IMPACT OF CAPITAL ADEQUACY AND COST INCOME RATIO ON PROFITABILITY OF COMMERCIAL BANKS IN NEPAL

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

by

Ambika Marasini

Campus Roll No: 3424/2075

T.U Regd. No: 7-2-1188-26-2014

Exam Roll No: 13064/2019

Shanker Dev Campus

Group: Finance

Kathmandu, Nepal

December, 2024

CERTIFICATION OF AUTHORSHIP

I hereby declare that the Dissertation titled "**Impact of Capital Adequacy and Cost Income Ratio on Profitability of Commercial Banks in Nepal**" submitted to the Faculty of Management, Tribhuvan University, is an original work and is submitted in partial fulfillment of requirements for the degree in Master of Business Studies (MBS). No other university or institution has received this proposal to award a degree or diploma.

I appreciate the help and cooperation I received during this research work. I further declare that the information source and literature I used during the study are cited in the section with reference to discretion.

……

Ambika Marasini

December, 2024

Report of Research Committee

Ms. Ambika Marasini has successfully defended research titled **"IMPACT OF CAPITAL ADEQUCACY AND COST INCOME RATIO ON PROFITABILITY OF COMMERCIAL BANKS OF NEPAL".** The research committee has registered the dissertation for further progress. It is recommended to carry out the work as per suggestion and guidelines of supervisor Srijana Khadka and submit the dissertation for assessment and viva voce examination.

.....
Srijana Khadka
Dissertation Supervisor

Dissertation Proposal Defended Date:
.....

Dissertation Submitted Date :
.....

.....
Asso. Prof. Dr. Sajeeb Kumar Shrestha
Head, Research Department

Dissertation Viva-voce Date:
.....

Approval Sheet

We reviewed the dissertation titled "**IMPACT OF CAPITAL ADEQUACY AND COST INCOME RATIO ON PROFITABILITY OF COMMERCIAL BANKS IN NEPAL**" Submitted by Ambika Marasini for Master of Business Studies (MBS). We hereby certify that the dissertation meets the requirements for degree awarding.

.....

Srijana Khadka

Dissertation Supervisor

.....

Internal Examiner

.....

Internal Expert

.....

External Expert

.....

Asso. Prof. Dr. Sajeeb Kumar Shrestha

Chairperson, Research Committee

.....

Joginder Goet

Acting Campus Chief

Acknowledgement

This study, titled "Impact of Capital Adequacy and cost income ratio on the Profitability of Commercial Banks in Nepal" was completed as part of the Tribhuvan University Master of Business Studies (MBS) degree requirements. Every project, large or small, is largely successful due to the efforts of several wonderful people who have always provided valuable advice or lent a helping hand. I sincerely thank everyone who has helped make this study a success by providing inspiration, support, and guidance.

I would like to express my deepest appreciation to all those who provided me with the opportunity to complete this report.

Firstly, I would like to express my gratitude to Tribhuvan University and Shanker Dev Campus, Ramshah Path, Putalisadak, Kathmandu for providing the basis for producing this report.

It's a pleasure for me to express my heartiest gratitude to the program coordinator and report supervisor for guiding me throughout this report preparing phase and providing necessary suggestion related to factual and subjective approaches related to report. I highly value his insightful comments, constructive criticism and friendly approach without which I would not have been able to complete this research in this form. I also admire and appreciate the trust and faith he had upon me to finish this work independently.

I extend my gratitude and gratefulness to the staff of Shanker Dev Campus for providing all basic and advanced knowledge about the survey procedures and its difficulties in dealing with. My thanks and appreciations also go to my classmates in developing the project and people who have willingly helped me out with their abilities.

Ambika Marasini

Table of Contents

List of Tables

List of Figures

Abbreviations

ANOVA: Analysis of Variances

ATM : Automated Teller Machine

BCBS : Basel Committee on Banking Supervision

BOD : Board of Directors

BS : Bank Size

CAMELS: Capital adequacy, Asset quality, Management, Earnings, Liquidity and Sensitivity

CAR : Capital Adequacy Ratio

CCR : Core Capital Ratio

CCR : Cash Conversion Ratio

CIR : Cost Income Ratio

DER : Debt to Equity Ratio

DETA : Deposit To Total Assets

EAR : Equity to Assets Ratio

EQTQ : Equity To Total Assets

GAAP : Generally Accepted Accounting Principles

GDP : Gross Domestic Product

HBL : Himalayan Bank Limited

ICRANP: Investment Information and Credit Rating Agency of Nepal

INFL : Inflation

IPDI : Innovative Perpetual Debt Instruments

LOTA : Loan to Total Assets Ratio

LR : Liquidity Ratio

NETA : Non-Interest Expenses to Total Assets

NIM	:	Net Interest Margin
NPAT	:	Net Profit After Tax
NRB	:	Nepal Rastra Bank
NSBIL:		Nepal SBI Bank Limited
PNCPS:		Perpetual Non-cumulative Preference Shares
POLS	:	Pooled Ordinary Least Squares
PRTO	:	Loan Loss Provision to Total Assets
ROA	:	Return on Assets
ROCE	:	Return On Capital Employed
ROE	:	Return on Equity
SBI	:	State Bank of India
SCR	:	Solvency Capital Requirement

Abstract

This study examines the impact of capital adequacy and cost income ratios on the profitability of commercial banks in Nepal. The main objective of this study is to examine relationship between various variables and study the impact of Capital Adequacy, Cost to Income, Equity to Total Assets, and Debt to Equity, Liquidity and Bank Size on profitability of commercial banks in Nepal. Descriptive and causal comparative research design were used to achieve research objectives. Three commercial banks -Standard charted Bank Limited, Nepal SBI Bank Limited and Himalayan Bank Limited were selected as the research sample for the study from fiscal year 2012/13 to 2022/23 fiscal year. The study was fully based on secondary data collected from the annual reports of sample bank, number of institutions and regulatory authorities like Nepal Rastra Bank, Nepal Stock Exchange, and Security Exchange Board of Nepal. Financial metrics like the ROA and ROE efficiency ratio and statistical tools such as mean, standard deviation, coefficient of Variation, correlation, regression analysis was used. Variables like capital adequacy, cost-to-income ratio, equity-to assets ratio, liquidity ratio and bank size were used as independent variables. Similarly, ROA and ROE were dependent variables of study. The study found that the Cost-Income Ratio (CIR) has a strong negative correlation with both Return on Assets (ROA) and Return on Equity (ROE), the Capital Adequacy Ratio (CAR) demonstrated a positive correlation with ROA, CAR did not show a significant impact on ROE and Bank Size (BS) was negatively correlated with both ROA and ROE. The findings of regression analysis indicate that CIR and BS are significant determinants of profitability. Other ratios such as CAR, Equity to Assets Ratio (EAR), Debt to Equity Ratio (DER), and Liquidity Ratio (LR) did not show significant effects on profitability measures in the current study. This suggests that while capital adequacy and cost management are critical, other financial ratios may have less influence on profitability or their impact may be context specific. The findings provide valuable insights for bank management, policymakers, and investors, emphasizing the need for a balanced approach to capital management and cost control to ensure sustainable profitability and financial stability.

Keywords: *Capital Adequacy, cost to income ratio, profitability, return of assets, return on equity.*

CHAPTER: I

INTRODUCTION

1.1 Background of the study

A key factor in determining the stability and strength of the banking system is capital adequacy. The minimum amount of capital a bank must hold to operate its business, seize profitable expansion possibilities, absorb losses, and maintain its customers' confidence in it is known as capital adequacy (Siddika & Haron, 2020). Capital adequacy is a measure of the financial strength of a financial institution. It shows how much capital it has in comparison to the amount of money it has lent out, i.e. its assets. The necessity that banks retain sufficient capital to safeguard themselves from insolvency is referred to as capital adequacy. As a result, capital must be sufficient to safeguard bank depositors and counter parties against risk. Capital adequacy has been a topic of discussion for decades, and it has grown much more prevalent after the 2008 economic downturn. In general, adequate capitalization is seen as a crucial variable in the banking industry, and banks must have sufficient capital to meet their daily needs, sustain their operations, expand, and secure depositors' funds. It serves as a source of confidence booster in that it gives the consumer, the public, and the regulatory authority trust in the bank's continued financial ability (Antwi, 2019). To assess capital adequacy, various ratios such as the core capital ratio (CCR), capital adequacy ratio (CAR), debt equity ratio, and so on can be used.

The capital adequacy ratio is the ratio that protects banks from excessive leverage, insolvency, and keeps them out of trouble. It is defined as the proportion of a bank's capital to its current obligations and risk-weighted assets. Risk weighted assets are bank assets that have been adjusted for risk. An adequate amount of capital adequacy ensures that the bank has enough capital to expand its company while also having enough net worth to absorb any financial downturns without becoming bankrupt. It is the ratio that evaluates a bank's ability to meet its time liabilities as well as other risks such as credit risk, market risk, operational risk, and so on. In general, by reducing the risk of bank failure, capital adequacy ratios can contribute to the effectiveness and stability of a country's financial system. In general, a bank with a high capital

adequacy ratio is thought to be secure and likely to fulfill its financial obligations. The bank's overall financial health and management's capacity to raise extra capital are both reflected in its capital adequacy. Additionally, it demonstrates whether the bank has enough capital to cover unforeseen losses. It can also be used to gauge bank leverage (NRB, 2007).

The "cost income ratio (CIR)" or "cost-to-income ratio" illustrates the relationship between income and the cost of obtaining it. A crucial indicator of bank performance is the CIR. Generally speaking, the more efficient a bank operates the lower its cost-to-income ratio. The cost to income ratio is usually defined as the sum of net interest income and non-interest income divided by non-interest costs, excluding bad and doubtful debt expense. The cost/income ratio is the proportion of operating expenses to operating income. It is a measure of how costs change in relation to income. It is one of the most important key performances indicators, the higher the ratio, the more efficient the bank.

The NRB has already announced the Basel III implementation action plan and stated its desire to embrace the Basel III framework, albeit in a simplified form, to adopt international best practices. This framework was created in accordance with international development and extensive consultation with stakeholders, as well as review and assessment of impact studies at various stages. This framework contains guidance for implementing the Basel III framework in Nepal. The Basel III capital laws maintain the three mutually reinforcing Pillars of the Basel II capital adequacy framework: minimum capital requirements, supervisory evaluation of capital adequacy, and market discipline (NRB, 2015). Regulators view capital as important and something that may have an impact on whether a bank continues to exist or not since it may have an impact on its degree of profitability. In a competitive environment, no firm can survive and attract outside capital to meet its investment target without profits. Commercial banks (Class A) must maintain a CAR of 11% based on the Capital Adequacy Framework, 2015, while Development banks and Finance companies (Class B and Class C) must maintain a CAR of 10% based on the Capital Adequacy Framework, 2007 (Updated July 2008) (NRB, 2019)

According to Athanasoglou, et al. (2006), profitability is a function of internal factors, which are primarily influenced by a bank's management decisions and policy

objectives such as liquidity, capital adequacy, provisioning policy, expense management, and bank size. They hypothesized that external factors such as ownership, stock market development, market concentration, and other macroeconomic factors are related to industrial structural factors. Based on the research of Toshniwal (2016), profitability can be defined as the ability to earn a return from the use of investment. It is composed of two words “profit” and “ability”. When the excess of output over input factors is expressed in monetary form, it is called profit. Therefore, profit can be concluded as excess of income over costs.

Although there are several indicators of development, economic growth is a major one in every aspect. Banks along with other financial institutions have been the key players. Banks serve as the global economy's backbone, providing capital for innovation, infrastructure, job creation, and overall prosperity. Banks also play a significant role in society, influencing not only individual consumer spending but also the growth of entire industries. Banks play a key role in the operation of an economy as financial intermediaries. The banking industry facilitates the collecting of capital and savings required for economic expansion, resulting in the emergence of new ventures in every area. Through the credit mechanism, these higher savings have a favorable influence on capital accumulation, ensuring economic growth and employment creation. However, the relationship between the banking sector and economic growth does not always point in the same direction. A solid banking system plays a vital role in sustaining economic activity and satisfying the financial demands of all segments of society, contributing to the country's overall progress.

Various research has explained the factors that affect the profitability of banking sectors. As per HirinduKawshala and KushaniPanditharathna (2017), there are internal factors like bank size, capital ratio, deposit ratio, liquidity ratio, capital adequacy, liquidity management, operating efficiency also called as cost to income ratio, technology and innovations etc., and external factors like economic condition (GDP growth, unemployment rates, inflations, etc.), competition, technology, exchange rates, market capitalization etc. that affects the profitability of banking sectors. The measurement of profitability in a bank is based on Return on Assets (ROA) and Return on Equity (ROE) (Christina,2019; Taswan,1982).

1.1.1 Introduction of Sample Organization under Study

Standard Chartered Bank Nepal (SCBN)

With the merger of two banks, The Chartered Bank of India, Australia and China, and Standard Bank of British South Africa, the name Standard Chartered has been evolved. Standard Chartered Bank Nepal is the subsidiary of standard chartered PLC which is British multinational bank with operations in consumer, corporate and institutional banking, and treasury service (Wikipedia Contributors, 2019). It has been operating in Nepal since 1987. Initially it was registered as Joint venture operation. It is the only bank in Nepal to have received the ICRANP-IR AAA rating from ICRA Nepal, indicating that it is the safest bank in terms of timely financial obligation servicing. The standard chartered group holds 70.21% of the total shares and the remaining 29.79% is owned by the Nepalese public. It has been reaffirmed AAA rating for fifth times by ICRA Nepal. It has been awarded as best RMB by the asset Triple A Awards and The Best Managed Commercial Bank by Abhiyan and new business age in 2022. Global business outlook awarded it by Best Digital bank in Nepal on 2021 and ICAN awarded it by Best Presented Annual Report 2020. It provides international banking services in Nepal, as well as a full range of banking products and services to a diverse range of clients and customers, including individuals, mid-market local corporates, multinationals, large public-sector companies, government corporations, and development organizations such as aid agencies, multilateral entities, non-governmental organizations, and international non-governmental organizations. The Bank has been a pioneer in introducing client-focused products and services, and it hopes to maintain its leadership. An anti-money laundering policy was firstly introduced by Standard Chartered Bank Nepal, and it is also the first bank in Nepal to apply the 'Know Your Customer' procedure to all customer accounts (Standard Chartered Bank, 2024).

Nepal SBI Bank Limited (NSBL)

Nepal SBI Bank Ltd. (NSBL) is the first Indo-Nepal financial joint venture, sponsored by three institutional promoters: State Bank of India (55%), Employees Provident Fund (15%), and Agricultural Development Bank of Nepal, under a Memorandum of Understanding signed on July 17, 1992. Nepal SBI Bank Ltd. (NSBL) was established in July 1993 as a subsidiary of State Bank of India (SBI),

with 55 percent ownership. It is one of the leading ‘A’ class banks in Nepal. It is first ever bank in Nepal rated ‘AA’ by ICRA Nepal for six consecutive years. With the vision ‘be the most preferred bank in transforming Nepal’ and mission ‘to provide high quality, reliable and innovative financial solution’, NSBL has emerged as one of the leading banks in Nepal. It has been awarded as Nepal Domestic initiative of the year under wholesale banking awards 2022, Nepal Domestic Technology and Operations Bank of the year 2023 under wholesale banking awards 2023 and Nepal Domestic Mobile Banking initiative of the year under wholesale banking awards 2023 by Asian Banking and Finance, Singapore, Best Corporate Banking Solutions Nepal 2022 by Capital Finance Internationals (CFI.co), London etc. (Nepal SBI Bank Limited, 2023).

