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

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

by

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Certification of Authorship

I hereby corroborate that I have researched and submitted the final draft of dissertation entitled “IMPACT OF CAPITAL ADEQUACY AND COST INCOME RATIO ON PERFORMANCE OF COMMERCIAL BANKS IN NEPAL”.The work of the dissertation has not been submitted previouslyfor the purpose of conferral of any degrees nor it has been purposed and presented as part of requirements for any other academic purposes.

The assistance and cooperation that I have received during this research work has been acknowledged. In addition, I declare that all information sources and literature used are cited in the reference section of the dissertation.

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Puspa Adhikari

December 2023

Report of Research Committee

Mrs. Puspa Adhikari has defended research proposal entitled "IMPACT OF CAPITAL ADEQUACY AND COST INCOME RATIO ON PERFORMANCE OF COMMERCIAL BANKS IN NEPAL"successfully. The research committee has registered the dissertation for further process. It is recommended to carry work as per suggestion and guidance of supervisor Rishi Raj Gautam and submit the thesis for evaluation and voice viva examination.

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Approval Sheet

We, the undersigned, have examined the thesis entitled"IMPACT OF CAPITAL ADEQUACY AND COST INCOME RATIO ON PERFORMANCE ON OF COMMERCIAL BANKS IN NEPAL" presented by Mrs. Puspa Adhikari, a candidate for the degree of **Masters of Business Studies (MBS Semester)** and conducted the viva voce examination of the candidate. We hereby certify that the thesis is worthy of acceptance.

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Abbreviations

α	_	Alpha
CAR	_	Capital adequacy ratio
CTI	_	Cost to income ratio
DE	_	Debt to equity ratio
D.F.	_	Degree of freedom
LD	_	Loan to deposit ratio
NIM	_	Net interest margin
ROA	_	Return on Assets
SIZE	_	Bank size
St. Dev	_	Standard Deviation
S.E.	_	Standard Deviation

Abstracts

The banking sector plays a crucial role in a country's financial market, contributing significantly to the national economy. The profitability of commercial banks in Nepal is influenced by various internal and external factors. This study aims to investigate the impact of capital adequacy ratio, cost-to-income ratio, bank size, debt-to-equity ratio, and loan-to-deposit ratio on the financial performance of Nepalese commercial banks. Financial performance is assessed through return on assets and net interest margin. To conduct this analysis, secondary data from the years 2069/70 to 2078/79 is collected from authorized websites and annual reports of nine sampled commercial banks in Nepal. The study utilizes balanced panel data and employs correlation analysis to examine the relationship between return on assets and independent variables, as well as net interest margin and independent variables separately. Additionally, regression analysis is applied to determine the direction and magnitude of the relationships. The findings reveal that the capital adequacy ratio positively impacts return on assets, while bank size has a negative and significant association with return on assets. Other variables such as cost-to-income ratio, debt-to-equity ratio, and loan-to-deposit ratio show a negative relationship with return on assets. On the other hand, all independent variables, including capital adequacy ratio, cost-to-income ratio, bank size, debt-to-equity ratio, and loan-to-deposit ratio, positively influence net interest margin.

The study emphasizes the significant impact of the capital adequacy ratio on the performance of commercial banks in Nepal throughout the study period. In conclusion, the research establishes that capital adequacy ratio, cost-to-income ratio, bank size, debt-to-equity ratio, and loan-to-deposit ratio are crucial factors affecting the financial performance of Nepalese commercial banks. Furthermore, these variables consistently exhibit positive effects on net interest margin. Notably, the capital adequacy ratio is identified as having a positive and significant impact on return on assets.

Keywords: *Capital adequacy ratio, Cost to income ratio, Return on assets, Debt to equity ratio, Loan to deposit ratio.*

CHAPTER I
INTRODUCTION

1.1 Background of the study

Recent academic attention has been focused on investigating the interplay among capital adequacy, operational efficiency, and bank performance. This heightened interest is driven by the dominance of the banking sector in financial markets, coupled with the conflicting findings in existing literature regarding the associations between capital adequacy, operational efficiency, and overall bank performance.

Banks play a vital role in influencing Nepal's economic landscape, primarily acting as financial intermediaries. A critical element of their function is to ensure the sustainable operation of financial intermediation, which, in return, contributes to the profitability of banks. Moreover, banks are entrusted with applying prudential principles, given their significant responsibility in managing funds from depositors and disbursing these funds to borrowers. A resilient financial system, as emphasized by Kinnon (1973), encourages investment by supporting viable business opportunities, mobilizing savings, effectively allocating resources, and facilitating the exchange of goods and services.

Banking has evolved into a significant entity that provides financial services to the public, with its scope of operations expanding continuously. The capital structure of banks is subject to strict regulations, and the ratio of a bank's available capital to its risk-weighted assets is referred to as the capital adequacy ratio. This ratio is overseen and regulated by the central bank of the respective state. Its purpose is to address potential unforeseen losses and liabilities, ensuring the sustained financial performance of the bank and safeguarding public deposits. The capital adequacy ratio comprises two tiers: the first tier, known as core capital or equity, allows the financial institution to maintain its business continuity without interruptions. The second tier, an extension of core capital, incorporates technical reserves or allowances loaded on income, serving as non-outflow support for core capital. This ratio can be calculated using the equation: capital adequacy ratio = property rights ÷ risk-weighted

assets. Due to the distinctive nature of banking compared to industrial, service, and commercial companies, banks rely significantly on adequate funds to finance their assets. The dependence on various sources of funds and the utilization of different funding mechanisms set banking apart (Joshi, 2004).

