.38	78.56
	2008/09	1.73	10.55	0.45	0.48	31.00	73.43
	2009/10	2.01	10.77	1.14	0.45	30.03	76.23
	2010/11	2.01	10.43	0.34	0.34	30.84	76.98

	2011/12	1.95	11.02	0.21	0.84	31.40	73.22
	2012/13	2.24	11.59	0.40	0.62	28.80	76.57
	2013/14	2.20	11.15	0.48	0.97	29.75	78.01
	2014/15	1.59	13.33	0.54	0.66	33.96	66.63
	2015/16	1.59	12.66	0.36	0.38	31.50	75.14
	2016/17	1.81	14.54	0.62	0.25	32.96	84.05
	2017/18	1.78	14.20	0.58	0.20	34.73	81.86
	2018/19	1.80	13.74	0.77	0.16	34.02	87.01
	2019/20	1.36	13.38	0.56	0.22	36.22	83.52
	2020/21	0.92	12.48	0.76	0.12	44.01	85.30
	2021/22	1.10	11.89	0.35	0.12	38.75	90.77
MBL	2007/08	0.68	10.52	0.32	3.56	39.16	81.00
	2008/09	0.70	11.84	0.38	2.33	44.42	80.74
	2009/10	0.35	11.25	0.27	2.32	53.88	83.25
	2010/11	0.05	15.04	0.18	4.17	64.68	89.77
	2011/12	0.16	10.79	0.17	2.84	80.34	74.62
	2012/13	0.49	12.54	0.23	2.84	50.66	79.79
	2013/14	1.12	10.63	0.23	1.78	47.28	79.56
	2014/15	1.26	12.24	0.03	0.64	44.65	78.77

	2015/16	1.50	12.36	0.06	0.55	39.07	84.59
	2016/17	1.82	16.82	0.16	0.38	33.53	88.74
	2017/18	1.47	15.36	0.04	0.44	38.57	89.78
	2018/19	1.61	12.79	0.11	0.37	43.57	87.00
	2019/20	1.02	13.00	0.06	0.52	47.25	88.99
	2020/21	1.02	12.00	0.02	0.62	45.73	85.19
	2021/22	0.94	13.36	0.37	1.04	47.54	86.32
NBL	2007/08	0.57	27.55	0.00	12.38	21.57	37.69
	2008/09	1.88	13.94	3.47	5.91	80.15	43.28
	2009/10	0.56	11.13	2.96	4.98	118.22	58.42
	2010/11	0.25	10.15	2.56	5.29	75.56	57.05
	2011/12	0.30	5.82	2.57	5.23	98.23	52.98
	2012/13	1.07	0.59	1.83	5.24	78.37	60.48
	2013/14	0.92	4.55	1.77	5.12	92.67	56.43
	2014/15	0.55	7.49	0.95	3.98	77.86	68.45
	2015/16	2.40	10.20	0.37	3.11	53.91	71.05
	2016/17	1.34	14.47	2.03	3.32	45.20	79.17
	2017/18	2.41	11.27	1.62	3.37	61.97	75.68
	2018/19	1.51	16.80	2.10	2.64	33.96	78.14
	2019/20	1.22	17.01	2.10	2.47	40.35	72.25

	2020/21	1.33	16.80	0.23	2.05	38.67	86.76
	2021/22	1.12	15.05	0.07	1.83	40.14	90.09
NICA	2007/08	1.60	13.11	0.68	0.25	71.94	87.62

	2008/09	1.69	12.42	0.46	0.34	73.01	89.32
	2009/10	2.21	12.92	0.56	0.19	72.30	80.97
	2010/11	2.24	12.89	0.32	0.06	29.18	82.45
	2011/12	1.53	11.01	0.28	0.13	37.04	79.25
	2012/13	1.38	13.17	0.55	0.67	30.45	81.23
	2013/14	1.61	14.05	0.33	0.68	34.12	82.93
	2014/15	1.12	12.49	0.32	0.41	41.56	81.03
	2015/16	1.28	12.44	0.29	0.11	40.30	85.62
	2016/17	1.32	13.83	0.02	0.04	42.06	82.76
	2017/18	0.78	12.24	0.94	0.01	70.67	80.51
	2018/19	1.39	13.32	0.07	0.23	50.83	83.15
	2019/20	1.24	13.50	0.09	0.27	48.46	82.40
	2020/21	0.94	12.47	1.06	0.24	50.15	88.21
	2021/22	1.18	13.38	0.06	0.07	42.41	89.85
NMB	2007/08	0.82	35.35	0.15	1.52	29.03	74.78
	2008/09	0.40	20.41	0.18	0.51	51.47	75.52
	2009/10	1.21	18.44	0.45	0.70	36.77	78.44

	2010/11	1.44	16.39	0.10	0.27	37.52	88.16
	2011/12	0.31	14.84	1.24	2.45	42.61	78.00
	2012/13	1.43	11.74	1.14	1.80	34.18	74.31
	2013/14	1.44	10.75	1.28	0.55	37.20	74.31