Himalayan Bank Limited (HBL)

Himalayan Bank Limited was established in 1993 as a joint venture of Pakistan's Habib Bank Limited and has since grown to become one of Nepal's largest banks. With the vision of becoming the country's leading bank and the mission of "Preferred Provider and Quality Financial Services," this bank offers a variety of services to its customers. From the start, the bank has been known for introducing new banking services in Nepal. HBL was the first to introduce products such as the Premium Savings Account, HBL Proprietary Card, and Millionaire Deposit Scheme, as well as services such as ATMs and Tele-banking, which won over customers at the time. Since its founding, the bank has been highly focused on innovation. It offers a variety of services, including deposit and credit services, corporate lending, retail/consumer lending, Himal remittance, locker services, and so on. Its total core capital as on July 16, 2023, was RS 29,420,571,989 and supplementary was 9,653,359,737 (Himalayan Bank Limited, 2024)

1.2 Statement of the Problem

Capital adequacy is a factor in determining and assessing the soundness of the banking sector. The primary functions of commercial banks are to raise and deploy capital. As a result, commercial banks receive large sums of money from the general public. Depositors believe that putting their money in a bank is a good investment. But what if the bank lacks sufficient capital to protect itself from future, unanticipated losses? As a result, a bank's capital must be sufficient to protect its depositors and

counter parties from credit and market risks. Otherwise, banks will spend all of depositors' money for their own benefit, causing depositors to lose money (Goet,2022; Maisel,1982). Banks with adequate capital outperform those with insufficient capital. Highly capitalized banks had lower bankruptcy costs and required less external funding, particularly in emerging economies where external borrowing is difficult.

To ensure continuity, all financial institutions must maintain adequate liquidity levels; thus, profitability is a primary goal. They are an indispensable source of information. It is critical to be able to generate capital. If profits are not generated, banks will be unable to attract external funds to improve their investments and coexistence with competitors. Profitability helps to increase the trust of bank deposit holders and potential investors, as well as attract capital shareholders to participate in the bank, and it is also used to measure the success of the bank's management. Provide solid indicators to regulators that the bank is on the right track, as well as an indication of management's ability to direct initiatives. It is also a measure of the performance of the bank's management in terms of investment, operational, and finance Policies (Almazari & Alamri, 2017). This study examines the relationship between two determinants (capital adequacy and cost-income ratio) and the profitability of a sample of Nepalese commercial banks. Capital adequacy ratios (CARs) and cost income ratios (CIRs) measure efficiency, while ROA and ROE measure profitability. Previous research indicates that capital adequacy and profitability have a positive relationship (Almazari 2013; Berger,1995; Ghosh et.al.2003), whereas cost income ratio and profitability have a negative relationship (Almazari ,2013; Ghosh et al., 2003; Hess & Francis, 2004).

The cost-to-income ratio assesses a bank's ability to manage and control operating costs. This ratio represents the relationship between cost and income. The higher the ratio, the less efficient the bank is in controlling and managing operating expenses. The Capital Adequacy Ratio (CAR) is the proportion of a bank's capital to its risk-weighted assets and current liabilities. Central banks and bank regulators make the decision to prevent commercial banks from taking on excessive leverage and becoming insolvent in the process. Commercial banks are expected to maintain an adequate level of capital to absorb all expected risks and to return a reasonable return

to shareholders and depositors. Banks' ability in this regard is measured in terms of capital adequacy ratios as prescribed by regulatory agencies such as the NRB. Capital adequacy is closely linked to a country's economic growth. The issue of capital adequacy in banks has gained significant importance in recent years because of increased risks and financial crises they face research problems, this study will deal with the following issues:

- What is the situation of Capital Adequacy, Cost to Income, Equity to Total Assets, Debt to Equity, Liquidity and Bank Size position of sampled banks in Nepal?
- Is there relationship between Capital Adequacy, Cost to Income, Equity to Total Assets, Debt to Equity, Liquidity and Bank Size on profitability of commercial banks in Nepal?
- How do Capital Adequacy, Cost to Income, Equity to Total Assets, Debt to Equity, Liquidity and Bank Size impacts on profitability of commercial banks in Nepal?

1.3 Objectives of the Study

There are several internal factors such as liquidity, capital adequacy, provisioning policy, expense management, and bank size and external factors such as ownership, stock market development, and market concentration, as well as other macroeconomic factors that affects the profitability of any commercial banks. This study was carried out with main objective to examine the impact of capital adequacy and cost income ratio in the profitability of commercial banks. The specific objectives of the study are as follows;

- To assess the situation of Capital Adequacy, Cost to Income, Equity to Total Assets, Debt to Equity, Liquidity and Bank Size position of sample banks in Nepal.
- To examine the relationship between Capital Adequacy, Cost to Income, Equity to Total Assets, and Debt to Equity, Liquidity and Bank Size on profitability of commercial banks in Nepal.
- To analyze the impact of Capital Adequacy, Cost to Income, Equity to Total Assets, and Debt to Equity, Liquidity and Bank Size on profitability of commercial banks in Nepal.

1.4 Hypothesis

This study aimed to investigate how the performance of Nepal's commercial banks is impacted by capital adequacy and cost-income ratio. Our primary goal in developing the hypothesis is to determine whether there is a significant relationship between each independent variable and the dependent variables, as well as to assess the significance of the independent variables used together on the dependent variables. Alternative hypotheses include:

$H_{1:}$ There is a positive relationship between Capital adequacy ratio and bank profitability.

$H_{2:}$ There is a positive relationship between Cost to income ratio and bank profitability.

$H_{3:}$ There is a positive relationship between equity capital to assets ratio and bank profitability.

$H_{4:}$ There is a positive relationship between Debts to equity ratio and bank profitability.

$H_{5:}$ There is a positive relationship between Liquidity ratio and bank profitability.

$H_{6:}$ There is a positive relationship between Bank Size and bank profitability.

1.5 Rationale of the Study

Almazari (2013) argues that bank capital structures are subject to strict regulation. Adequate capital enables bankers and regulators to withstand any shocks the bank may encounter. While banks take excessive risks in order to maximize shareholder value at the expense of fund providers, capital plays a critical role in reducing the number of bank failures and losses to depositors. In the banking industry, capital adequacy is essential for lowering various risk factors, and it's also necessary to lower moral hazard and competitiveness. Additionally, having adequate capitalization is a crucial factor in business; banks need to have enough capital to cover their expenses, expand, and guarantee depositor security.

In order to highlight the crucial role that commercial banks play in boosting the profitability of the Nepalese banking system, the primary goal of this study is to examine the effect of capital adequacy and cost income ratio on commercial bank profitability. This study will help a variety of businesses, individuals, researchers, and institutions preserve their assets and maximize potential returns while assuming the fewest risks. The research could advance our understanding, advance our methods, or influence how policies are made. It assists various bank management in determining where they fall short and where they excel. Key policymakers, such as the government and the capital market, may benefit significantly from the study's findings, which will help them develop new policies. This study may help educational institutions provide references and literature to future researchers interested in conducting additional research in this field or a related area. This will help the development of knowledge in this field of study. Because some areas of this study may not be fully covered, future researchers will have a starting point from which to expand their research. The findings of this study are expected to benefit individual investors, institutional investors, and businesses when making investment decisions. Additionally, by using real data rather than figures that have been altered, investors

may be able to make decisions about which companies to invest in based on information about the profitability, liquidity, financial leverage, and asset capitalization of those companies.

1.6 Limitations of the Study

Aside from the aforementioned procedure and strengths, there were some limitations that cannot be overlooked. The study had limited resources, making it difficult for the researchers to discover new aspects. The main limitation was the reliability of the statistical tools used, as well as a lack of research experience. Other limitations were as follows:

- Though, there has been in operation of 20 commercial banks as of data in Nepal, only three commercial banks Standard chartered Bank, NSBL and HBL were taken for the study.
- This study concentrates only on Impact of Capital Adequacy and Cost to Income on Profitability of Commercial Banks in Nepal and ignores the other financial aspects.
- This study is based on co-relation and multiple regression method of analysis and using secondary data of selected commercial bank so other research design and primary data is not taken into consideration.
- Only secondary data are used and the whole study is limited to the past 10 years from 2012/2013 to 2022/23.
- This study only focused on banks specific variables such as Capital Adequacy, Cost to Income, Equity to Total Assets, Debt to Equity, Liquidity and Bank Size so, other variable are not focus for the study.
- This study used purposive sampling method

CHAPTER: II

LITERATURE REVIEW

A literature review is a search and evaluation of the available literature that is related and relevant to a specific subject or topic under study. It describes the state of the art in relation to the topic or subject of study. A well-documented review demonstrates to the reader that the researcher had a thorough knowledge and understanding of the subject matter. As a result, literary reviews have become an essential component of every research project. It reviews the available literature, synthesizes the information into a summary, critically analyses the data gathered, and presents it in an organized manner. This chapter examines other people's writings on the impact of capital adequacy and cost income ratio on the profitability of commercial banks in papers, journals, books, and websites in order to consider the critical points of current knowledge, including substantive findings as well as theoretical and methodological contributions to this specific topic. It includes a review of works, research gaps, and theoretical frameworks. The primary goal of this chapter is to discover what work has been done in the area of research problem under investigation. To better understand the users of this research work, the literary results have been structured as follows:

2.1 Theoretical review

Theoretical review is the part of literature review that helps to determine what theories are currently in exist along with their relationship and the extent to which those theories have been part of research or investigated. It helps in developing and testing new hypotheses. The main objective of this review is to examine the body of theory that has accumulated in relation to an issue, concept, theory, or phenomenon. This type of research is used to find the gaps between recent theories and emerging research problems. The unit of analysis can be a specific theoretical concept or an entire theory or framework (University of Southern California, 2024).

2.1.1 Capital Adequacy and Capital Adequacy Ratio

Capital adequacy refers to the statutory minimum reserve of capital that banks and financial institutions must have available. As a result, all banks and financial institutions must adhere to the NRB's minimum capital requirements. The minimum

amount of capital a bank must hold to operate its business, seize profitable expansion possibilities, absorb losses, and maintain its customers' confidence in it is known as capital adequacy (Siddika & Haron, 2019). The minimum capital requirement refers to the amount of capital that banks must keep on hand to comply with financial regulations. Banks face a variety of risks when granting loans and advances to various sectors. Banks must have sufficient capital to absorb any losses incurred during their business. If banks have sufficient capital, they can protect their depositors from unforeseen circumstances while also promoting the stability and efficiency of financial systems. Tier I and Tier II capital are the two components of capital mentioned in the NRB capital adequacy framework 2007. Tier I capital includes paid-up capital (ordinary shares), statutory reserves, and disclosed free reserves, Perpetual Non-cumulative Preference Shares (PNCPS) subject to applicable laws, Innovative Perpetual Debt Instruments (IPDI), and capital reserves representing surplus arising from asset sale proceeds. It is referred to as the core capital, which absorbs losses without requiring a bank to cease trading, thus providing more protection to its depositors. Tier II capital consists of undisclosed reserves, revaluation reserves, general provisions and loss reserves, hybrid capital instruments, subordinated debt, and an investment reserve account. It is the supplementary capital that absorbs losses in a liquidation, providing depositors with a lower level of protection. Tier II items qualify as regulatory capital to the extent that they absorb losses resulting from the bank's operations. Aside from this, there is another key component of capital known as Tier III Capital. To be classified as Tier III capital, it must have a minimum maturity of two years, assets must be limited to 250% of a bank's Tier I capital and be unsecure. This is designed to cover a portion of market risk, such as changes in interest rates, exchange rates, equity prices, commodity prices, etc. (Fatima, 2014).

The capital adequacy ratio shields banks from excessive leverage and insolvency, keeping them out of trouble. It is defined as the ratio of a bank's capital to its current liabilities and risk-weighted assets. Based on the research of Abba, Peter at al., (2013), the capital adequacy ratio is crucial for assessing the "safety and soundness" of banks and depository institutions. It acts as a buffer against losses. It has become a key benchmark for financial institutions. The capital adequacy ratio is a key concept in banking that compares a bank's capital to its risk-weighted credit exposur

Modigliani-Miller Theorem (M&M)

Chen (2022) writes in Investopedia, the Modigliani-Miller theorem (M&M) states that a company's market value is correctly calculated as the present value of its future earnings and underlying assets, regardless of its capital structure. Merton Miller, one of the two originators of the theorem, explains the concept behind the theory with an analogy in his book, "Financial Innovations and Market Volatility". According to the Modigliani-Miller theorem, a company's capital structure does not affect its value. According to the theorem, market value is determined by the present value of expected future earnings. The theorem has had a significant impact since its introduction in the 1950s. Brusov et al. (2021) in their article states that Modigliani and Miller (M&M) pioneered capital structure theory. Under the assumption of perfect markets, a firm's value is not affected by its capital mix. This suggests that regulators should not set adequate capital levels.

2.1.2 Cost-Income Ratio

Non-interest costs, excluding bad debts and doubtful debts expenses, divided by the total of net interest income and non-interest income gives cost to income ratio (Tripe, 1998). Burger and Moormann (2008), on their article “Productivity in banks: myths & truths of the cost income ratio” argues that the cost income ratio compares a bank's administrative expenses and operating income. CIR measures a bank's output in relation to its input. . The cost/income ratio is the proportion of operating expenses to operating income. It is a measure of how costs change in relation to income. It is oneof the most important key performances indicators, the higher the ratio, the more efficient the bank.

2.1.3 Profitability

Profitability refers to a company's ability to generate revenue. This is a crucial step towards increasing shareholder wealth and generating value for the bank (Goet, 2022). Based on the research of Toshniwal (2016), profitability can be defined as the ability to earn a return from the use of investment. The banking sector's profitability can be measured through various indicators, such as Return on Assets (ROA) and Return on Equity (ROE). ROA is the primary measure used to evaluate bank profitability (Chalise, 2019; Golin, 2001). Albulescu (2015) on his article “Banks’

Profitability and Financial Soundness Indicators: A Macro Level Investigation in Emerging Countries" concluded that Bank profitability is positively influenced by capitalization, liquidity, and interest rate margins, while negatively impacted by nonperforming loans and non-interest expenses. The findings are consistent regardless of whether profitability is measured using the ROA or ROE. To improve profitability, banks should priorities loan quality. Increased capitalization and liquidity have a positive impact on profitability, despite potential dual effects. A well-capitalized banking sector is reportedly profitable.

2.1.4 Agency Theory

As exposited by Alchian and Demsetz (1972) and further supported by Jensen and Meckling (1976) the Agency theory has its foundation in the Economic Theory. This theory has its focus mostly on the division of proprietorship and power (Fama, 1983). It further illustrates the connection between shareholders (the principals), company executives (the agents) and the managers. According to the notion, a division of ownership and control takes place since the principals usually give the agents decision-making authority. Potential conflicts of interest may arise from this separation, leading agents to behave in ways that serve their own interests rather than those of the principals. as argued by Eisenhardt (1989). Problems arise in the agency when the agents decide to take part in decision making without the knowledge of principals. For instance, in the cases of Adelphia, Enron, WorldCom and Parmalat whereby the agents decided to keep information to themselves and run the companies on their own which eventually resulted in Agency problems. Jensen and Meckling (1976) argued that the Agency problem is involved with the managers taking advantage of the firms building on their own. According to Daily et al. (2003), the two main aspects affect agency theory success. The first and simple one is the one that leaves a firm to be run by the managers and shareholders while the second one reduces the managers and employees in a firm to be selfish. The cure to agency problems in corporate governance requires both the executives and the shareholders to share the same interests. In short, the agency theory tries to explain the major responsibility of corporate governance to simplify compliance by ensuring that the executives compensate their risks through the best means possible (Daily et al., 2003)

2.1.5 Resource Dependency Theory

The resource dependency theory was developed by Pfeffer (1973) and Pfeffer and Salancik (1978) it highlights the responsibilities by the board of directors (BODs) in ensuring that there is easy access of resources that eventually leads to the good performance of firms. Through the easy access of resources, the board improves organizational performance through easy access to the environment to natural resources and ensure buffers are created against hostile external changes (Daily et al., 2003) According to Farooqi and Ngo (2014) there are four categories of directors of a company; the insiders (they are executives either former members or current members that give advice to the company directors), experts in business (they provide advice on business strategies), specialists in support systems (lawyers, firmer, insurance company representatives that provide support in their individual specialized field) and the community at large (political leaders, university faculty, members of clergy, and leaders of social or community organizations)

2.1.6 Stewardship Theory

Stewardship Theory explains the role of managers to ensure that the main goals are achieved by doing hard tasks thus their inspiration overcomes simple financial concerns. This theory emphasizes on the principals need to act harder to increase the profits of the shareholders. Also, managers need power and desire respect from their colleagues, friends and their bosses so as to perform their duties effectively. Therefore, the shareholders also need to empower the managers through governance organization systems, power and information to empower the managers' independence, trust building and to take decisions that matter in their capability to achieve their main goal objectives (Donaldson & Davis, 1991). In comparison with the Agency theory, Stewardship theory insists on the responsibilities of directors as the stewards who control all the activities of an organization. (Daily et al. 2003) contends that executives and directors ensure that the organization is effectively run to ensure that financial performance is well enhanced. Managers are required to increase the shareholders benefits and to create a good name to ensure they hold to their positions in the firms (Farouk & Hassan, 2014).