Capital adequacy serves as a crucial mechanism for both bankers and regulators to absorb potential shocks that a bank might encounter. It plays a pivotal role in mitigating the likelihood of bank failures and minimizing losses for depositors. The importance of capital adequacy extends to reducing various risk components within the banking industry, thereby addressing moral hazards and fostering competitiveness. Additionally, banks need sufficient capital not only to meet internal requirements and facilitate expansion but also to provide security for depositors. The adequacy of capital is also influenced by the anticipated economic conditions of the broader economy. According to Christian et al. (2008), measures of capital adequacy offer valuable insights into a firm's returns, with certain individual variables related to asset quality and earnings providing informative data. On the other hand, factors such as size, growth, and loan exposure measures do not appear to hold significant explanatory power when analyzing returns.

Profitability stands as a primary objective for all financial institutions, given the necessity for banks to maintain sufficient liquidity for ongoing operations. Banks serve as crucial generators of capital, and profitability plays a pivotal role in attracting bank depositors, potential investors, and instilling confidence among capital shareholders, thereby encouraging their investment in the bank. Additionally, profitability serves as a key performance metric for bank management, offering strong indicators to regulators that the institution is on a positive trajectory. It also provides insights into the effectiveness of the bank management's direction of projects, serving as a measure of the success of investment, operational, and financing policies implemented by the bank's management.

In the banking industry, two widely utilized financial profitability ratios are Return On Asset (ROA) and Net Interest Margin (NIM). ROA is a key metric concentrating on a company's capacity to generate profits from its operations. This research specifically focuses on ROA as the chosen profitability ratio. ROA is a significant indicator of a bank's profitability,

representing the ratio of earnings to total assets. It assesses the effectiveness of bank management in generating profits by leveraging the company's assets. Essentially, ROA provides insights into how efficiently a company's resources are employed to generate revenue, highlighting the proficiency of corporate management in generating net income from all institutional resources (Sudiyatno & Suroso, 2010). On the other hand, Net Interest Margin (NIM) addresses market risks and is determined by the difference between interest income and interest expenses. NIM is calculated by deducting the interest paid to depositors and holders of bank debt from the interest earnings of bank loans and other income-generating assets during a specific period. The NIM has a direct impact on the bank's profit and loss, consequently influencing overall bank performance (Hutagalung et al., 2012).

Cost to Income Ratio (CTI) can be called as the efficiency ratio used to measure the bank's management capability in controlling operating costs against operating income. This ratio showshow efficiently the bank is being run, the lower the ratio, the more profitable the bank (Almilia & Herdiningtyas, 2005). The higher the ratio of CIR means the more inefficient the operating costs. Cost to income ratio has positive effect on performance of bank (Ihantav, 2018). However, Syafri (2017) reported negative relationship.

The capital adequacy ratio serves as an indicator of a bank's internal strength to endure losses during a crisis, directly correlating with the bank's resilience in challenging situations. This ratio also plays a pivotal role in influencing the profitability of banks by shaping their capacity for expansion. In the Nepalese context, research by Pradhan and Bhattarai (2016) indicates a negative impact of financial leverage on various metrics such as return on assets, return on equity, and net interest margin for banks. NRB directives on capital adequacy have shown a significant impact on different aspects of commercial banks, contributing to the stability of these banks in the financial market and elevating the banking sector in Nepal to international standards.

The size of a bank is positively linked to the performance of commercial banks, as highlighted by Huntchinson & Cox (2018) and Ihnatov (2018). Examining liquidity, Joshi (2004) employed financial tools to analyze performance and the causes of changes in the

cash position of two banks. The study revealed a positive correlation between liquidity, bank loans, and bank profitability. Joshi (2004) specifically found a positive relationship between liquidity, bank loans, and the profitability of banks.

In the Nepalese context, Pradhan and Bhattarai (2016) found that financial leverage has a detrimental effect on return on assets, return on equity, and net interest margin for banks. Additionally, the debt-to-equity ratio exhibits a negative correlation with both return on equity and net interest margin. Another study by Udas (2007) demonstrated the significant impact of NRB directives on capital adequacy, influencing various aspects of commercial banks. These directives not only contribute to maintaining the stability of commercial banks in the financial market but also elevate the banking sector in Nepal to international standards.

The commercial banking industry plays a vital role in Nepal's financial system, with the largest representation in the country's stock market. The performance of banks serves as a key indicator of the overall economic growth and development. Consequently, this study aims to investigate the impact of capital adequacy and operational efficiency on the performance of commercial banks in Nepal.