	2014/15	1.21	11.13	1.56	0.42	4.21	75.32
	2015/16	1.41	10.98	1.07	1.81	36.72	84.07
	2016/17	1.60	13.61	1.37	1.68	37.39	85.50
	2017/18	1.65	15.75	1.96	0.88	39.29	90.46
	2018/19	1.67	15.43	1.79	0.82	37.17	94.61
	2019/20	0.95	15.08	1.86	2.68	37.42	92.31
	2020/21	1.17	15.08	1.80	2.27	39.69	96.69
	2021/22	1.29	13.59	0.09	1.45	42.47	97.68
PCBL	2007/08	0.44	13.82	0.11	0.81	34.64	96.75
	2008/09	1.06	12.40	0.28	0.79	25.86	83.45
	2009/10	1.61	10.67	0.38	0.68	22.82	78.86
	2010/11	1.63	16.48	0.63	0.57	25.70	89.07
	2011/12	0.99	14.85	1.77	0.76	30.87	79.34
	2012/13	1.47	13.82	1.68	2.23	25.58	73.62
	2013/14	1.46	12.40	1.29	2.43	25.86	79.94
	2014/15	1.63	12.16	0.72	1.83	23.23	81.63

	2015/16	2.05	11.60	0.29	1.23	21.28	85.00
	2016/17	1.90	13.28	0.20	0.88	20.35	89.12
	2017/18	1.82	12.24	0.11	0.85	26.61	87.53
	2018/19	2.15	12.76	0.13	1.00	26.91	89.15
	2019/20	1.48	13.84	0.12	1.48	28.03	88.97

	2020/21	1.71	14.82	0.08	0.99	28.10	89.23
	2021/22	1.33	13.12	0.11	1.77	27.96	91.79
SANIMA	2007/08	0.37	11.26	0.01	1.51	44.72	87.94
	2008/09	0.99	16.01	0.05	0.18	38.71	91.39
	2009/10	1.18	16.50	0.04	0.08	42.81	89.33
	2010/11	1.66	29.12	0.02	0.00	35.45	101.25
	2011/12	0.89	20.79	0.09	0.48	48.90	86.25
	2012/13	1.39	14.87	2.06	0.03	33.34	85.72
	2013/14	1.46	12.54	1.40	0.02	31.24	82.90
	2014/15	1.55	11.08	1.78	0.07	30.46	83.97
	2015/16	1.77	12.36	1.73	0.02	26.68	88.10
	2016/17	1.98	15.57	2.04	0.01	26.26	89.03
	2017/18	1.85	12.41	1.69	0.03	31.16	87.45
	2018/19	2.07	13.19	1.64	0.08	33.14	90.42
	2019/20	1.41	13.00	1.59	0.45	34.17	85.10

	2020/21	1.44	13.57	1.25	0.12	36.02	94.11
	2021/22	1.09	13.36	0.03	0.33	31.55	89.18
SBL	2007/08	1.23	10.35	0.16	1.10	29.24	93.03
	2008/09	1.22	10.69	0.04	0.82	34.10	85.18
	2009/10	1.06	10.04	0.37	0.76	38.95	83.65
	2010/11	1.28	10.78	0.13	0.79	45.10	86.43

	2011/12	1.12	11.03	0.09	1.52	43.66	79.42
	2012/13	1.43	11.70	0.09	2.39	37.53	83.55
	2013/14	1.74	11.39	0.11	2.75	37.38	79.02
	2014/15	1.51	11.10	0.19	1.80	39.45	83.04
	2015/16	1.65	11.25	0.12	1.47	31.09	87.02
	2016/17	1.53	12.74	0.16	1.30	33.82	88.40
	2017/18	1.47	12.12	0.06	1.09	33.87	86.08
	2018/19	1.47	12.70	0.20	0.75	40.63	89.65
	2019/20	1.26	13.17	0.08	1.38	43.20	89.04
	2020/21	1.25	13.36	1.21	1.00	39.00	90.60
	2021/22	1.10	13.00	0.07	1.07	39.96	96.08
SCBL	2007/08	2.46	13.15	0.13	0.92	25.69	46.95
	2008/09	2.53	14.70	1.17	0.66	25.30	38.70
	2009/10	2.70	14.60	1.43	0.61	26.47	45.98

	2010/11	2.55	14.22	0.41	0.62	27.27	49.11
	2011/12	2.80	13.93	0.47	0.78	27.90	55.13
	2012/13	2.67	12.54	0.63	0.77	28.96	58.63
	2013/14	2.51	12.27	0.29	0.48	29.18	56.87
	2014/15	1.99	13.10	1.34	0.34	31.17	48.92
	2015/16	1.98	16.38	2.43	0.32	31.99	56.88
	2016/17	1.98	21.08	2.34	0.19	31.69	62.20

	2017/18	2.64	22.99	2.27	0.18	33.38	66.45
	2018/19	2.61	19.69	2.02	0.15	30.89	70.11
	2019/20	1.71	18.51	1.65	0.44	32.87	56.75
	2020/21	1.22	17.17	2.30	0.96	38.85	71.27
	2021/22	1.83	15.95	0.47	0.59	33.94	87.91