2.1.7 Stakeholder Theory

The stakeholder theory emphasizes on the importance of employees, shareholders, suppliers, business partners and contractors and their relationship with the managers. The stakeholder theory was developed by Harrison and Freeman in 1999. This theory varies with the agency theory that emphasizes that there exists a relationship between managers and shareholders where the managers have the greatest role to play in increasing the wealth of the shareholder. In this theory, the managers' actions seem to affect other parties interested in the organization activities rather that affecting the shareholders. This theory insists on managers being answerable in all angles to the stakeholders. Harrison and Freeman (1999) argued that a stakeholder is either one person or a group of individuals who have an effect or is affected by the success of a firm's main goal. So as to effectively attain the main goals of a company, the stakeholder theory ensures that safety of stakeholders is adequate, consensus building is ensured, conflicts are avoided and harmony is emphasized (Donaldson & Davis, 1991). The stakeholders' theory has been condemned for over empowering the managers with being responsible over the stakeholders without following procedures in ensuring that conflict of interest is solved effectively. Although Harrison and Freeman (1999) argue that some relations with some parties can affect the decision-making process, as the theory is mostly concerned with the effects and results of the company and its stakeholders.

According to Donaldson & Davis (1991) the stakeholder theory reflects on the decisions of the managers and the interests of the stakeholders and continues to emphasize that none of the interests is supposed to overpower the other. Therefore, the managers are supposed to make sure they also consider other parties' interests especially those who are affected in one way or another by the activities and operations of the firm (Fatima, 2014). She also argues that the managers should put the interests of the stakeholders first and ensure that the main goal of the company promotes long term value. Throughout the years, the idea of earnings management has raised genuine worries among financial market controllers, financial administrators, speculators and academic researchers; as reflected in one of the talks of the previous U.S Security and Exchange Commission Chairman in 2002. Moreover, this idea has kept on accepting consideration because of the arrangement

of corporate disappointments in both developed and developing economies. This pattern has constantly increased the questions in the stakeholders' minds on the reliability and dependability of financial report. The significance joined to accounting earnings by stakeholders of any given association can't be over accentuated as the whole destiny of the association and its stakeholders rely upon it. Moreover, accounting as a field additionally has a stake to ensure, attributable to the way that earnings are the last result of the entire accounting process. Earnings management expresses a wide cluster of accounting systems used by management to accomplish a particular earnings objective. While there exists no single acknowledged meaning of earnings management, accounting literature gives different portrayals of the training. Albrecht (2006) depicted it as a ponder intercession in the outer financial revealing procedure, with the plan of acquiring some private additions. Smith and Johnson (2018) investigate how managers may overstate financial results or mislead stakeholders by using GAAP discretion to control earnings. They talk about the moral ramifications of these actions as well as how they affect investor opinions. The paper also looks at how the regulatory environment influences financial reporting and guarantees corporate governance openness.

2.2 Review of Regulatory Framework

Prior to 1988, there was no international regulatory standard for determining bank capital requirements. In 1988, the Basel Committee on Banking Supervision (BCBS) created the Capital Accord, also known as Basel I, to align capital adequacy requirements for banks in the G-10 countries. Basel I introduced two major concepts. First, it defined what banks could hold as capital and classified it as Tier 1 or Tier 2 based on its loss-absorbing or creditor-protecting characteristics. Basel I introduced the concept of banks holding capital based on their risk exposure.

In 2004, the BCBS released the "International Convergence of Capital Measurements and Capital Standards: Revised Framework," also known as Basel II. The framework was updated in 2005, and a comprehensive version was released in 2006. The BCBS' capital accord recommendations serve as a framework for the banking industry's regulatory capital requirements, based on the three pillars of the Basel II framework. Basel II strengthens Basel I by making capital more sensitive to key bank risks.

Basel III aims to strengthen global capital and liquidity rules to promote resilience in the banking sector. The Basel III rules, published by the BCBS in 2010, added macro-prudential elements to the capital framework to mitigate systemic risks caused by procyclicality and interconnected financial institutions. It also implemented micro-prudential measures like liquidity standards, improved capital quality and quantity, and leverage ratio regulation. The new accord improves standards for Pillar 2 (supervisory review processes) and strengthens Pillar 3 (disclosures). Basel III implementation timetables and action plans have been announced or are being prepared in most countries, including major Asian ones

2.3 Empirical Review

Empirical research draws conclusions based on observations and measurements rather than theories or beliefs. To answer specific research questions, it may involves making a list of the people, behaviors, or events being studied. This research will use an empirical study to develop methods and solve problems based on relevant previous studies.

2.3.1 Review of International articles and journals

Dessie and Lambamo (2023) conducted research on "Profitability Determinants of Commercial Banks in Ethiopia," with the main objective of investigating the determinants of profitability of commercial banks in Ethiopia. The data analysis method used in this study was a panel data regression model. The main findings using random effect Panel regression revealed that return on equity, capital adequacy, liquidity, foreign exchange rate, and GDP all have a negative and statistically significant impact on banks' return on equity.

Al-Sharkas and Al-Sharkas (2022) examined the impact of capital adequacy ratios on bank profitability in Jordan, using static panel data for 24 banks from 2008-2018. The goal is to determine the impact of capital adequacy ratios and other bank-specific variables on bank profitability, as measured by ROA and ROE. The study found a negative correlation between ROA and all four capital adequacy ratios. However, when ROE is used as a proxy for bank profitability, mixed results emerge. Both the core and total capital to risk-weighted assets ratios have a positive impact on ROE. In contrast, the core capital to total assets ratio and the total equity capital to total assets

ratio have a negative impact on ROE. It could be argued that the most important finding in this paper is that the impact on bank profitability varies depending on the proxy used for capital adequacy. Furthermore, the cost-income ratio has an inverse relationship with both bank profitability measures, as does the non-performing loan ratio.

Jadhav et al. (2021) study on the impact of capital adequacy ratios on the profitability of private sector banks in India found that increasing capital adequacy led to increased profitability and return on assets. The study found that maintaining high capital adequacy is not enough to ensure high profitability for banks. Bank regulators should also prioritise strategic monitoring and regular evaluations to maintain financial strength and stability, leading to improved overall performance.

With the implementation of linear regression techniques, Almazari (2013) analyses the capital adequacy, cost income ratio, and performance of Saudi banks from 2007 to 2011. The study shows a significant correlation between capital adequacy, cost-income ratio, and bank size and profitability. This study found a negative correlation between profitability (measured by return on assets and equity) and capital adequacy. The cost-income ratio indicates a negative correlation between Saudi banks' efficiency and profitability. Capital adequacy improves bank profitability and lowers the costs of financial distress, such as bankruptcy.

Gul et al. (2011) examined the relationship between bank-specific and macroeconomic characteristics and bank profitability using data from the top fifteen Pakistani commercial banks from 2005 to 2009. They used the pooled Ordinary Least Squares (POLS) method to look into the impact of assets, loans, equity, deposits, economic growth, inflation, and market capitalization on major profitability indicators such as return on asset (ROA), return on equity (ROE), return on capital employed (ROCE), and net interest margin (NIM). In order to analyze bank profitability over particular determinants, they developed two hypotheses. Hypothesis 1 contends that microeconomic factors significantly affect profitability. Hypothesis 2 contends that the profitability of the banks is significantly impacted by external factors. The outcome demonstrates that both theories are valid and significantly affect the bank's profitability.

Mathuva (2009) conducted research on "Capital Adequacy, Cost Income Ratio, and the Performance of Commercial Banks: The Kenyan Scenario" and concluded that bank profitability is positively related to the core capital ratio and the tier 1 risk-based capital ratio. This implies that increasing capital can boost expected earnings by lowering the expected costs of financial distress, including bankruptcy. Similarly, the study shows that there is a negative relationship between the equity capital ratio and profitability. The study shows that the CIR is inversely related to both bank profitability measures.

Sufian and Chong (2008) investigate the factors influencing Philippine bank profitability between 1990 and 2005. They found that all of the bank-specific determinant variables have a statistically significant impact on bank profit. The result shows that, size, credit risk, and expense preference behavior all have a negative impact on bank profitability, whereas non-interest income and capitalization do so positively. During the study period, the findings indicates that inflation has a negative impact on bank profitability, while the effects of economic growth, money supply, and stock market capitalization have not significantly explained variations in bank profitability.

Table 1

Summary of review of articles and journals

SN	**Date**	**Topic**	**Author**	**Objectives**	**Methodology**	**Findings**
1	2024	The impact of capital adequacy on profitability of commercial banks in Nepal.	Kunjeda	To determine the effect of capital adequacy on the profitability of selected commercial banks in	Regression analysis.	The findings indicate a complex relationship between capital adequacy and profitability indicators, with ROE NPM showing a slightly higher positive correlation than ROA.

				Nepal.		
2	2023	Profitability determinants of commercial banks in Ethiopia	Dessie and Lambamo	To determine the profitability of commercial banks in Ethiopia	Panel data regression model	Results using random effect panel regression exhibited that, return on equity, capital adequacy, liquidity, foreign exchange rate, and gross domestic product have a negative and statistically significant effect on bank's return on equity.
3	2022	The impact of capital adequacy ratios on bank profitability in Jordan.	AI-sharkas and AI-shark's	Examine the impact of capital adequacy ratios on bank profitability in Jordan.	Correlation and regression analysis	The most important findings in this paper are that the impact on bank profitability varies depending on the proxy used for capital adequacy.

4	2021	Capital adequacy ratios on the profitability of private sector banks in India	Jadhav, Kathale, & Rajpurohit	TO examine the relationship between capital adequacy ratios (CARs) and the profitability of private sector banks in India.	Correlation analysis and multiple regression analysis	The study emphasizes the importance of robust regulatory oversight. Regular evaluations and strategic monitoring can help banks maintain financial strength and stability, ultimately leading to improved overall performance.
5	2021	Effects of credit risk on profitability of commercial banks in Afghanistan.	Rasa	To investigate the factors affecting the profitability of commercial banks in Afghanistan.	Correlation analysis and multiple regression analysis.	The most controversial result comes up with the negative relationship between CAR and profitability indicators as well as the positive association between credit risk and banking profitability.
6	2021	Impact of liquidity management on the financial performance of quoted deposit money	Bassey	To analyze the liquidity management on the financial performance of quoted deposit money banks	Correlation analysis and multiple regression analysis.	Finding the credit approved and non-performing loans significantly influences return on investments both in the short and long run.

		banks in Nigeria.		in Nigeria.		
7	2021	Profitability in Commercial Bank – A Case from Nepal	Mishra & Aithal	To determine the impact of various factors on profitability	Correlation and regression analysis	there is a positive correlation with bank size and inflation and a negative correlation between ROA and ROE with loan ratio, deposit ratio, and capital ratio. NIM, bank size, loan ratio, deposit ratio, and inflation show positive relationships, but the capital ratio has a negative relationship
8	2020	Financial Performance Analysis of Nepalese Financial Institutions in the Framework of CAMEL	Gautam	To investigate the financial performance and variables influencing the financial	Descriptive and pooled regression analysis	ROA has a positive correlation with capital adequacy and ROE, but a negative correlation with asset quality. ROE correlates positively with asset quality and ROA, but negatively with capital adequacy.

9	2020	Impact of credit risk on the financial performance of banks in Africa.	Munangi & Sibindi	To examine the liquidity, activity, profitability and risk position of sample banks Africa.	Correlation analysis and multiple regression analysis.	The result of the current studies are inconclusive between bank leverage and financial performance. Bank leverage and ROA have a negative and significant relationship, yet positive but insignificant ROE.
10	2020	Determinants of Capital Adequacy Ratio of Commercial Banks in Nepal	Bhattarai	To determinants of Capital Adequacy Ratio of Commercial Banks in Nepal	Correlation and regression analysis of secondary balance panel data	liquidity had a positive and statistically significant impact on capital adequacy ratio, but bank size has significant negative results and inflation rate and profitability, asset quality, credit risk, management quality, and GDP growth had no impact on the capital adequacy ratio.

11	2019	The Impact of Capital Adequacy and Cost-Income Ratio on Performance of Nepalese Commercial Banks	Chalise	To determine the Impact of Capital Adequacy and Cost-Income Ratio on Performance of Nepalese Commercial Banks	Correlation and regression analysis	bank performance was negatively impacted by the cost-income ratio, (ROA) was negatively impacted by total capital adequacy and positively impacted by the debt-to-equity ratio, bank size, and equity ratio
12	2013	Analysis the capital adequacy, cost income ratio, and performance of Saudi banks	Almazari	To determine the capital adequacy, cost income ratio, and performance of Saudi banks.	Panel data regression model.	Capital adequacy improves bank profitability and lowers the costs of financial distress, such as bankruptcy
13	2009	Capital adequacy, cost income ratio, and the performance of commercial banks.	Mathuva	To examine the capital adequacy, cost income ratio, and the performance of commercial banks.	Correlation analysis and multiple regression analysis	The study shows that the CIR is inversely related to both bank profitability measures.
14	2008	The factors influencing	Sufian and	Investigate the factors	Correlation and regression	The findings indicates that inflation has a

		Philippine bank profitability.	chong	influencing Philippine bank profitability.	analysis	negative impact on bank profitability, while the effects of economic growth, money supply, and stock market capitalization have not significantly explained variations in bank profitability.
15	1992	Determinants of European bank profitability.	Molyneux and Thornton's	To determine the European bank profitability.	Correlation analysis.	The study found a statistically significant inverse relationship between return on capital and government ownership, as well as a statistically significant positive relationship, indicating that state-owned banks outperform private sector competitors in terms of capital returns.

2.3.2 Review of Literature in Nepalese Context

Kunjeda (2024) studied the impact of capital adequacy on profitability of commercial banks in Nepal. The primary goal of this study was to determine the effect of capital adequacy on the profitability of selected commercial banks in Nepal. It measured and evaluated the capital adequacy and profitability ratios of selected Nepalese commercial banks using descriptive and casual comparative research designs, with a sample of one government-owned bank and one private sector bank in Nepal. The

investigation revealed varying correlation levels between ROE, ROA, NPM, and capital adequacy variables. ROE and NPM showed a weak positive correlation with capital adequacy variables (CCR, SCR, and CAR), but ROA showed a weak negative correlation. The findings indicate a complex relationship between capital adequacy and profitability indicators, with ROE and NPM showing a slightly higher positive correlation than ROA. The regression analysis revealed that capital adequacy had no significant impact on profitability based on the studied data and variables.

Goet (2022) investigated the impact of several bank-specific factors, such as capital sufficiency, on the profitability of Nepali listed commercial banks. According to this study, there is a significant correlation between net profit and shareholders' equity, total capital, tire 1 capital, loan and advance, but not with tier 2 capital. Research indicates that the credit deposit ratio significantly affects return on assets, while other factors do not. The shareholders' equity ratio and capital adequacy ratio have a significant impact on bank return on equity, while the credit deposit ratio does not.