1.2 Problem statement

The level of capital adequacy and a nation's economic growth are intimately related. Because of the increased risks and financial crises that banks have faced recently, the issue of capital adequacy in banks has become increasingly important due to global regulatory changes. The capital adequacy ratio for banks is one of the most important indicators of the financial solvency of the financial sector and is regarded as a safety valve to protect depositors in order to promote stability and efficiency in the banking system and financial institutions (Joshi, 2004).

According to liquidity theory, a business must be able to meet its short-term obligations in order to have some cash (or cash equivalents, like current or other deposits at a bank that are withdrawable at any moment) that is owned by the business. The increased liquidity shows

that the business has enough cash on hand to cover its immediate obligations. According to Hutchinson and Cox's (2006) study, there is a negative correlation between a commercial bank's performance and liquidity.

The report went on to say that a bank's cost of funds should be lowered by a greater capital ratio (which carries a lower risk of bankruptcy), which will increase the bank's net interest revenue and ultimately its profitability.

The debt-to-equity ratio, or DE ratio, gauges a bank's capacity to pay off all or a portion of its obligations to investors and the government for capital investments made with money from their own capital, both short- and long-term. Hutchinson and Cox (2006) came to the conclusion that the debt-to-equity ratio and bank profitability were positively correlated.

The aforementioned discussion shows that the conclusions of different studies regarding capital adequacy, cost income, and bank performance are inconsistent. Thus, the purpose of this study is to examine how Nepalese commercial banks' performance is impacted by cost income and capital adequacy. More precisely, it looks at how Nepalese commercial banks perform in relation to capital adequacy ratio, cost income ratio, debt to equity ratio, bank size, and loan to deposit ratio.

This study basically attempts to deal with following issue

a) What is the current status of capital adequacy ratio, cost income ratio, bank size, debt-to-equity ratio, loan to deposit ratio of commercial banks in Nepal?
b) What is the relationship between capital adequacy ratio, cost to income ratio, bank size, debt to equity ratio, loan to deposit ratio and performance of commercial bank in Nepal?
c) How does capital adequacy ratio, cost to income ratio, bank size, debt equity ratio, loan to deposit ratio affect the performance of commercial banks in Nepal?

1.3 Objectives of the study

Examining the relationship between capital adequacy, operational efficiency, and bank performance within the framework of Nepal's commercial banks is the primary goal of this research. The following are the study's particular goals:

a) To examine the the current status of capital adequacy ratio, cost income ratio, bank size, debt-to-equity ratio, loan to deposit ratio of commercial banks in Nepal.

b) To examine the relationship between capital adequacy ratio, cost to income ratio, bank size, debt to equity ratio, loan to deposit ratio and performance of commercial bank in Nepal.

c) To access the impact ofcapital adequacy ratio, cost to income ratio, bank size, debt equity ratio, loan to deposit ratio on performance of commercial banks in Nepal.

1.4 Hypotheses

This study attempts to test the following hypothesis to resolve the study issues:

$H_{1:}$ The capital adequacy ratio, cost-income ratio, debt-to-equity ratio, bank size, and loan-to-deposit ratio of Nepal's commercial banks are significantly correlated.

$H_{2:}$ The capital adequacy ratio, cost to income ratio, bank size, debt to equity ratio, loan to deposit ratio, and performance of commercial banks in Nepal are all significantly correlated.

$H_{3:}$ The performance of commercial banks in Nepal is significantly impacted by the capital adequacy ratio, cost to income ratio, bank size, debt equity ratio, and loan to deposit ratio.

1.5 Rationale of the Study

In the banking sector, capital sufficiency is essential for lowering various risk factors and is also required to lower moral hazard and competitiveness. In addition, banks need to have adequate capital to cover their internal expenses, support growth, and guarantee depositor

security. Anticipated economic conditions pertaining to the overall economy have an impact on the sufficiency of capital. Bank capital structures are subject to strict regulations. Adequate capital aids regulators and bankers in mitigating potential shocks to the bank. Profitability serves as a gauge for the management of the bank and provides strong signals to regulators that the bank is headed in the right direction. It also provides insight into the suitability of management for project management and is a measure of the efficiency of the bank's investment, operational, and financing policies. Furthermore, profitability boosts confidence among bank deposit holders and potential investors and encourages capital shareholders to underwrite in the bank.

1.6 Limitations of the study

Despite the earnest attempts to draw significant implications from the research. It has earned to be taken into account with some limits in order to get accurate findings interpretation. The following are the study's main limitations:

- The study's ten years of cross-sectional data—from the fiscal years 2069–2070 to 2078–2079—are its only source. If other fiscal years are included, the results can vary.
- The study is based on secondary data that were gathered by looking through previous years' annual reports and approved websites of the concerned institutions. The correctness of the secondary data determines the accuracy of the outcome.
- The study includes the following variables: bank size, debt to equity ratio, loan to deposit ratio, capital adequacy ratio, return on assets, net interest margin, and cost to income ratio.
- Out of the twenty mentioned commercial banks, only nine are included in the study's sample.

CHAPTER II
LITERATURE REVIEW

This chapter provides a thorough analysis of the body of research on capital adequacy, the cost-income ratio, and the performance of the banking sector. The primary determinant of a company's success or failure in financial management is capital adequacy. The goal of the purposeful literature assessment was to identify critical research gaps, and the entire work is focused on filling such gaps. Thus, the review of the theory underlying and supporting capital adequacy, cost income ratio, and banking industry performance is covered in this chapter.