Bhattarai (2021) conducted a study on "Capital Adequacy Ratio and Financial Performance of Commercial Banks in Nepal" using a descriptive and casual comparative research design. The study measured the impact of capital adequacy ratios (core, supplementary, and total capital fund ratios), financial performance (return on assets and return on equity), and their relationship. This study found that return on equity is highly scattered compared to return on assets. Supplementary capital has a higher spread than core capital ratio. Return on assets has a low positive correlation with core and supplementary capital ratios. Return on equity has a low positive correlation with supplementary capital but a low inverse correlation with core capital. Core capital ratio and total capital fund ratio have a positive impact on return on assets and return on equity.

Mishra and Aithal (2021) found that there is a positive correlation with bank size and inflation and a negative correlation between ROA and ROE with loan ratio, deposit ratio, and capital ratio. On the other hand, when it comes to NIM, bank size, loan ratio, deposit ratio, and inflation all show positive relationships, but the capital ratio has a negative relationship in their study "Profitability in Commercial Bank – A Case from Nepal."

Based on secondary balance panel data, Bhattarai (2020) concluded in his article "Determinants of Capital Adequacy Ratio of Commercial Banks in Nepal" that liquidity had a positive and statistically significant impact on capital adequacy ratio. In a similar vein, there are statistically significant negative results for bank size and inflation rate. The other factors like profitability, asset quality, credit risk, management quality, and GDP growth had no impact on the capital adequacy ratio. The study concluded that the main factors influencing Nepal's capital adequacy ratio are inflation, bank size, and liquidity.

Descriptive and pooled regression analysis were used by Gautam (2020) in his article "Financial Performance Analysis of Nepalese Financial Institutions in the Framework of CAMEL" to investigate the financial performance and variables influencing the financial performance of Nepalese financial depositary institutions within the framework of CAMEL. He discovered that descriptive analysis demonstrates that financial institutions in every category satisfy the NRB's capital adequacy standard. Finance companies rank first in terms of capital adequacy and earnings; development banks rank first in terms of asset quality; and commercial banks rank first in terms of management effectiveness. Compared to other financial institutions of the same class, finance companies store a lot of liquidity. On the other hand, the regression analysis revealed that return on assets (ROA) has a positive correlation with capital adequacy and ROE, but a negative correlation with asset quality. Return on equity (ROE) correlates positively with asset quality and ROA, but negatively with capital adequacy. He concluded that financial institutions could maximize ROA and ROE by ensuring adequate capital and asset quality.

The results of Chalise (2019) study, "The Impact of Capital Adequacy and Cost-Income Ratio on Performance of Nepalese Commercial Banks," showed that the bank performance was negatively impacted by the cost-income ratio, and the bank performance (ROA) was negatively impacted by total capital adequacy. In contrast, the bank performance was positively impacted by the debt-to-equity ratio, bank size, and equity ratio, indicating that the higher the equity ratio, the higher the bank performance. The study's findings indicate that cost income and capital sufficiency have a detrimental effect on bank performance.

Bam et al. (2015) investigated the determinants of profitability in Nepalese commercial banks in their study "Determinants of Profitability of Commercial Banks in Nepal". The study utilized ROA and ROE as dependent variables, with firm-specific variables such as equity to total assets (EQTQ), loan to total assets ratio (LOTA), deposit to total assets (DETA), loan loss provision to total assets (PRTO), and non-interest expenses to total assets (NETA), as well as macro-economic variables such as GDP growth rate, inflation, and financial structural variables like banking sector size (SIBS) as independent variables. They discovered that the dependent variable ROA has a positive but poor relationship with the bank-specific variables LOTA, NETA, and PRTO. There was a positive and strong relationship between bank-specific and variable DETA and ROA (0.920). Similarly, there was a negative and weak relationship between ROA and macroeconomic variables (GDP growth rate, inflation rate), implying that higher GDP growth rates and higher inflation rates reduced the bank's ROA. LOTA and EQTA are only significantly related to ROA. The other independent variables had a poor and insignificant relationship with the dependent variable ROA. The results of the regression analysis indicated that all bank-specific variables like EQTA, DETA, NETA, PRTO, and LOTA had a positive impact on ROA; however, only DETA and EQTA were significant at the 1% level of significance. There was a negative and negligible correlation between the ROA and the other variables, GDP, INFL, and SIBS. The equity to total assets ratio (EQTA) has a positive impact on ROA but a negative impact on ROE. Its beta coefficients are also noteworthy. The loan to total asset ratio (LOTA) has an adverse effect on both ROE and ROA.

2.4 Research Gap

Numerous experts, researchers, and students have undertaken several studies regarding the effects of cost to income and capital adequacy on the profitability of commercial banks in Nepal. They conducted research on the effects of cost to income and capital adequacy on the profitability of commercial banks in Nepal among public and financial enterprises. Between the current study and earlier research, there is a research gap in terms of time and in the sample banks as well as fiscal years. Numerous tools, some of which were not used in earlier research, are included in this study, including multiple regression analysis, ratio analysis, correlation analysis, and

coefficient of variation. Regression analysis was used in this study to determine how capital adequacy and cost to income related activities affect bank profit. Additionally, efforts were made to address capital adequacy, cost to income, and equity to total assets, debt to equity, liquidity, and bank size all of which were not covered in earlier research on the subject.

In the Nepalese context, there are very few literatures which have analyzed the impact of capital adequacy and cost to income on profitability of commercial banks in Nepal and fewer literatures analyzing the impact of capital adequacy and cost to income on profitability of commercial banks. Chalise (2013) in his article to analyses the impact of capital adequacy and cost to income on profitability of commercial banks in Nepal. There are many literatures that Impact of capital adequacy and cost to income on profitability of commercial banks in Nepal and there is literature focused on finding the determinants of profitability of banks in Nepal however, literatures evaluating the impact of capital adequacy and cost to income on profitability of commercial banks in Nepal especially profit efficiency is very few. This paper aims to fill this research gap and find out the Impact of capital adequacy and cost to income on profitability of commercial banks in Nepal.

CHAPTER: III

RESEARCH METHODOLOGY

Research methodology lays out the general plan for the study and is a methodical approach to problem solving. It is a science that studies the best ways to conduct research. Research methodology basically refers to the processes that scientists use to go through their work of explaining, clarifying, and predicting phenomena. The study methodology must be explained before the analysis and interpretation of the data are presented. Without a methodology, the study is probably proceeding without a plan, and the conclusions made could be interpreted incorrectly.

This chapter, which is broken down into five sections, describes the methodology used in this study. The study plan and research design are described in section one; the nature and sources of data are covered in section two; the population, sample, and bank selection are described in section three; the data collection process is covered in section four; and the data analysis tools are presented in section five.

3.1 Research Design

A research design is a comprehensive combination of previously identified elements and any other information or data that leads to a reasonable end result. To arrive at an error-free, authentic conclusion, the research design must adhere to a pre-planned, well-thought-out methodology that is appropriate for the pre-selected research type. A Research Design provides a researcher with a well-structured, objective study plan that allows him or her to efficiently assess the causes and effects of various dependent and independent variables. The causal comparative research designs were used with the study's objectives in mind. A variety of financial tools were used to analyze collected data and achieve the study's objectives.

Descriptive research describes the characteristics of the population or phenomenon under study. It helps to gain deeper understanding of what the population or phenomenon is rather than why or how it takes place. In this method variables aren´t controlled and the data collected and analyzed through this method can be further researched using different techniques taking the form of cross-sectional study. Similarly, causal-comparative research attempts to determine the cause or

consequences and attempt to establish a cause-and-effect relationship between two or more variables.

Depending on their nature, the data gathered from financial statements, annual reports, and other sources of information were processed, tabulated, and displayed in a variety of tables and charts under distinct headings. Regression analysis and other measures of association were used to determine the relationship between variables, which aids analysis in understanding how capital adequacy and cost to income affect the profitability of commercial banks in Nepal. The topic is not a unique one, but the concept and objectives is new. This research will also attempt to explore the factors and realities on impact of capital adequacy and cost income ratio on profitability of commercial banks of Nepal.

3.2 Population and Sample and Sample Design

At present there are 20 licensed commercial banks running in Nepal. All the data of 20 commercial bank would be huge so for this study three commercial bank are taken as sample. This sample is taken covering 15 % of the population as sample calculation assembles of random sampling methods of selected commercial banks. Commercial banks which are operated now in Nepal comprises the population whereas three commercial banks including as listed below: Standard charted Bank Limited, Nepal SBI Bank Limited and Himalayan Bank Limited were the sample for the study. The study covers 10 years data from 2012/13 to 2022/23.

3.3 Nature and Source of Data

The study was fully based on secondary data as the commercial bank does not provide full internal information. The secondary data were collected from different sources like UN Document, ADB and World Bank status, books, websites, publications, journals, magazines and others of various commercial banks of Nepal. Quantitative nature of data was used for conducting the study. The secondary sources of data were: the annual reports and web sites of Standard charted Bank Limited, Nepal SBI Bank Limited and Himalayan Bank Limited as they were the sample for the study. Beside this, number of institutions and regulatory authorities like Nepal Rastra Bank, Nepal Stock Exchange, and Security Exchange Board of Nepal and from different related websites were used to collect the required content and data.

3.4 Methods of Analysis

Numerous financial, statistical, and accounting tools were employed in this study in order to meet its goal. Several statistical and accounting techniques has been employed in the data analysis, which has been carried out in accordance with the patterns of data that are currently available. The diverse calculated outcomes derived from accounting, financial, and statistical instruments were arranged under distinct categories. Afterwards, the outcomes were interpreted through comparative analysis. To make the study more specific and reliable, the two types of tools are used for analysis which were financial and statistical tools. Descriptive statistic, correlation analysis and multiple regression were used to summarize data, examine relationship and determine impact respectively.

3.4.1 Financial Tools

Financial tools were used to highlight a company's relative advantages and disadvantages when compared to other businesses in the same sector and to indicate whether the company's financial situation has been getting better or worse over time. Consequently, one can evaluate the efficiency between variables using the efficiency ratio. We had computed financial metrics like the ROA and ROE efficiency ratio.

3.4.2 Descriptive Statistical Tools

Some important statistical tools are used to achieve the objective of the study. In this study, statistical tools such as mean, standard deviation, coefficient of Variation, correlation, regression analysis were used. The variables' minimum, maximum, mean, and standard deviation from the sampled commercial banks were found, presented, and analyzed in accordance with the descriptive statistics in this study. The arithmetical average of the variables included in this study was reported by the mean value. A point that was most representative of the data was provided by an average. The variable's lowest and highest values were indicated by the minimum and maximum values. Each variable's variability or diversity within the data set was displayed by the standard deviation. High standard deviation values indicate that the data set is spread out over a wide range of values, whereas small standard deviation values indicate that the data points are inclined to be very close to the mean.

Mean is calculated using formula: $(\overline{X}) = \frac{\sum x}{n}$

Where,

$\overline{X}$ = Arithmetic mean

$\sum x$ = Sum of given Observation "n"

n = Total number of observations

Standard Deviation is calculated using formula:

$$S.D = \sqrt{\frac{\sum(X-\overline{X})^2}{n-1}}$$

Where,

S.D = Standard Deviation

$(X - \overline{X})$ = Difference from mean

N = Total number of observations

Coefficient of Variation is calculated using formula:

$$C.V = \frac{\sigma}{\overline{X}} \times 100$$

Where,

C.V = Coefficient of Variation

σ = Standard Deviation

$\overline{X}$ = Arithmetic mean

3.4.3 Analytical Statistics

In this study, Karl Pearson's Correlation Coefficient, coefficient of determination and multiple regression Coefficient was used as analytical statistics.

Karl Pearson's Correlation Coefficient

Karl Pearson's Correlation Coefficient measures the relation between two or more variables. This is most widely used bivariate correlation statistic. The correlation coefficient between two variables can range from +1 to -1, indicating a perfect

positive and perfect negative relationship. Two variables are said to have correlation when the value of one variable is accompanied by the change in the value of the other. Therefore, it is measured by following formula using two variables.

$$\text{Correlation Coefficient (r)} = \frac{n\sum XY - \sum X \sum Y}{\left[n\sum X^2 - (\sum X)^2\right]\left[n\sum Y^2 - (\sum Y)^2\right]}$$

Where,

r = Correlation Coefficient

$\sum XY$ = Sum of product of two series "X" and "Y"

$\sum X^2$= Sum of square in series "X"

$\sum Y^2$= Sum of square in series "Y"

n = Total number of observations

Coefficient of Determination

It measures the proportion or percentage or fraction or amount of the total variation in dependent variable explained by explanatory variable. It provides an overall measure of extent to which the variation in one variable determines the variation in others. The value of coefficient determination ranges from 0 – 1. If r^2 = 1, it means perfect fit and in case of zero, it means no relation between dependent and explanatory variable. It is calculated using formula:

$$\text{Coefficient of determination } (r^2) = \frac{\text{Explained Variation}}{\text{Total Variation}}$$

Multiple Regression Analysis

Multiple linear regression seeks to model the relationship between two or more explanatory variables and a response variable by fitting a linear equation to the observed data. Each independent variable X value corresponds to a dependent variable Y value. This study used return on equity (ROE) and return on assets (ROA) (dependent variables) to measure profitability, and other predictors (independent variables) were chosen for analysis. These variables are bank-specific: capital adequacy ratio (CAR), cost to income ratio (CIR), equity to total assets ratio (EAR),

debt to equity ratio (DER), liquidity ratio (LR), and bank size (BS). Regression Equation for dependent variable:

ROE: $Y1 = \beta0 + \beta1X1 + \beta2X2 + \beta3X3 + \beta4X4 + \beta5X5 + \beta6X6 + e$

ROA: $Y2 = \beta0 + \beta1Y1 + \beta2Y2 + \beta3Y3 + \beta4Y4 + \beta5Y5 + \beta6Y6 + e$

Where, Y = Dependent Variables i.e. ROA and ROE

β0 = Value of "Y" when all X1, X2, X3, X4, X5 and X6 are zero

β1 = Coefficient of Capital Adequacy Ratio (CAR)

β2 = Coefficient of Cost-income Ratio (CIR)

β3 = Coefficient of Equity to total Assets Ratio (EAR)

β4 = Coefficient of Debt-to-Equity Ratio (DER)

β5 = Coefficient of Liquidity Ratio (LR)

β6 = Coefficient of Bank Size (BS)

X1 = Capital Adequacy Ratio (CAR)

X2 = Cost-income Ratio (CIR)

X3 = Equity to total Assets Ratio (EAR)

X4 = Debt to Equity Ratio (DER)

X5 = Liquidity Ratio (LR)

X6 = Bank Size (BS)

e = Residual error or disturbance term of regression equation

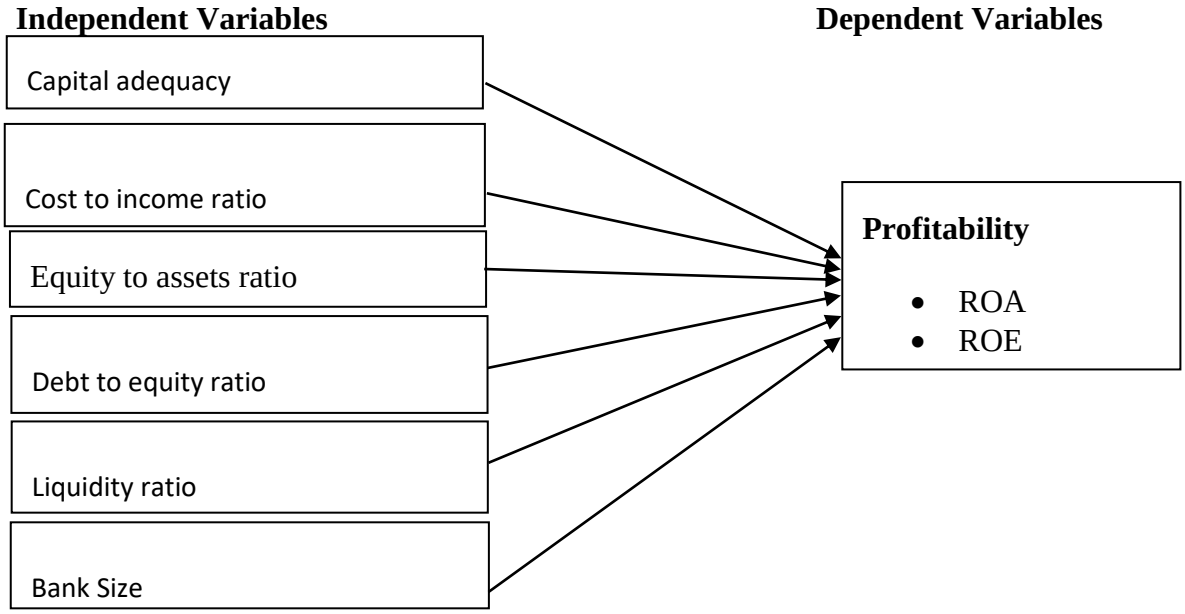
3.5 Research Framework

A conceptual model known as a research framework illustrates the connections between the various elements that have been determined to be significant to the issue at hand. It builds a scientific foundation pertaining to the hypotheses and theories and logically connects to the findings of earlier research. The relationship between the independent and dependent variables is presented. The logical management of variables by the research framework facilitates the testing of theoretical problems. The relationship between the independent and dependent variables that are found in

the research problems should be presented by the researcher. This relationship is developed based on the literature. A theoretical framework is necessary when conducting research because it identifies the variables, describes the relationship between two or more variables, and explains why such a relationship is expected. Based on a review of the key papers the following conceptual framework illustrates the relationship between dependent and independent variables. To investigate the relationship between the variables included in the framework, six research hypotheses were developed. The hypothesis determines whether there is a statistically significant positive relationship between variables.

Figure 1

Research Framework



Source: Pradhan and Parajuli (2017)

3.5.1 Definitions and Measurements of Variables

Variables are measured to show the relationship. There were two types of variables taken under study i.e. dependent variables and independent variables.

Dependent Variables

Dependent variables are those variables whose values are changed with the change in the values of independent variables. Under the study ROA and ROE were considered as dependent variables.

Return on Equity Ratio (ROE)

The amount of net income returned as a percentage of shareholders' equity is known as return on equity, or ROE. This ratio measures, how much profit is earned by utilizing funds of total equity by the firm Almazari (2013) founds negative correlation between ROE and capital adequacy. According to the study of Al-Sharkas and Al-Sharkas (2022), when ROE is used as a proxy for bank profitability, mixed results emerge. Both the core and total capital to risk-weighted assets ratios have a positive impact on ROE. In contrast, the core capital to total assets ratio and the total equity capital to total assets ratio have a negative impact on ROE. Kunjeda (2024) also examined weak positive correlation of ROE with capital adequacy variables (CCR, SCR, and CAR). Similarly, according to Bhattarai (2021), Return on equity has a low positive correlation with supplementary capital but a low inverse correlation with core capital. Core capital ratio and total capital fund ratio have a positive impact on return on assets and return on equity. Total shareholders' equity consists of preference share capital, ordinary share capital, share premium and reserve and surplus less accumulated losses. This ratio can be computed as Net profit after tax (NPAT) divided by average total shareholders' equity.

$$\text{Return on Euity Ratio (ROE)} = \frac{\text{Net Profit}}{\text{Total Shareholder's Equity}}$$

Return on Assets Ratio (ROA)

This ratio is related to net profit after tax (NPAT) and total assets. How efficiently is the assets of a firm able to generate more profit are measured using this ratio. The higher ratio is also shows that the bank could manage their overall operations, but the

lower ratio shows vice-versa. This ratio provides the foundation necessary for a company to deliver a good return on equity. Authors like Jadhav, Kathale, and Rajpurohit's (2021), Gautam (2020), Bhattarai (2021) etc founds positive relationship between ROA and capital adequacy. On the other hand, Chalise (2019), Kunjeda (2024), Al-Sharkas and Al-Sharkas (2022), Almazari (2013) etc found negative relationship between ROA and Capital adequacy ratios. This ratio is calculated by dividing NPAT by Total Assets.

$$\text{Return on Assets Ratio (ROA)} = \frac{\text{Net profit}}{\text{Total Assets}}$$

Independent Variables

Independent variables are those variables whose values remains constant in every situation and are not influenced by any other variables under study. These variables are controlled and manipulated under the experiment to study their effects.

Capital Adequacy Ratio (CAR)

Capital adequacy refers to the statutory minimum reserve of capital that banks and financial institutions must have available, result, all banks and financial institutions must adhere to the NRB's minimum capital requirements. The minimum amount of capital a bank must hold in order to operate its business, seize profitable expansion possibilities, absorb losses, and maintain its customers' confidence in it is known as capital adequacy (Siddika & Haron, 2020). The capital adequacy ratio shields banks from excessive leverage and insolvency, keeping them out of trouble. It is defined as the ratio of a bank's capital to its current liabilities and risk-weighted assets. Based on the research of Abba, Peter, and Inyang (2013), the capital adequacy ratio is crucial for assessing the "safety and soundness" of banks and depository institutions. Various studies conducted on impact of capital adequacy on profitability founds mixed result. Based on literature reviews, authors like Almazari (2013), Athanasoglou, Brissimis, and Delis (2008), Tan (2016) etc found positive impact of capital adequacy on profitability of commercial banks. On the other hand, authors like Dietrich and Wanzenried (2011), Goddard, Molyneux, and Wilson (2004) etc found negative impact of capital adequacy on profitability of commercial banks. To calculate the

Capital Adequacy Ratio (CAR), divide eligible regulatory capital by the total risk weighted exposure which is given as:

$$\text{The Capital Adequacy Ratio (CAR)} = \frac{\text{eligible regulatory capital}}{\text{total risk weight assets}}$$

Source: NRB (2008)

Cost to Income Ratio (CIR)

In a simple word CIR refers as the relationship between income and the cost of obtaining it. The cost to income ratio is usually defined as the sum of net interest income and non-interest income divided by non-interest costs, excluding bad and doubtful debt expense. The cost/income ratio is the proportion of operating expenses to operating income. It is a measure of how costs change in relation to income. It is one of the most important key performances indicators; the higher the ratio, the more efficient the bank. Molyneux and Thornton (1992), Dietrich & Wanzenried (2011), Ayinuola and Gumel (2023) and other various researchers explained negative impact of CIR to profitability of commercial banks. The formula to calculate CIR is given as:

$$\text{Cost to Income Ratio (CIR)} = \frac{\text{Operating Cost}}{\text{Operating Income}}$$

Equity to Assets Ratio (EAR)

The total equity capital to total assets ratio, which is measured by total equity over total asset, reveals capital adequacy that capture the general safety and soundness of the financial institution. The Equity to Assets Ratio (EAR) calculates the ratio of total equity to total assets. Banks that have higher levels of equity would decrease the cost of capital (Molyneux & Thorton, 1992), which ultimately will have a positive impact on bank profitability. Chalise (2019) founds that the bank performance was positively impacted by the debt-to-equity ratio, bank size, and equity ratio, indicating that the higher the equity ratio, the higher the bank performance.

Equity to assets ratio is calculated by:

$$\text{Equity to Assets Ratio (EAR)} = \frac{\text{Total Equity}}{\text{Total Assets}}$$

Debt to Equity Ratio (DER)

The debt/equity ratio, which is computed by dividing a company's total liabilities by its stockholders' equity, is a debt ratio used to assess a company's financial leverage. The debt-to-equity ratio (D/E ratio) shows how much debt a business is using to finance its assets in comparison to the value of shareholders' equity. It also illustrates the extent to which, in the case of a company's liquidation, shareholder equity can satisfy its debts to creditors. The riskiness of the company's capital structure is gauged by the debt-to-equity ratio, which considers the relationship between the funds provided by creditors and investors. Susilawati, Agusetiawan Shavab, and Mustika (2022) found significant negative impact of debt-to-equity ratio on return of assets and significant positive impact on profitability (ROA). Similarly, Chalise (2019) founds that the bank performance was positively impacted by the debt-to-equity ratio

$$\text{Debt to Equity Ratio (DER)} = \frac{\text{Total Liabilities}}{\text{Total shareholder's Equity}}$$

Liquidity Ratio

The ability of the business to fulfil its commitments to settle its short-term debt is demonstrated by the liquidity ratio. Commercial banks' liquidity refers to their ability to meet their obligations at maturity, including lending, investment, withdrawals, deposits, and accrued liabilities (Ehiedu & Chukwunweike, 2014). The liquidity ratio calculates the ratio of liquid assets to total assets. As a percentage of total bank assets, liquid assets include cash and equivalents, the central bank's cash reserve, short-term bank deposits, and other government and non-government guaranteed securities. To calculate the liquid ratio, divide the acid liquid ratio by the total assets. Liquidity risk is one type of risk for banks; when banks have fewer liquid assets, they are more vulnerable to large deposit withdrawals. As a result, liquidity risk is estimated using the ratios of liquid assets to deposits and liquid assets to total assets.

$$\text{Liquidity to Total Deposit Ratio (LR)} = \frac{\text{Total Liquidity}}{\text{Total Deposit}}$$

Bank Size

Size is typically measured by gross sales, total assets, employees, and sales turnover. Increasing a firm's size, whether in terms of revenue, profits, assets, or employees, is

crucial for financial stability and profitability. There is no significant impact of bank size on profitability (Tharu & Shrestha, 2019). Almazari (2013) founds significant correlation between bank size and profitability. Similarly, the study of Sufian and Chong (2008) found size has negative impact on probability. Bhattarai (2020) also resulted on statistically significant negative results for bank size and inflation rate. Chalise's (2019) study found bank performance was positively impacted by bank size. Mishra, Kandel, and Aithal (2021) founds that there is a positive correlation with bank size and inflation.

Bank Size = Natural Logarithm of Total Assets

CHAPTER: IV

RESULTS AND DISCUSSION

This chapter presents the findings of the study on the impact of capital adequacy and cost-income ratio on the profitability of commercial banks in Nepal, focusing on key profitability indicators: Return on Assets (ROA) and Return on Equity (ROE). The analysis is structured into five main sections, beginning with the descriptive statistics, which provide an overview of the variables under study. The subsequent sections delve into the correlation coefficients to examine the relationships between the dependent and independent variables. This is followed by the regression analyses for ROA and ROE, which evaluate the influence of capital adequacy ratio (CAR), cost-income ratio (CIR), equity to assets ratio (EAR), debt to equity ratio (DER), liquidity ratio (LR), and bank size (BS) on the profitability of the banks. Finally, the chapter concludes with a summary of the major findings, offering insights into the key determinants of profitability in the context of Nepalese commercial banks.

4.1 Result

4.1.1 Descriptive Statistics

Descriptive statistics used in this study include minimum, maximum, mean, standard deviation for the determined variables. Thus, descriptive statistics facilitate the interpretation of data by allowing the data to be presented in a meaningful way.

Table 2

Descriptive statistics

	N	Minimum	Maximum	Mean	Std. D
CAR	30	11.14	22.99	14.66	2.93
CIR	30	0.39	0.83	0.52	0.09
EAR	30	0.08	0.17	0.12	0.02
DER	30	5.03	12.02	8.12	1.80
LR	30	0.04	0.43	0.16	0.09

BS	30	24.70	26.57	25.44	0.41
ROA	30	0.47	2.61	1.69	0.53
ROE	30	4.65	26.27	15.7027	4.96468

(Source: Secondary Data, 2023)

Table 2 shows CAR among the 30 commercial banks analyzed ranges from a minimum of 11.14% to a maximum of 22.99%, with an average value of 14.66% and a standard deviation of 2.93%. This indicates a moderate level of variability in the capital adequacy across the banks, suggesting that while some banks maintain a higher capital buffer, others operate closer to the regulatory minimum. CIR shows a minimum value of 0.39 and a maximum of 0.83, with an average of 0.52 and a standard deviation of 0.09. This ratio, which reflects the efficiency of the banks in managing their operating costs relative to income, demonstrates relatively low variability, indicating that most banks operate with similar efficiency levels.

EAR varies from 0.08 to 0.17, with an average of 0.12 and a standard deviation of 0.02, suggesting a low variation in the equity structure of the banks. This indicates that the banks generally maintain similar proportions of equity relative to their total assets, which is crucial for absorbing losses and protecting depositors. DER shows more considerable variability, ranging from 5.03 to 12.02, with a mean value of 8.12 and a standard deviation of 1.80. This indicates significant differences in the leverage levels among the banks, with some banks relying more heavily on debt financing compared to others.

LR which measures the banks' ability to meet short-term obligations, ranges from 0.04 to 0.43, with an average of 0.16 and a standard deviation of 0.09. This variation suggests differing levels of liquidity management practices among the banks, with some banks maintaining higher liquidity buffers. BS as measured by the natural logarithm of total assets, shows a narrow range from 24.70 to 26.57, with an average value of 25.44 and a standard deviation of 0.41. This indicates that the banks in the sample are of relatively similar sizes, which is expected given the homogeneity of the sample population.

ROA and ROE exhibit noteworthy differences. ROA varies from a minimum of 0.47% to a maximum of 2.61%, with a mean of 1.69% and a standard deviation of

0.53%. This indicates moderate profitability across the banks, with some banks achieving significantly higher returns on their assets. ROE, on the other hand, ranges from 4.65% to 26.27%, with a mean value of 15.70% and a standard deviation of 4.96%. The wider range and higher variability in ROE suggest greater differences in how effectively banks utilize their equity to generate profits. These descriptive statistics provide a foundational understanding of the financial characteristics of the sampled banks, which is essential for the subsequent correlation and regression analyses to explore the relationships between these variables and their impact on profitability.

4.1.2 Correlation Analysis

strength and direction of the relationships between the independent variables CAR, CIR, EAR, DER, LR, BS and the dependent variables, ROA and ROE. Understanding these correlations is crucial for determining the degree to which these financial metrics are associated with the profitability of commercial banks in Nepal.

Table 3

Correlations between dependent and independent variables

	CAR	**CIR**	**EAR**	**DER**	**LR**	**BS**	**ROA**	**ROE**
CAR	1							
CIR	.075	1						
EAR	.888*	.044	1					
DER	-.735**	.035	-.903**	1				
LR	.626**	.089	.544**	-.469**	1			
BS	-.172	.230	.002	-.051	-.114	1		
ROA	.415*	-.437*	.430*	-.431*	.208	-524**	1	
ROE	-.024	-.945**	-.091	.042	.020	-.692	.807**	1

(Source: SPSS Output Appendix II)

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

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

Table 3 examines the relationships between the independent variables— CAR, CIR, EAR, DER, LR, BS and the dependent variables, ROA and ROE. CAR shows a strong positive correlation with EAR ($r = 0.888$, $p < 0.05$), indicating that as the capital adequacy of a bank increases, the equity to assets ratio also tends to increase. There is a significant negative correlation between CAR and DER ($r = -0.735$, $p < 0.01$), suggesting that higher capital adequacy is associated with lower debt relative to equity.

CAR is positively and significantly correlated with ROA ($r = 0.415$, $p < 0.05$), indicating that higher capital adequacy contributes to higher returns on assets. CIR has a significant strong negative significant correlation with ROE ($r = -0.945$, $p < 0.01$), implying that as the cost-income ratio increases (indicating lower efficiency), the return on equity decreases. CIR also shows a negative correlation with ROA ($r = -0.437$, $p < 0.05$), suggesting that higher operating costs relative to income negatively affect the return on assets.