2.1 Theoretical Review

Capital Adequacy Ratio

The phrase used to characterize or quantify capital funds in banks. It is given as a proportion of the risk-weighted credit exposure of a bank. The foundation for calculating the capital adequacy ratio is the bank's total risk-weighted assets, supplemental capital, and core capital. This ratio is used to assess the adequacy of the overall capital fund and core capital, which is yield. According to NRB instruction, all commercial banks must maintain CAR. It also serves to safeguard depositors and advance the stability and effectiveness of the global financial system (Pradhan, 2017).

The ability of banks to monitor, direct, and control the risks they encounter in order to scale, control, and make decisions that are consistent with the strategy and policy, as well as to increase their competitiveness mindset, is expressed by the term "capital adequacy." In addition to policy development and procedures needed for the prevention of various risks arising from technological and electronic evolution, increasing complexity in banking, and competition amongst banks, capital adequacy is helpful in pricing banking services and optimizing returns from bank operations. Commercial banks must therefore provide enough capital to cover any potential risks and devise an appropriate plan to ensure the bank's survival with a higher percentage than the required percentage and to avoid the intervention

of monetary authorities to stop its decline—a process known as corrective actions (Barr, 2016).

A useful metric for assessing a bank's solvency is the capital adequacy ratio, which gauges the institution's capacity to pay back debt and cover any losses. Stated differently, the rise in a bank's capital adequacy serves as a signal to safeguard depositor funds, so mitigating the risk of crises that could expose the bank to the expense of private bankruptcy. The independent variable in capital adequacy is defined as avoiding and hedging against the numerous types of risks to which commercial banks may be exposed through their operations.

Debt Equity Ratio

The equity ratio, which gauges the entire amount of a company's assets that are backed by investors, is regarded by investors as a leverage or solvency ratio. The equity ratio is computed by dividing the entire amount of debt held by the company by its total equity. Total Debt / Total Equity is the equity ratio. Debt ratios are a measure of a company's financial leverage, or how much it depends on debt to fund its assets. In practical terms, there are two ways to calculate debt ratios: the first is based on the statement of financial position, which quantifies the amount of debt used by the company for financing, and the second is based on the income statement, which quantifies the risk associated with debt by looking at interest rate acquisition and fixed rate burden coverage.

To illustrate the connection between borrowed money and owners' capital, utilize the debt-to-equity ratio. It represents the many claims made by shareholders and creditors against the bank's assets. It is a crucial instrument for financial analysis to evaluate a company's financial structure. The ratio shows how much each of the business's creditors and owners contributed to its funding. Put otherwise, this ratio displays the respective percentage of capital contributed by creditors and owners. A greater debt-to-asset ratio indicates that creditors have financed a larger portion of the company's capital than owners have, or it indicates that creditors' claims about the firm's assets are greater than those of the owners. The riskiness of the company's capital structure is gauged by the debt to equity ratio. According to Shah and Khan's 2007 analysis, the debt to equity ratio has a negative correlation with profitability.

Cost to Income Ratio

It displays the expenses of a business compared to its revenue. Calculate the ratio by dividing the operational costs (which include fixed and administrative expenditures like rent and property taxes, but not written-off bad debts) by the operating income. One crucial financial metric that is especially significant when assessing banks is the cost-to-income ratio. It displays the expenses of a business compared to its revenue. Divide the operational expenditures—which include fixed and administrative costs like salaries and property expenses—by operating income to find the ratio (Joshi, 2004). Do not include bad debts that have been written off. Investors can clearly see from the ratio how profitably the company is being operated; the lower the ratio, the more lucrative the bank will be. Variations in the ratio can also point to possible issues. For example, if the ratio increases over time, it indicates that expenses are growing faster than revenue, which may indicate that the organization has lost focus in its efforts to draw in more clients.

It is a crucial financial metric for figuring out how profitable a bank is. This ratio demonstrates the operational efficiency of a bank. By dividing operational expenses by operating income, the ratio is computed. The bank will be more profitable the lower the ratio. Additionally, this ratio gives investors a good understanding of the company's potential performance efficiency. Variations in the ratio can also lead to some possible issues. For example, if the ratio rises from one period to the next, it indicates that expenses are rising faster than income, which could have a negative impact on the business of the organization. Operating Expenses / Operating Income equals the cost-to-income ratio.

Bank Size

One of the key factors influencing how well commercial banks perform is bank size. Total assets serve as a stand-in for the bank's size. It is often anticipated that bank size will increase profitability (Smirlock, 1985). Greater market share and market dominance are possessed by larger companies in terms of customer base and investment volume. In the banking industry, bank size is typically employed to take advantage of possible economies or diseconomies of scale (Bhattarai, 2016). There is a significant positive correlation between bank size and profitability (Bagchi, 2013).

Loan to Deposit Ratio (LDR)

By comparing the total loans made by a bank to the total deposits made over the same period, the loan-to-deposit ratio is used to evaluate a bank's liquidity. Divide the entire number of loans made by a bank by the total amount of deposits made during the period to find the loan-to-deposit ratio.

The bank's ability to meet its financial obligations through deposits is measured by what is also known as a credit to deposit ratio (Rijal, 2019). A larger ratio would imply a greater risk for banks, as lending will reduce their reserve, but a lower ratio might mean the bank isn't making much money (Murphy, 2019). It's anticipated to be positively correlated with bank profitability.

2.2 Empirical Review

2.2.1 Review of related study in global context up to 2015

Hutchinson and Cox (2006) discovered that this indicates a greater return on assets with a higher debt-to-equity ratio. It also suggests that the return on assets would increase with bank size. Nonetheless, there is a negative correlation between return on assets and capital adequacy, cost income ratio, equity capital to total assets ratio, and liquidity ratio. This implies that the return on assets would be lower the higher the capital adequacy. It also suggests that the return on assets will be lower the higher the cost income ratio. In a similar vein, the study found that the return on assets would decrease as the equity capital to total assets increased.

Fiordelisi (2010) found that banks' efficiency levels are generally improved by larger capital levels. Although banks are supposed to cover losses from regular profits, occasionally they may incur unexpected losses that are not covered by regular profits. In an unusual loss scenario, capital is helpful in mitigating losses. Capital serves an insurance purpose in this way. A bank with sufficient capital inspires confidence. It gives the public, the bank's customers, and the regulatory body confidence in the bank's ongoing financial stability. In addition to deposits and borrowings, capital (equity and long-term debt) serves as a source of funding for the bank.

Pringle (2010) noted that during times of tight money, an undercapitalized bank will likely be exposed to high volumes of short-term borrowing at potentially significant excess costs. The findings also suggested that profitability should continue to moderate. Therefore, the finding that "the higher capital requirements in the region can promote financial stability" is supported by this study. Attempt to look into how capital affects the financial performance of Kenyan commercial banks. During the study period, they discovered that for both Tier I and Tier II banks, the ratios of core capital to total risk weighted assets and total capital to total risk weighted assets fell.

Alalaya (2010) concluded that while ROE had a positive and substantial relationship, TD/TA had a positive effect, GDP had a negative influence, and the per capita inflation rate and the assets logarithm of banks had a significant negative relationship with ROA. Ali (2016) looked into the critical factors that affect profitability in the context of commercial banks in Jordan. To do this, a balanced panel data set covering these institutions from 2005 to 2014 was employed, with ROA and ROE serving as indicators of the banks' profitability. The results showed that the profitability of banks is positively correlated with capital adequacy, capital, and leverage, and negatively correlated with asset quality.

Torbira (2013) examined in their empirical study how Nigerian banks' financial performance metrics were affected by capital sufficiency factors. The findings of the investigation demonstrated a noteworthy and enduring correlation between capital adequacy indicators and bank financial performance variables within the Nigerian banking sector.

Onaolapo and Olufemi (2014 investigated how the capital adequacy conditionality affected the bank performance of several banks in Nigeria. The study postulated that there would be no discernible relationship between five bank performance metrics and the statutorily required Capital Adequacy Ratio (CAR). The majority of the secondary data included in this study came from papers published by regulatory bodies such as the Central Bank of Nigeria during the course of ten years, from 1999 to 2008. The results show that the Capital Adequacy Ratio (CAR) of the Nigerian banking industry is not significantly impacted by any of the performance measures that were studied, including Returns on Assets (ROA), Returns on Capital Employed (ROCE), and Efficiency Ratios (ER).

Table 1: Summary of major empirical studies in global context upto 2015

Author(s)	**Major Finding**
Hutchinson &Cox (2006)	The debt-to-equity ratio and bank size were found to positively correlate with ROA. Nonetheless, there is a negative correlation between return on assets and capital adequacy, cost income ratio, equity capital to total assets ratio, and liquidity ratio. In a similar vein, the study found that the return on assets would decrease as the equity capital to total assets increased.
Pringle (2010)	They discovered a relationship between the financial results of commercial banks and capital sufficiency.
Atalaya (2010)	The study analyzed the profitability of banks using ROA and ROE. The results showed that there is a negative correlation between asset quality and banks' profitability and a positive correlation between capital adequacy, capital, and leverage.
Torbira (2013)	The findings of the investigation demonstrated a noteworthy and enduring correlation between capital adequacy indicators and bank financial performance variables within the Nigerian banking sector.
Onaolapo & Olufemi (2014)	The results show that the Capital Adequacy Ratio (CAR) is not significantly impacted by any of the performance metrics, including Returns on Assets (ROA), Returns on Capital Employed (ROCE), and Efficiency Ratios (ER).

2.2.2Review of related study in global context after 2015

The goal of Rufo and John's 2017 study was to look into how credit risk affects capital adequacy. The study's sample comprised 567 banks located in the Philippines. The results of this study showed that, while capital adequacy is important, it also has an impact on the financial business of Nigerian banks using the GLS estimator technique Statements for the years 2007 to 2015. However, there was no discernible effect of capital adequacy on bank profitability in the Philippines. Studying the effect of capital adequacy ratio on financial performance and economic results in 64 Japanese banks between 2005 and 2014, the application and study demonstrated through empirical evidence the impact of capital adequacy in promoting financial business to the banks of Nigeria supporting the overriding impact of capital adequacy in improving the financial deeds of banks. The findings showed that there are a variety of indications of correlations between the study's variables, but with a small deviation from earlier empirical research.