The correlation coefficient is 0.075, indicating a weak positive relationship between CAR and CIR. However, this relationship is not statistically significant, as no asterisk (*) appears, suggesting that this relationship may not be meaningful. The correlation between CAR and LR is 0.626, which is a moderately strong positive relationship. The double asterisk (**) indicates that this correlation is significant at the 0.01 level, meaning that as CAR increases, LR tends to increase, and this relationship is statistically significant. The correlation coefficient is -0.172, showing a weak negative relationship between CAR and Bank Size (BS). This relationship is not significant, indicating that changes in CAR are not reliably associated with changes in BS. The correlation coefficient is -0.024, showing an almost negligible negative relationship between CAR and ROE. This relationship is also not statistically significant, implying little to no meaningful association between the two variables.

zEAR is strongly positively correlated with CAR ($r = 0.888$, $p < 0.05$) and strongly negatively correlated with DER ($r = -0.903$, $p < 0.01$). This indicates that banks with higher equity relative to their assets tend to have higher capital adequacy and lower debt levels. EAR also shows a positive correlation with ROA ($r = 0.430$, $p < 0.05$), meaning that a higher equity to assets ratio is associated with better asset returns. DER is strongly negatively correlated with EAR ($r = -0.903$, $p < 0.01$) and CAR ($r = -$

0.735, $p < 0.01$), reflecting that higher leverage (debt relative to equity) is associated with lower capital adequacy and equity levels. DER is negatively correlated with ROA ($r = -0.431$, $p < 0.05$), suggesting that higher leverage may decrease profitability in terms of asset returns.

LR shows positive correlations with CAR ($r = 0.626$, $p < 0.01$) and EAR ($r = 0.544$, $p < 0.01$), indicating that banks with higher liquidity ratios tend to have better capital adequacy and higher equity relative to assets. However, the correlation between LR and the profitability measures (ROA and ROE) is not statistically significant, suggesting a weaker relationship. BS does not exhibit significant correlations with most variables, except for a negative correlation with ROA ($r = -0.524$, $p < 0.01$). This indicates that larger banks might have lower returns on assets, possibly due to operational inefficiencies or higher costs associated with larger scale operations.

ROA is positively correlated with CAR ($r = 0.415$, $p < 0.05$), EAR ($r = 0.430$, $p < 0.05$), and negatively correlated with CIR ($r = -0.437$, $p < 0.05$), DER ($r = -0.431$, $p < 0.05$), and BS ($r = -0.524$, $p < 0.01$). This suggests that higher capital adequacy, equity levels, and efficiency (lower CIR) contribute to better returns on assets, while higher leverage and larger bank size are associated with lower ROA. ROE shows a strong positive correlation with ROA ($r = 0.807$, $p < 0.01$), indicating that banks with higher returns on assets also tend to have higher returns on equity. There is a significant negative correlation between ROE and CIR ($r = -0.945$, $p < 0.01$), indicating that inefficiencies (higher CIR) drastically reduce equity returns. These correlations help in understanding the interrelationships between the financial metrics and how they jointly influence the profitability of commercial banks in Nepal.

4.1.3 Regression Analysis with ROA

This section presents the results of the regression analysis conducted to examine the impact of the independent variables CAR, CIR, EAR, DER, LR, BS and the dependent variables, ROA and ROE. The analysis aims to determine the extent to which these financial indicators influence the profitability of commercial banks in Nepal, as measured by ROA. By evaluating the regression coefficients and their significance levels, this section seeks to identify the key drivers of asset returns and provide insights into the financial strategies that contribute to improved profitability

within the banking sector.

Table 4

Model summary

Model	r	r Square	Adjusted r square	Std. error of the estimate
1	.770	.592	.486	.38052

a. Predictors: (Constant), BS, EAR, CIR, LR, DER, CAR

(Source: Appendix)

Table 4 provides important information about the strength and explanatory power of the regression model used to analyze the impact of the independent variables CAR, CIR, EAR, DER, LR, BS with the dependent variables, ROA and ROE. for commercial banks in Nepal. The value of R is 0.770, showing a strong positive correlation, meaning the independent variables collectively have a strong association with ROA. R Square (0.592): R Square, also known as the coefficient of determination, indicates the proportion of variance in ROA that can be explained by the independent variables in the model. An R Square value of 0.592 means that approximately 59.2% of the variance in ROA is explained by the variables included in the model. This suggests that the model has a good explanatory power, although there is still 40.8% of the variance in ROA that is unexplained by these factors.

The Adjusted R Square accounts for the number of predictors in the model and adjusts the R Square value accordingly. An Adjusted R Square of 0.486 indicates that, after considering the number of independent variables, about 48.6% of the variance in ROA is reliably explained by the model. This adjusted value is slightly lower than the R Square, reflecting the potential for overfitting when multiple predictors are included. Standard Error of the Estimate measures the average distance that the observed ROA values fall from the regression line. A standard error of 0.38052 indicates the typical deviation of the actual ROA values from the predicted values. The smaller the standard error, the more accurate the model's predictions are.

The model shows a strong relationship between the predictors and ROA, with more than half of the variance in ROA being explained by the independent variables. The adjusted R Square indicates a robust model with reliable explanatory power, and the standard error suggests a reasonable level of prediction accuracy.

Table 5

Analysis of Variance (ANOVA)

Model 1		Sum of squares	d.f	Mean square	F	Significant
1	Regression	4.837	6	.806	5.568	.001
	Residual	3.330	23	.145		
	Total	8.167	29			

(Source: Appendix)

a. Dependent Variable: ROA

b. Predictors: (Constant), BS, EAR, CIR, LR, DER, CAR

ANOVA presented in Table 5 assesses the overall significance of the regression model predicting CAR, CIR, EAR, DER, LR, BS and the dependent variables, ROA. The Regression Sum of Squares is 4.837, indicating the portion of the variance in ROA that the model explains. In contrast, the Residual Sum of Squares is 3.330, representing the variance not explained by the model, also known as the error variance. The Total Sum of Squares, which combines both explained and unexplained variance, is 8.167.

The degrees of freedom (d.f) associated with the regression model is 6, corresponding to the number of independent variables included. The residual degrees of freedom is 23, which accounts for the total number of observations (N = 30) minus the number of predictors and minus 1. This results in a total degree of freedom of 29. The Mean Square for Regression is 0.806, calculated by dividing the regression sum of squares by its degrees of freedom. This value represents the average variance explained by each predictor. On the other hand, the Mean Square for Residual is 0.145, reflecting the average unexplained variance. The F-statistic of 5.568 indicates that the regression model significantly explains a portion of the variance in ROA compared to the unexplained variance. This is further supported by a significance level (p-value) of 0.001, which is well below the conventional threshold of 0.05, confirming that the model's predictors collectively have a statistically significant impact on ROA.

Table 6

Regression coefficient of MPS with independent variables

Model	Unstandardized Coefficients		Standardized Coefficients	t	P-value
1	Beta	Std. Error	Beta		
(Constant)	18.235	5.187		3.515	.002
CAR	-.014	.064	-.075	-.211	.835
CIR	-1.870	.813	-.325	-2.299	.031
EAR	8.806	11.947	.370	.737	.468
DER	-.058	.099	-.196	-.583	.566
LR	-.372	.996	-.064	-.373	.713
BS	-.624	.195	-.480	-3.199	.004

(Source: Appendix)

Dependent variable ROA, 95% confidence interval, 5% significance level.

Table 6 presents the regression coefficients for the model predicting Return on Assets (ROA) based on the independent variables— CAR, CIR, EAR, DER, LR, BS and the dependent variables, ROA. The analysis provides insights into the relationship between these financial indicators and the profitability of commercial banks in Nepal, as measured by ROA.

The Constant (intercept) of 18.235, with a t-value of 3.515 and a p-value of 0.002, is statistically significant, indicating that when all independent variables are held constant, the expected ROA is 18.235. This baseline value reflects the level of profitability in the absence of the influences from the independent variables. The coefficient for CAR is -0.014, with a t-value of -0.211 and a p-value of 0.835. This indicates that CAR has a negative but statistically insignificant impact on ROA, suggesting that changes in capital adequacy do not significantly affect profitability. CIR has a coefficient of -1.870, with a t-value of -2.299 and a p-value of 0.031, showing a significant negative relationship with ROA. This implies that an increase in the cost-income ratio is associated with a reduction in profitability, highlighting the importance of efficient cost management for enhancing returns on assets.

The coefficient for EAR is 8.806, with a t-value of 0.737 and a p-value of 0.468.

Although positive, this relationship is not statistically significant, indicating that the equity to assets ratio does not have a substantial impact on ROA within this model. DER has a coefficient of -0.058, with a t-value of -0.583 and a p-value of 0.566, showing an insignificant negative effect on ROA. This suggests that the debt-to-equity ratio does not significantly influence profitability in this context. The coefficient for LR is -0.372, with a t-value of -0.373 and a p-value of 0.713, indicating an insignificant negative impact on ROA. This suggests that liquidity ratio fluctuations do not meaningfully affect profitability. Finally, BS shows a significant negative coefficient of -0.624, with a t-value of -3.199 and a p-value of 0.004. This result suggests that larger bank size is associated with lower ROA, potentially reflecting the challenges larger banks face in maintaining high returns on assets. Regression analysis highlights that, among the variables studied, CIR and BS have significant effects on ROA, with CIR negatively impacting profitability and BS also contributing negatively to ROA. The other variables, including CAR, EAR, DER, and LR, do not exhibit statistically significant relationships with ROA in this model.

4.1.4 Regression Analysis with ROE

Table 7 provides the model summary for the regression analysis examining the impact of the independent variables CAR, CIR, EAR, DER, LR, BS and the dependent variables, ROE for commercial banks in Nepal. The correlation coefficient (r) for the model is 0.788, indicating a strong positive relationship between the independent variables and ROE. This suggests that the predictors collectively have a substantial association with ROE.

Table 7

Model summary

Model	r	r Square	Adjusted r square	Std. error of the estimate
1	.788	.621	.522	3.43279

a. Predictors: (Constant), BS, EAR, CIR, LR, DER, CAR

(Source: Appendix)

The R Square (0.621) shows that approximately 62.1% of the variance in ROE is explained by the independent variables included in the model. This indicates a robust

model with a significant portion of ROE variability accounted for by the predictors. The Adjusted R Square (0.522), which adjusts the R Square value for the number of predictors, is slightly lower at 52.2%. This adjustment reflects the model's explanatory power while accounting for the potential effects of overfitting due to multiple predictors. The adjusted R Square value suggests that the model still has substantial explanatory power even when considering the number of variables. The Standard Error of the Estimate (3.43279) represents the average deviation of the observed ROE values from the values predicted by the model. A smaller standard error indicates a closer fit of the model to the data, although in this case, the relatively high standard error suggests that while the model is strong, there is still considerable variability in ROE that is not explained by the predictors. Regression analysis reveals a strong model with good explanatory power in predicting ROE, highlighting that the independent variables collectively account for a significant portion of the variance in return on equity for the commercial banks studied.

Table 8

Analysis of Variance (ANOVA)

Model 1		Sum of squares	d.f	Mean square	F	Significant
1	Regression	443.761	6	73.960	6.276	.001
	Residual	271.033	23	11.784		
	Total	714.794	29			

(Source: Appendix)

a. Dependent Variable: ROE

b. Predictors: (Constant), BS, EAR, CIR, LR, DER, CAR

ANOVA in Table 8 assesses the overall significance of the regression model used to predict ROE based on the independent variables; CAR, CIR, EAR, DER, LR, BS and the dependent variables. The Regression Sum of Squares is 443.761, which indicates the amount of variance in ROE that is explained by the model. This value reflects the combined impact of the independent variables on ROE. The Residual Sum of Squares is 271.033, representing the variance in ROE that is not explained by the model, or the error variance. The Total Sum of Squares is 714.794, which combines both the

explained and unexplained variances.

The Degrees of Freedom (d.f) for the regression model is 6, corresponding to the number of predictors included in the model. The residual degrees of freedom is 23, calculated as the total number of observations (N = 30) minus the number of predictors (6) minus 1. The total degrees of freedom is 29. The Mean Square for Regression is 73.960, obtained by dividing the regression sum of squares by its degrees of freedom. This value represents the average variance explained by each predictor. The Mean Square for Residual is 11.784, reflecting the average unexplained variance.

The F-statistic is 6.276, which is the ratio of the mean square of the regression to the mean square of the residual. This value indicates that the regression model significantly explains the variance in ROE relative to the residual variance. The Significance (p-value) of 0.001 confirms that the F-statistic is statistically significant at the 5% level. This p-value is well below the conventional threshold of 0.05, indicating that the regression model is statistically significant and that the predictors collectively have a meaningful impact on ROE. ANOVA results demonstrate that the regression model significantly explains the variance in ROE, with the independent variables collectively accounting for a substantial portion of the variability in return on equity.

Table 9 shows regression coefficients for the model predicting Return on Equity (ROE) based on the independent variables. The Constant (intercept) is 238.767, with a t-value of 5.102 and a p-value of 0.000. This significant intercept suggests that when all independent variables are zero, the ROE is estimated to be 238.767, establishing a baseline profitability level. CAR has a coefficient of -0.336, with a t-value of -0.580 and a p-value of 0.568. This indicates a negative but statistically insignificant impact on ROE. The high p-value suggests that CAR does not significantly affect ROE in this model. CIR has a coefficient of -17.409, with a t-value of -2.373 and a p-value of 0.026. This significant negative relationship indicates that higher CIR, which reflects less efficient cost management, is associated with a lower ROE. A decrease in ROE is expected with an increase in CIR, highlighting the importance of controlling costs to enhance profitability. EAR shows a coefficient of -26.035, with a t-value of -0.242 and a p-value of 0.811. The negative coefficient indicates that higher EAR is

associated with lower ROE, but the impact is not statistically significant. This suggests that EAR does not have a meaningful effect on ROE in this model.

Table 9

Regression coefficient of ROE with independent variables

Model	Unstandardized Coefficients		Standardized Coefficients	t	P-value
1	Beta	Std. Error	Beta		
(Constant)	238.767	46.794		5.102	.000
CAR	-.336	.580	-.198	-.580	.568
CIR	-17.409	7.338	-.324	-2.373	.026
EAR	-26.035	107.777	-.117	-.242	.811
DER	-.550	.893	-.199	-.616	.544
LR	3.728	8.986	.069	.415	.682
BS	-7.952	1.760	-.654	-4.519	.000

(Source: Appendix)

Dependent variable ROE, 95% confidence interval, 5% significance level.

DER is -0.550, with a t-value of -0.616 and a p-value of 0.544. This negative relationship is statistically insignificant, suggesting that DER does not have a significant impact on ROE. LR has a coefficient of 3.728, with a t-value of 0.415 and a p-value of 0.682. The positive coefficient indicates that higher liquidity is associated with higher ROE, but the effect is not statistically significant, suggesting that LR does not significantly influence ROE in this context. BS shows a significant negative coefficient of -7.952, with a t-value of -4.519 and a p-value of 0.000. This indicates that larger banks tend to have lower ROE, suggesting potential challenges in maintaining profitability as bank size increases. Regression analysis reveals that among the variables examined, CIR and BS significantly impact ROE, with CIR negatively affecting ROE and BS also contributing negatively. The other variables—CAR, EAR, DER, and LR—do not show statistically significant effects on ROE in this model.

4.2 Discussion

The findings of this study line up with and contrast various empirical studies on the determinants of profitability in commercial banks across different contexts. One key finding in this study is the negative relationship between the Cost-Income Ratio (CIR) and both Return on Assets (ROA) and Return on Equity (ROE), where higher CIR values reflect cost inefficiency and are associated with reduced profitability. This result is consistent with Mathuva (2009), who also observed an inverse relationship between CIR and profitability in commercial banks. Similarly, Almazari (2013) found that efficient cost management, indicated by lower CIR, positively influences the profitability of Saudi banks. These studies reinforce the argument that cost management is crucial for bank performance, emphasizing that higher cost inefficiencies adversely affect profitability.