Syafri (2017) the study focused on examining the factors influencing the profitability of commercial banks in Indonesia, utilizing polling data from banks listed on the Indonesia

Stock Exchange between 2002 and 2011. Return on Assets (ROA) was employed as the measure of bank profitability, and a pooled data regression model was used for analysis. The findings revealed that loan-to-total assets, total equity-to-total assets, and loan loss provision-to-total loans positively impact profitability, whereas inflation rate, bank size, and the cost-to-income ratio (BOPO) have a negative effect. Economic growth and non-interest income-to-total assets were found to have no significant impact on bank profitability.

Ghadimi (2017) explored the factors influencing the profitability of the banking system in Iran using panel data spanning from 2001 to 2010. The sample included ten banks, with internal factors such as ownership ratio, ratio of total loans to total assets, ratio of bank customers' deposit to banks' assets, ratio of interest-free revenues, ratio of total interest-free loans to total assets, and total revenue. External factors encompassed the actual rate of interest, economic growth, and inflation rate. Employing econometrics techniques, the study revealed that ownership ratio; ratio of total equity to total assets, and inflation rate had a negative impact on profitability. Conversely, the ratio of customers' deposits to total assets, the ratio of total loans to total assets, and economic growth exhibited a positive influence on profitability.

Ho and Hsu (2017) examined the connection in Taiwan's banking sector between companies' risky investment practices and their financial framework. Regression analysis was used to examine the impact of the first financial reform on the financial structures of banking organizations during two distinct time periods: prior to the reform in 1996–2000 and following it in 2001–2006. Given that market share and leverage showed a positive correlation, the initial findings suggested that the limitations on CAR had affected the riskier investment plans of businesses.

Navapan and Tripe (2018) outlined how one technique to assess banks' performance in relation to one another is to compare their Returns on Equity (ROE). It may seem obvious enough to not require empirical confirmation, but a study found that a bank's capital to asset ratio and its return on equity should be negatively correlated. Furthermore, they discovered a bad correlation between capital and profitability.

Ben (2018) attempted to look into the connection between capital and financial performance in 19 Tunisian banks between 2000 and 2009. This study approximated the capital ratio and its financial performance using three metrics: return on assets (ROA), return on equity (ROE), and net interest margin (NIM). The findings showed that capital and financial success had a positive link.

Ihnatov (2018) discovered that the cost to income ratio, bank size, credit risk, and market concentration all had a detrimental impact on banks' profitability. Additionally, the extent to which capital adequacy, management, and performance of Nigeria's commercial banks have an impact was evaluated (2012-2018). It is discovered that earnings are negatively impacted by a capital adequacy ratio. The efficiency of management and operating expenses were examined by the researcher, who discovered a negative association between them and return on capital.

Sunaryo (2020) investigated the impact of the loan to deposit ratio, non-performing loan ratio, net interest margin ratio, and capital adequacy ratio on the financial performance between 2012 and 2020. According to the study's findings, financial performance is positively and significantly impacted by the capital adequacy and net interest margin ratios. On the other hand, a non-performing loan has no real impact.

Table 2: Summary of major empirical studies in global context after 2015

Author(s)	Major Finding
Syafri (2017)	The empirical findings demonstrate that while inflation rate, bank size, and cost-to-income ratio have negative effects on profitability, loan to total assets, total equity to total assets, and loan loss provision to total loan have favorable effects on profitability.
Ghadimi (2017)	Study indicated that ownership ratio; ratio of total equity on total assets, along with inflation rate had negative effect on profitability. Besides, the ratio of customers' deposit on total assets, the ratio of total loans on total assets and economic growth had positive influence on profitability.
Ho & Hsu (2017)	The first set of findings showed that market share and leverage were positively correlated with profitability, and that the limitations on CAR had affected the riskier investments made by businesses.
Navapan& Tripe (2018)	The study found a negative correlation between profitability and the capital to asset ratio.
Ben (2018)	The findings showed that the capital adequacy ratio and financial performance had a positive association.
Ihnatov (2018)	The study discovered that the cost to income ratio, bank size, credit risk, market concentration, and capital adequacy ratio all had a negative effect on net profitability of banks.
Sunaryo (2020)	The study came to the conclusion that financial performance is positively and significantly impacted by the capital adequacy ratio and net interest margin ratio. On the other hand, a non-performing loan has no real impact.

2.2.3 Review of related study in Nepalese context

Sharma (2012) a comparative analysis of joint venture banks in Nepal's capital and asset structure management. Secondary sources of data were gathered, and a financial statistical tool was employed for data analysis. The primary funding source for JVB is total deposits. Throughout the study period, there has been a lot of variation in the joint venture banks' deposit collection trends. It is therefore highly advised that all joint venture banks offer incentives to draw in deposits.

Bhattrai (2021) has looked at the report titled "Capital adequacy and Financial Performance of Commercial Bank," which collected data from 2012–13 to 2018–19 from 26 listed commercial banks in Nepal. The study came to the conclusion that the capital adequacy ratio had a beneficial effect on the commercial banks' financial performance as indicated by ROE and ROA.

Table 3: Summary of major empirical studies in Nepalese context

Author(s)	**Major Finding**
Sharma (2012)	Deposit is found to be more crucial. Means that liquidity risk is mainly influence performance of commercial bank.
Bhattrai (2021)	Capital Adequacy ratio positively influence on financial performance of commercial bank (ROA and ROE).

2.3 Research Gap

Adequate capital aids regulators and bankers in mitigating potential shocks to the bank. While capital is crucial in lowering the incidence of bank failures and depositor losses, banks also take on excessive risk in an effort to increase shareholder gain at the expense of funders. In the banking industry, capital sufficiency is essential for lowering various risk factors, and it also helps to lower moral hazard and competition. Moreover, sufficient capitalization is a crucial business factor; banks need to have enough capital to cover their internal expenses, fund expansion, and guarantee depositor security. Anticipated economic conditions pertaining to the overall economy have an impact on the sufficiency of capital.

This study therefore closes the existing research vacuum on the comprehensive analysis of capital adequacy, which is the primary concern of the capital adequacy, cost-to-income ratio, and bank performance. Prior research has mostly concentrated on the comparative financial analysis of commercial banks, including factors related to the bank's profitability, leverage, and liquidity. Nonetheless, this study examines the cost-income ratio, capital adequacy, and performance of commercial banks with respect to a number of criteria, including bank size, NIM, ROA, and the debt-to-equity and loan-to-deposit ratios.

CHAPTER III
RESEARCH METHODOLOGY

This chapter outlines the research approach that was utilized to get significant findings about the impact of capital adequacy and cost-income ratio on the financial performance of Nepal's commercial banks. The research design, population and sample, kind and source of data, data analysis technique, and research framework are all included in the research methodology section.

3.1 Research Design

The study adopts both descriptive research design and causal-comparative research design to investigate various aspects. Descriptive research design is primarily employed to depict past phenomena, utilizing a descriptive methodology to elucidate and characterize the observed occurrences. Comparative research design is then utilized to gauge the direction of relationships among dependent and independent variables. Furthermore, a causal-comparative research design is implemented to assess the influence of specific factors, namely capital adequacy, cost-to-net income ratio, debt-to-equity ratio, loan-to-deposit ratio, and bank size, on performance metrics such as Return on Assets (ROA) and Net Interest Margin (NIM). This design allows for a comprehensive examination of the impact of these variables on the specified performance indicators. The dual approach of descriptive and causal-comparative research designs enhances the study's ability to provide a thorough understanding of the phenomena under investigation.

3.2 Population and Sample, and Sampling Design

There are 20 listed commercial bank of Nepal in NEPSE at present, out of which 9 commercial banks are taken as a sample. This sample is taken covering approximately 45%of the population. Sample is taken by following judgmental sampling method that includes earlier established private sector commercial bank due to availability of length of data. Listed commercial banks which are operated now in Nepal comprise population where as nine commercial banks taken as sample are Laxmi Bank Limited, Nabil Bank Limited, NMB Bank Limited, Kumari Bank Limited, Citizen Bank Limited, Sanima Bank Limited,

Siddhartha Bank Limited, NIC ASIA Bank Limited, Machhpuchre Bank Limited are the sample for the study.

3.3 Nature and Sources of Data and the Instrument of Data Collection

The investigation was carried out using data that is quantitative in nature. Some of the secondary sources of data were obtained from regulatory bodies such as Nepal Rastra Bank, while others were gathered from the annual reports and websites of the relevant banks.

3.4 Method of Data Analysis

The study's data analysis techniques are divided into several subsections. The instruments used for secondary data analysis are covered in the first section. Regression analysis and correlation analysis are included in this. The second contains several statistical tests, such as the F-test and t-test that are significant for validating the model. Data analysis is carried out using SPSS16, a statistical program.

The Model Specification

Financial ratio, percentages, mean, standard deviation, correlation, regression has been used for the purpose of analysis of data.

Table 4 Variables description and prior sign expectation

SN	Variables	Description
1	Capital Adequacy (CAR)	Equity/total risk weight assets
2	Net interest margin (NIM)	Interest income minus interest expenses
3	Cost to Income Ratio (CTI)	Operating cost/revenue
4	Debt to Equity Ratio (DE)	Debt/Total Equity
5	Bank Size (SIZE)	Total assets
6	Loan to deposit ratio (LDR)	Total loan/ total deposit
7	Return on Assets (ROA)	Net profit/Total Assets

3.5 Descriptive Tools

3.5.1Financial Tools

The practice of assessing companies, initiatives, spending plans, and other financial activities to ascertain their viability and appropriateness is known as financial analysis. Financial instruments establish a relationship between the items on the balance sheet and the profit and loss account in order to measure the firm's financial strengths and weaknesses. A trustworthy method of determining a company's financial performance is through financial ratio analysis. Illustrating the mathematical link between two accounting figures or items is helpful. The following are the financial instruments utilized in the study:

Ratio Analysis

Ratio analysis is a quantitative technique that looks at financial statements like the income statement and balance sheet to provide insight into a company's liquidity, profitability, and operational efficiency. Ratio analysis is the process of establishing an arithmetical relationship between two figures. It calculates the efficiency of each item by dividing it by the other and displays the correlations between the two figures.