However, this study's findings on Capital Adequacy Ratio (CAR) provide a more nuanced perspective. While CAR was positively associated with ROA in the current research, it had no significant effect on ROE. This contrasts with the findings of Kunjeda (2024), who noted a slightly higher positive correlation between CAR and ROE than with ROA, indicating that capital adequacy can influence equity returns in some contexts. In contrast, Dessie and Lambamo (2023) found that CAR negatively impacted ROE in Ethiopian banks, suggesting that the relationship between capital adequacy and profitability might depend on local market conditions and bank-specific characteristics. This variability in findings suggests that capital adequacy might influence profitability differently depending on the geographical and economic environment of the banks.

In terms of bank size (BS), the negative correlation between BS and both ROA and ROE in this study is supported by empirical research from Molyneux and Thornton (1992), who identified that larger banks often face challenges in profitability due to operational inefficiencies and complexities that arise with size. This negative relationship is further echoed by the results from studies on the Philippine banking sector, where Sufian and Chong (2008) found that larger banks had lower profitability. This could be due to increased operational costs and administrative burdens that come with managing a larger organization. However, some studies, such as Jadhav et al. (2021), emphasize the importance of regulatory oversight and

strategic management in ensuring that larger banks can maintain profitability despite their size, indicating that optimal management could mitigate the negative effects of size on performance.

While CIR and BS were significant determinants of profitability in the current study, other financial ratios, including CAR, Equity to Assets Ratio (EAR), Debt to Equity Ratio (DER), and Liquidity Ratio (LR), did not show a significant effect on profitability. This result is similar to findings from AI-Sharkas and AI-Shark's (2022) study on Jordanian banks, where capital adequacy and other financial ratios had varying degrees of influence depending on the profitability metric used. This suggests that while some financial ratios, such as CAR and CIR, are important, their impact may vary based on the specific profitability measure (ROA or ROE) and the local banking context. Cost management and bank size are crucial determinants of profitability across different banking contexts, the influence of capital adequacy and other financial ratios may vary depending on the market and regulatory environment. This aligns with Bassey's (2021) findings in Nigeria, which highlighted the importance of liquidity management and credit risk in shaping financial performance, emphasizing the context-specific nature of profitability determinants in banking sectors.

CHAPTER: V

SUMMARY AND CONCLUSION

5.1 Summary

Capital adequacy is a important thing for the stability and strength of the banking sector. It refers to the minimum amount of capital that a bank must maintain to operate effectively, absorb losses, and retain customer confidence. This measure of financial strength indicates the proportion of capital a bank holds relative to its assets, aiming to protect depositors and counter parties from risks. Capital adequacy gained heightened importance following the 2008 financial crisis, as it is essential for ensuring banks' ability to handle financial challenges and regulatory requirements. Key ratios used to assess capital adequacy include the CAR and the CCR) The problem addressed in this study is the impact of capital adequacy and cost-income ratio on the profitability of commercial banks. Banks play a crucial role in the economy by mobilizing and deploying capital. However, inadequate capital can lead to severe risks, including insolvency and loss of depositor funds.

The study aims to evaluate how capital adequacy and cost-income ratio affect the profitability of commercial banks in Nepal. Previous research suggests a positive relationship between capital adequacy and profitability, while the cost-income ratio is generally negatively correlated with profitability. Assess the current status of key financial ratios capital adequacy, cost-income, equity to total assets, debt to equity, liquidity, and bank size among Nepalese commercial banks. Examine the relationship between these financial ratios and the profitability of commercial banks. The rationale for this study is based on the critical role of capital adequacy in mitigating risks and enhancing the stability of banks. Adequate capitalization helps banks withstand economic shocks, reduce failures, and maintain depositor confidence. By examining the impact of capital adequacy and cost-income ratio on profitability, this study seeks to provide valuable insights for bank management, policymakers, and investors. The findings can guide regulatory policies, improve management practices, and contribute to the financial stability and growth of the Nepalese banking sector.

The study employs a causal-comparative research design to analyze the impact of capital adequacy and cost-income ratio on the profitability of commercial banks in

Nepal. Secondary data from financial statements and annual reports of three selected commercial banks (Standard Chartered Bank Limited, Nepal SBI Bank Limited, and Himalayan Bank Limited) are used. The analysis includes descriptive statistics, correlation analysis, and multiple regression to evaluate the relationships between financial ratios and profitability.

The findings demonstrated a positive association between capital adequacy and profitability, with banks with greater capital adequacy ratios being more stable and lucrative. This emphasises the necessity of having a solid capital base to promote profitability and reduce risk. In contrast, the cost-to-income ratio exhibited a negative link with profitability, implying that banks with fewer operational costs, as seen by a lower cost-to-income ratio, tend to perform better in terms of ROA and ROE. This emphasises the importance of banks controlling operational costs in order to maximise profits. The equity-to-total assets ratio was proven to improve profitability, specifically ROE. This shows that a larger equity basis enables banks to provide higher returns for shareholders. However, there was a mixed association between debt-to-equity ratio and profitability. While debt can boost returns, excessive debt can raise financial risks and impair profitability, especially in volatile economic circumstances. Furthermore, the liquidity ratio had a positive but negligible influence on profitability, demonstrating that banks with adequate liquidity may satisfy their short-term obligations while remaining profitable.

The study also discovered that bank size influences profitability, with larger banks generally performing better due to economies of scale, allowing them to operate more effectively and grab a larger market share. Smaller banks, on the other hand, displayed resilience in niche markets by effectively managing expenses while preserving profitability. This study makes major contributions both practically and academically. The findings give a framework for bank managers to identify opportunities for improvement in cost control, capital structure, and liquidity management. For policymakers and regulators, the findings highlight the need of strong capital adequacy standards and cost-cutting initiatives in promoting a stable and profitable banking system. Academically, this study contributes to the literature by giving empirical information on the determinants influencing bank profitability in Nepal, laying the groundwork for future research. Capital sufficiency and cost-to-

income ratios are important drivers of profitability in Nepalese commercial banks. Banks with strong financial ratios in these areas are more likely to remain profitable. Furthermore, the study's findings provide useful insights for future research, particularly in investigating the dynamic interaction of financial performance measurements and profitability in emerging countries such as Nepal.

5.2 Conclusion

In conclusion, there are notable variations in the sample banks' major financial parameters, which indicate different degrees of performance and financial health. The Capital Adequacy Ratio (CAR) illustrates the variation in the capital that banks possess to handle risks; certain banks keep a substantial capital buffer, while others function more in line with regulatory minimums. Significant variations in cost efficiency may be seen in the Cost-Income Ratio (CIR), where lower ratios indicate more effective control of operating expenses in relation to income. The profitability metrics Return on Equity (ROE) and Return on Assets (ROA) also differ significantly, indicating significant differences in the efficiency with which banks earn a profit on their equity and assets.

Further information about the connections between these financial measurements may be gained from the correlations. ROA and ROE show a substantial negative association with CIR, indicating that lower profitability is associated with higher operating expenses relative to income. A significant association has been shown between CAR and ROA, indicating that banks with stronger capital adequacy typically provide higher returns on their assets. But CAR has no discernible effect on ROE, suggesting that capital adequacy may not have a direct effect on equity returns. The negative correlation between Bank Size (BS) and both ROA and ROE suggest that larger banks are typically less profitable, possibly as a result of operational inefficiencies or complexity brought on by their size.

According to the ROA regression analysis, the independent variables account for a sizable amount of the variance in profitability, with CIR and BS having a particularly large influence. Reduced profitability is linked to higher CIR, which indicates inefficiency in controlling expenses compared to income. Larger banks generally typically struggle to sustain high returns on assets. The lack of a substantial impact on ROA by other financial measures such as CAR, EAR, DER, and LR suggests that these factors may not be the main forces behind asset-based profitability.

The regression model shows that the same important factors—CIR and BS—have an impact on ROE. Larger banks also have difficulty attaining high returns on equity. Higher cost inefficiency, as indicated by a higher CIR, results in lower returns on equity. Once more, there is no discernible effect of factors such as CAR, EAR, DER,

and LR on equity-based profitability. Study concluded that bank size (BS) and the cost-income ratio (CIR) are important variables influencing profitability, with larger banks and higher cost inefficiencies being associated with lower returns. Several other financial parameters, including EAR, DER, LR, and CAR, seem to have less of an impact, indicating that other variables could be involved in determining the overall success of the bank.

The relationship between financial ratios and profitability was analyzed to understand how they impact the performance of commercial banks. The study found that the Cost-Income Ratio (CIR) has a strong negative correlation with both Return on Assets (ROA) and Return on Equity (ROE), suggesting that higher CIRs are associated with lower profitability. Conversely, the Capital Adequacy Ratio (CAR) demonstrated a positive correlation with ROA, indicating that better capital adequacy supports higher returns on assets. However, CAR did not show a significant impact on ROE, highlighting a complex relationship between capital adequacy and different profitability measures. Bank Size (BS) was negatively correlated with both ROA and ROE, suggesting that larger banks may face challenges in maintaining high profitability.

The regression analysis provided insights into the impact of financial ratios on profitability. The findings indicate that CIR and BS are significant determinants of profitability. Higher CIRs and larger bank sizes negatively affect ROA and ROE, underscoring the importance of efficient cost management and optimal bank size in achieving better financial performance. Other ratios such as CAR, Equity to Assets Ratio (EAR), Debt to Equity Ratio (DER), and Liquidity Ratio (LR) did not show significant effects on profitability measures in the current study. This suggests that while capital adequacy and cost management are critical, other financial ratios may have less influence on profitability or their impact may be context specific. It is an important role of capital adequacy and cost management in influencing the profitability of commercial banks in Nepal. Efficient cost management and optimal capitalization are essential for enhancing financial performance. The findings provide valuable insights for bank management, policymakers, and investors, emphasizing the need for a balanced approach to capital management and cost control to ensure sustainable profitability and financial stability.

5.3 Implications

The study has following implications for managers, academicians and future researchers:

Focus on Cost Efficiency: Managers should prioritize improving cost management practices to enhance profitability. The study's finding that a higher CIR negatively impacts both ROA and ROE suggests that banks should implement strategies to optimize their operating costs. Effective cost control can lead to better financial performance and competitive advantage.

Ensuring adequate capital levels is crucial for sustaining profitability and mitigating risks. The positive correlation between the CAR and ROA indicates that maintaining robust capital reserves can support higher returns on assets. Managers should therefore focus on balancing capital adequacy with growth opportunities to enhance financial stability. The negative correlation between BS and profitability suggests that larger banks might experience diminishing returns. Managers should consider strategies to manage the complexities and inefficiencies that can accompany larger operations. This might include streamlining processes, enhancing operational efficiency, and focusing on niche markets to improve profitability. Academicians can build on this study by exploring additional factors that influence profitability beyond capital adequacy and cost management. Research into other financial ratios, market conditions, and regulatory impacts could provide a more comprehensive understanding of bank performance.

REFERENCES

Abba, G. O., Zachariah, P., & Inyang, E. E. (2013). Capital Adequacy Ratio and Banking Risks in the Nigeria MoneyDeposit Banks. *Research Journal of Finance and Accounting*, *4*(17), 17–25. https://www.researchgate.net/publication/342465792_Capital_Adequacy_Ratio_and_Banking_Risks_in_the_Nigeria_Money_Deposit_Banks

Albrecht, W. S. (2006). *The role of power in financial statement fraud schemes*. Journal of Financial Crime, 13(4), 45-57. https://doi.org/10.1108/13590790610723157

Almazari, A. A. (2013). Capital Adequacy, Cost Income Ratio and the Performance of Saudi Banks (2007-2011). International Journal of Academic Research in Accounting Finance and Management Sciences. 3(4), 379 – 392.

Al-Sharkas, A. A., & Al-Sharkas, T. A. (2022). The impact on bank profitability: Testing for capital adequacy ratio, cost-income ratio and non-performing loans in emerging markets. *Journal of Governance and Regulation*, *11*(1, special issue), 231–243. https://doi.org/10.22495/jgrv11i1siart4

Albulescu, C. T. (2015). Banks' Profitability and Financial Soundness Indicators: A Macro-level Investigation in Emerging Countries. *Procedia Economics and Finance*, *23*, 203–209. https://doi.org/10.1016/s2212-5671(15)00551-1

Alchian, A. A., & Demsetz, H. (1972). Production, Information Costs, and Economic Organization. *The American Economic Review*, *62*(5), 777–795. https://www.jstor.org/stable/1815199

Almazari, A. A., & Alamri, A. M. (2017). THE EFFECT OF CAPITAL ADEQUACY ON PROFITABILITY: A COMPARATIVE STUDY BETWEEN SAMBA AND SAAB BANKS OF SAUDI ARABIA. *International Journal of Economics, Commerce and Management*, *5*(11), 86–102. https://doi.org/ISSN%202348%200386

Anjay Kumar Mishra, Deepak Raj Kandel, & Aithal, P. S. (2021). Profitability in Commercial Bank – A Case from Nepal. *Zenodo (CERN European Organization for Nuclear Research)*. https://doi.org/10.5281/zenodo.4752052

Antwi, F. (2019). Capital Adequacy, Cost Income Ratio and Performance of Banks in Ghana. *International Journal of Academic Research in Business and Social Sciences*, *9*(10). https://doi.org/10.6007/ijarbss/v9-i10/6471

Athanasoglou, P. P., Delis, M., & Staikouras, C. (2006). Determinants of bank profitability in the South Eastern European region. *SSRN Electronic Journal*, *2*(12). https://doi.org/10.2139/ssrn.4163741

Bam, M., Kumar, S., & Gaire, P. (2015). *Determinants of profitability of commercial banks in Nepal*. *Tribhuvan University Journal of Management*, *12*(1), 1-18.

Bassey, E. A. (2021). *Impact of liquidity management on the financial performance of quoted deposit money banks in Nigeria*. *Journal of Asian Business Strategy*, 11(1), 24-32. https://doi.org/10.18488/journal.11.2021.11.1.24-32

Bhattarai, B. P. (2020). Determinants of Capital Adequacy Ratio Commercial Banks in Nepal. *Asian Journal of Finance & Accounting*, *12*(1), 194. https://doi.org/10.5296/ajfa.v12i1.17521

Bhattarai, D. R. (2021). Capital Adequacy Ratio and Financial Performance of Commercial Banks in Nepal. *Tribhuvan University Journal*, *36*(01), 96–105. https://doi.org/10.3126/tuj.v36i01.43583

Brusov, P., Filatova, T., Orekhova, N., Kulik, V., Chang, S.-I., & Lin, G. (2021). Generalization of the Modigliani–Miller Theory for the Case of Variable Profit. *Mathematics*, *9*(11), 1286. mdpi. https://doi.org/10.3390/math9111286

Burger, A.Moormann, J.(2008).Productivity in banks: myths & truths of the cost income ratio, in: Banksand Bank Systems 3 , Nr. 4, S. 92-101

C.B. Kunjeda. (2024). Impact of Capital Adequacy on Profitability of Commercial Banks in Nepal. *Sudur Paschim Wisdom of Academic Gentry Journal*, *1*(1), 57–72. https://doi.org/10.69476/sdpr.2024.v01i01.006

Chalise, S. (2019). The Impact of Capital Adequacy and Cost-Income Ratio on Performance of Nepalese Commercial Banks. *International Journal of Economics and Management Studies*, *6*(7), 78–83. https://doi.org/10.14445/23939125/ijems-v6i7p112

Chen, J. (2022, March 23). *Modigliani-Miller Theorem (M&M)*. Investopedia. https://www.investopedia.com/terms/m/modigliani-millertheorem.asp

Christina, L. (2019). INTERNAL FACTORS CONTRIBUTION TO THE PROFITABILITY OF PRIVATE BANK . *International Journal of*

Economics, Business and Management Research, *3*(11), 31–38. issn: 2456-7760

Daily, C. M., Dalton, D. R., & Rajagopalan, N. (2003). GOVERNANCE THROUGH OWNERSHIP: CENTURIES OF PRACTICE, DECADES OF RESEARCH. *Academy of Management Journal*, *46*(2), 151–158. https://doi.org/10.2307/30040611

Dessie, Y., & Lambamo, H. (2023). Profitability Determinants of Commercial Banks in Ethiopia. *International Journal of Financial Studies*, 8(4), 65.

Donaldson, L., & Davis, J. H. (1991). Stewardship Theory or Agency Theory: CEO Governance and Shareholder Returns. *Australian Journal of Management*, *16*(1), 49–64. https://doi.org/10.1177/031289629101600103

Eisenhardt, K. M. (1989). Agency Theory: An Assessment and Review. *Academy of Management Review*, *14*(1), 57–74. https://doi.org/10.5465/amr.1989.4279003

Fama, E. F. (1983). Separation of Ownership and Control. *The Journal of Law and Economics*, *26*(2), 301–325.

Farooqi, S. U., & Ngo, L. V. (2014). *Resource dependence and governance: The role of board categories in managing inter-organizational relationships. Journal of Business and Economics, 21*(1), 1-15.

Farouk, A., & Hassan, A. (2014). Audit quality and its relationship with corporate performance. *International Journal of Recent Research in Commerce Economics and Management*, *6*(3), 191-198. Retrieved from https://www.paperpublications.org

Fatima, N. (2014). Capital Adequacy: A Financial Soundness Indicator for Banks. *Global Journal of Finance and Management*, *6*(8), 771–776. https://www.ripublication.com/gjfm-spl/gjfmv6n8_12.pdf

Gautam, K. R. (2020). Financial performance analysis of Nepalese financial institutions in the framework of CAMEL. *Janapriya Journal of Interdisciplinary Studies*, *9*(1), 56–74.

Goet, J. (2022). Impact of Capital Adequacy on Profitability of Commercial Banks in Nepal. *Dristikon: A Multidisciplinary Journal*, *12*(1), 91–99. https://doi.org/10.3126/dristikon.v12i1.46128

Gul, S., Sial, M. H., & Asghar, M. Z. (2011). Factors affecting the profitability of commercial banks in Pakistan: Evidence from top 15 banks. *The Romanian Economic Journal, 14*(39), 61-70. Retrieved from ResearchGate

Harrison, J. S., & Freeman, R. E. (1999). STAKEHOLDERS, SOCIAL RESPONSIBILITY, AND PERFORMANCE: EMPIRICAL EVIDENCE AND THEORETICAL PERSPECTIVES. *Academy of Management Journal*, *42*(5), 479–485. https://doi.org/10.2307/256971

Hillman, A. J., Withers, M. C., & Collins, B. J. (2009). Resource Dependence Theory: a Review. *Journal of Management*, *35*(6), 1404–1427. https://doi.org/10.1177/0149206309343469

Himalayan Bank Limited. (2023). *31st Annual Report 2022-2023*. https://www.himalayanbank.com/en/publication-en

HirinduKawshala, & ushaniPanditharathna. (2017). The Factor Effecting on Bank Probability. *International Journal of Scientific and Research Publications*, *7*(2), 212–216. https://www.researchgate.net/publication/313530386_The_Factors_Effecting_on_Bank_Profitability

Jadhav, J. J., Kathale, A., & Rajpurohit, S. (2021). An Impact of Capital Adequacy Ratio on the Profitability of Private Sector Banks in India – A Study. *International Journal of Engineering and Management Research*, *11*(5). https://doi.org/10.31033/ijemr.11.5.5

Jadhav, P., Kathale, A., & Rajpurohit, V. (2021). An Impact of Capital Adequacy Ratio on the Profitability of Private Sector Banks in India – A Study. *International Journal of Engineering and Management Research*, 11(5), 177-186.

Jensen, M. C., & Meckling, W. H. (1976). Theory of the Firm: Managerial Behavior, Agency Costs, and Ownership Structure. In *Economic Analysis of the Law* (pp. 162–176). Journal of Financial Economics. https://doi.org/10.1002/9780470752135.ch17

Kunjeda, C. B. (2024). The impact of capital adequacy on profitability of commercial banks in Nepal. *SP Swag: Sudur Pashchim Wisdom of Academic Gentry Journal, 61*(2), 60-62.

Mathuva, D. M. (2009). Capital Adequacy, Cost Income Ratio and the Performance of Commercial Banks: The Kenyan Scenario. *The International Journal of Applied Economics and Finance, 3*(2), 35–47.

Mishra, A. K., & Aithal, A. (2021). *Profitability in commercial banks: A case from Nepal*. *International Journal of Case Studies in Business, IT, and Education*, 5(1), 63–67. https://doi.org/10.5281/zenodo.4567517

Molyneux, P., & Thornton, J. (1992). Determinants of European bank profitability: A note. *Journal of Banking & Finance, 16*(6), 1173–1178. https://doi.org/10.1016/0378-4266(92)90065-8

Munangi, E., & Sibindi, A. B. (2020). Impact of credit risk on the financial performance of banks in Africa. *Academy of Accounting and Financial Studies Journal, 24*, 1-15.

Nepal Rastra Bank. (2007). *Capital Adequacy Framework 2007*. https://www.nrb.org.np/contents/uploads/2020/02/New_Capital_Adequacy_Framework_NCAF-New-Capital_Adeuqacy_Framework-2007_Updated_2008.pdf

Nepal Rastra Bank. (2015). *Capital adequacy framework (Basel III)*. Kathmandu, Nepal: Nepal Rastra Bank.

Nepal Rastra Bank. (2019). *Capital adequacy framework for banks and financial institutions in Nepal*. Kathmandu, Nepal: Nepal Rastra Bank.

Nepal SBI Bank Limited. (2023). *30th Annual Report 2022-2023*. https://nsbl.statebank/financial-reports

Neupane, B. P. (2020). Profitability determinants of Nepalese commercial banks. *Pressacademia, 12*(1), 40–45. https://doi.org/10.17261/pressacademia.2020.1345

Panda, B., & Leepsa, N. M. (2017). Agency theory: Review of Theory and Evidence on Problems and Perspectives. *Indian Journal of Corporate Governance, 10*(1), 74–95. sagepub. https://doi.org/10.1177/0974686217701467

Pfeffer, J. and Salancik, G. (1978) The External Control of Organizations: A Resource Dependence Perspective. Harper & Row, New York.

Pradhan, R. S., & Parajuli, P. (2017). Impact of Capital Adequacy and Cost Income Ratio on Performance of Nepalese Commercial Banks. *International Journal of Management Research*, *8*(1), 6–18.

Rasa, R. (2021). The effects of credit risk on the profitability of commercial banks in Afghanistan. *The Journal of Asian Finance, Economics and Business, 8*(7), 477-489. https://doi.org/10.13106/jafeb.2021.vol8.no7.477

Siddika, A., & Haron, R. (2019). Capital regulation and ownership structure on bank risk. *Journal of Financial Regulation and Compliance*, *28*(1), 39–56. https://doi.org/10.1108/jfrc-02-2019-0015

Smith, J. A., & Johnson, M. K. (2018). Earnings management and stakeholder theory: Exploring the impact of GAAP discretion. *Journal of Accounting Research*, 56(2), 145-167. https://doi.org/10.1111/j.1475-679X.2018.00530.x

Standard Chartered. (2019). *About us | Standard Chartered*. Sc.com. https://www.sc.com/en/about/

Sufian, F., & Chong, R. R. (2008). Determinants of bank profitability in a developing economy: Empirical evidence from Philippines. *Asian Academy of Management Journal of Accounting and Finance, 4*(2), 91-112.

Toshniwal, Dr. R. (2016). CONCEPT OF PROFIT AND PROFITABILITY OF COMMERCIAL BANKS IN INDIA. *International Journal of Science Technology and Management*, *5*(12), 547–551. https://www.ijstm.com/images/short_pdf/1481881953_196ijstm.pdf

Tripe D. (1998), *Cost to income ratio in Australian banking*, Centre for Banking Studies Massey University, New Zealand

University of Southern California. (2024). *Research Guides: Organizing Your Social Sciences Research Paper: 5. The Literature Review*. Usc.edu. https://libguides.usc.edu/writingguide/literaturereview

Wikipedia Contributors. (2019, August 26). *Standard Chartered*. Wikipedia; Wikimedia Foundation. https://en.wikipedia.org/wiki/Standard_Chartered

APPENDIX

Appendix I- Data

CAR

Year	SCB	SBI	HBL
2022/23	17.09	12.58	12.31
2021/22	15.95	13.25	11.75
2020/21	17.17	13.86	13.89
2019/20	18.51	15.55	14.89
2018/19	19.69	14.12	12.6
2017/18	22.99	15.15	12.46
2016/17	21.08	15.71	12.15
2015/16	16.38	13.49	12.15
2014/15	13.1	14.03	11.14
2013/14	12.27	13.28	11.23
Mean	17.42	14.10	12.46
SD	3.15	1.00	1.09
CV	0.18	0.07	0.09

CIR

Year	SCB	SBI	HBL
2022/23	0.52	0.41	0.83
2021/22	0.57	0.48	0.54
2020/21	0.62	0.65	0.42
2019/20	0.56	0.55	0.48
2018/19	0.52	0.47	0.42
2017/18	0.53	0.45	0.55
2016/17	0.55	0.42	0.39
2015/16	0.55	0.41	0.41
2014/15	0.55	0.43	0.62
2013/14	0.54	0.44	0.57
Mean	0.55	0.47	0.52
SD	0.03	0.07	0.13
CV	0.05	0.15	0.24

EAR

Year	SCB	SBI	HBL

2022/23	0.13	0.10	0.10
2021/22	0.15	0.11	0.10
2020/21	0.14	0.11	0.11
2019/20	0.13	0.11	0.11
2018/19	0.16	0.12	0.12
2017/18	0.17	0.12	0.12
2016/17	0.16	0.12	0.11
2015/16	0.12	0.11	0.09
2014/15	0.09	0.09	0.08
2013/14	0.10	0.10	0.08
Mean	0.13	0.11	0.10
SD	0.02	0.01	0.01
CV	0.18	0.10	0.13

LR

Year	**SCB**	**SBI**	**HBL**
2022/23	0.18	0.14	0.11
2021/22	0.23	0.12	0.08
2020/21	0.33	0.14	0.09
2019/20	0.43	0.15	0.14
2018/19	0.20	0.18	0.07
2017/18	0.39	0.18	0.09
2016/17	0.13	0.19	0.10
2015/16	0.04	0.20	0.11
2014/15	0.04	0.16	0.13
2013/14	0.22	0.16	0.09
Mean	0.22	0.16	0.10
SD	0.13	0.02	0.02
CV	0.58	0.15	0.20

BS

Year	**SCB**	**SBI**	**HBL**
2022/23	0.18	0.14	0.11

2021/22	0.23	0.12	0.08
2020/21	0.33	0.14	0.09
2019/20	0.43	0.15	0.14
2018/19	0.20	0.18	0.07
2017/18	0.39	0.18	0.09
2016/17	0.13	0.19	0.10
2015/16	0.04	0.20	0.11
2014/15	0.04	0.16	0.13
2013/14	0.22	0.16	0.09
Mean	0.22	0.16	0.10
SD	0.13	0.02	0.02
CV	0.58	0.15	0.20

ROA

Year	**SCB**	**SBI**	**HBL**
2022/23	2.29	1.06	0.47
2021/22	1.83	1.07	1.09
2020/21	1.22	0.7	1.68
2019/20	1.71	1.17	1.79
2018/19	2.61	1.94	2.21
2017/18	2.61	1.97	1.67
2016/17	1.84	1.57	2.19
2015/16	1.98	1.59	2.03
2014/15	1.99	1.64	1.34
2013/14	2.51	1.5	1.3
Mean	2.06	1.42	1.58
SD	0.42	0.39	0.51
CV	0.21	0.27	0.33

ROE

Year	**SCB**	**SBI**	**HBL**
2022/23	20.78	10.77	4.65
2021/22	14.21	9.57	10.76

2020/21	9.44	6.26	14.89
2019/20	15.15	10.44	15.4
2018/19	19.49	16.2	18.34
2017/18	18.66	15.81	14.17
2016/17	11.98	14.87	21.58
2015/16	17.18	17.46	21.22
2014/15	21.69	17.08	17.06
2013/14	26.27	22.85	16.85
Mean	17.49	4.65	15.49
SD	4.72	4.59	4.74
CV	0.27	0.99	0.31

Appendix II-Correlation

Correlations									
		CAR	**CIR**	**EAR**	**DER**	**LR**	**BS**	**ROA**	**ROE**
CAR	Pearson Correlation	1	.075	.888**	-.735**	.626**	-.172	.415*	-.024
	Sig. (2-tailed)		.695	.000	.000	.000	.363	.022	.898
	N	30	30	30	30	30	30	30	30
CIR	Pearson Correlation	.075	1	.044	.035	.089	.230	-.437*	-.495**
	Sig. (2-tailed)	.695		.818	.854	.640	.222	.016	.005
	N	30	30	30	30	30	30	30	30

EAR	Pearson Correlation	.888**	.044	1	-.903**	.544**	.002	.430*	-.091
	Sig. (2-tailed)	.000	.818		.000	.002	.991	.018	.631
	N	30	30	30	30	30	30	30	30
DER	Pearson Correlation	-.735**	.035	-.903**	1	-.469**	-.051	-.431*	.042
	Sig. (2-tailed)	.000	.854	.000		.009	.790	.017	.826
	N	30	30	30	30	30	30	30	30
LR	Pearson Correlation	.626**	.089	.544**	-.469**	1	-.114	.208	.020
	Sig. (2-tailed)	.000	.640	.002	.009		.548	.271	.915
	N	30	30	30	30	30	30	30	30
BS	Pearson Correlation	-.172	.230	.002	-.051	-.114	1	-.524**	-.692**
	Sig. (2-tailed)	.363	.222	.991	.790	.548		.003	.000
	N	30	30	30	30	30	30	30	30
ROA	Pearson Correlation	.415*	-.437*	.430*	-.431*	.208	-.524**	1	.807**
	Sig. (2-tailed)	.022	.016	.018	.017	.271	.003		.000
	N	30	30	30	30	30	30	30	30
RO	Pearson	-	-	-	.042	.020	-	.807	1

E	Correlation	.024	.495**	.091			.692**	**	
	Sig. (2-tailed)	.898	.005	.631	.826	.915	.000	.000	
	N	30	30	30	30	30	30	30	30
**. Correlation is significant at the 0.01 level (2-tailed).									
*. Correlation is significant at the 0.05 level (2-tailed).									

IMPACT OF CAPITAL ADEQUACY AND COST INCOME RATI...

By: Ambika Marasini

As of: Dec 2, 2024 11:52:12 AM
18,636 words - 164 matches - 15 sources

Similarity Index

20%

Mode: Summary Report

sources:

1,151 words / 6% - Internet from 01-May-2019 12:00AM
pdfs.semanticscholar.org

299 words / 2% - from 17-Jan-2024 12:00AM
elibrary.tucl.edu.np

374 words / 2% - Internet from 18-Oct-2022 12:00AM
www.apeejay.edu

142 words / 1% - from 17-Feb-2024 12:00AM
elibrary.tucl.edu.np

136 words / 1% - from 05-Aug-2024 12:00AM
elibrary.tucl.edu.np

130 words / 1% - Internet from 24-Nov-2022 12:00AM
elibrary.tucl.edu.np

127 words / 1% - from 17-Feb-2024 12:00AM
elibrary.tucl.edu.np

274 words / 1% - Internet from 23-Oct-2022 12:00AM
nepjol.info

182 words / 1% - Internet from 25-Feb-2022 12:00AM
docplayer.net

180 words / 1% - Internet from 06-Jan-2023 12:00AM
library.uniglobe.edu.np

180 words / 1% - Internet from 10-Oct-2022 12:00AM
www.internationaljournalssrg.org

173 words / 1% - Internet from 06-Jan-2023 12:00AM
kb.icai.org