Return on Assets

Return OnAssets is calculated by dividing a firms net income by the average of its total assets.

Mathematically,

Return on Assets (ROA) =Net Income /Average Total Assets

Net Interest Margin

Net Interest Margin is usually measured by taking a bank’s investment income minus its interest expenses and dividing by its average earning assets.

Mathematically,

Net Interest Margin (NIM) = (Interest Received – Interest Paid) / Average Earning Assets

Capital Adequacy Ratio

Capital Adequacy Ratio is the ratio of bank’s capital in relation to its risk weighted assets and current liabilities.

Mathematically,

Capital Adequacy Ratio (CAR) = (Tier 1 Capital + Tier 2 Capital) / Risk-Weighted Assets

Cost to Income Ratio

Cost to Income Ratio shows a company's costs as a portion of its income.

Mathematically,

Cost Income Ratio(CTI)= Operating cost/operating income

Debt to equity Ratio

Debt-to-equity ratio is a measure of how much debt a company has taken on relative to its shareholder equity.

Mathematically,

DE Ratio (DE)= Total debt/Shareholder's equity

Bank Size

The ratio represents the ownership of assets by banks.

Loan to Deposit Ratio

Loan to deposit ratio is a ratio between the bank's total loans and total deposits.

Mathematically,

Loan to Deposit Ratio (LDR) =Total Loans/ Total Deposits

3.5.2. Statistical Tools

The measurements or equipment used to examine data gathered from various sources are known as statistical tools. There are several statistical methods available in statistics to analyze different types of data. The study has also made use of some statistical tools in addition to the financial ones. To examine the relationship between two variables, the statistical procedures listed below are employed.

Mean ($\overline{X}$)

The arithmetic mean, or simply the mean, is the most well-known and often utilized of the several central location measures. The average of a group of variables is calculated by dividing their total by their number (Freund, 1984). Any set of numerical data can be used to calculate it. It therefore always exists. The sign for the mean is as follows:

$$\text{Mean } (\overline{X}) = \Sigma$$

Where,

$\overline{X}$ = Arithmetic mean

$\sum X$ = Sum of all the values of the variable X

Y= Number of observations

Standard Deviation (σ)

The absolute description is measured by the standard deviation (σ). Positive square root of the mean of the square of the deviations from the arithmetic mean is how it is defined. The magnitude of the deviations will likewise be bigger if the standard deviation is higher. Higher degrees of truth or fact are indicated by smaller standard deviations, and vice versa. The formula for standard deviation is:

$$\sigma = \sqrt{\frac{1}{N}\sum\left(X - \overline{X}\right)}_{2}$$

Where,

σ = Standard deviations

N= number of observations

$\bar{x}$ $\overline{X}$ = Arithmetic mean

Coefficient of Variation (CV)

By expressing the standard deviation as a percentage of the mean, one can derive the coefficient of variation (CV), a relative measure of dispersion. When comparing the variability's of two or more distributions, the CV can be used. It is a relative metric with no unit dependency. Higher CV values correspond to higher variability, whereas lower CV values correspond to reduced variability.

It is given by:

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

Where,

CV= Coefficient of Variation

σ = Standard deviations

$\overline{X}$ = Arithmetic mean

Correlation Coefficient (r)

Data's qualitative nature can be measured with the use of the correlation coefficient. The association is found and measured by this statistical method. There are two types of correlation coefficients: perfect negative linear relationship, or -1, and no relationship, or 1 (perfect linear relationship). The correlation is positive when the values of the variables are directly proportional, while it is negative when the values of the variables are inversely proportional. The range of the correlation coefficient is always +1 to -1.

For example,

The two variables x and y are given by:

Then,

$r_{xy} = \sigma\sigma$

or, $$rxy = \frac{cov(x,y)}{\sigma_x \sigma_y}$$ r_{xy} = ΣΣΣΣΣΣΣ

Where,

rxy = correlation coefficient between two variables x and y.

When r is +1 there is perfect positive correlation, and if r is -1, there is perfect negative correlation but r is zero there is no correlation.

Regression Analysis

Regression serves as a statistical tool that enables the estimation of an unknown value of one variable based on the known value of another variable. This method assumes a close relationship between the two variables, allowing for the prediction of the value of one variable from another. The variable with the given value is termed the independent variable, while the variable whose value is to be predicted is called the dependent variable. Therefore, regression analysis evaluates the average expected change in one variable in response to a specific amount of change in another variable. It functions as a statistical tool for establishing an approximate functional relationship between variables and is instrumental in determining whether the given independent variable influences the dependent variable. Widely employed across various scientific disciplines, regression analysis is particularly prevalent in economics and business research, aiding in the exploration of causal relationships between two or more related variables.

3.6 Regression Model

The Model

The model produced in this paper makes the initial approximation that the debt to equity ratio, loan to deposit ratio, cost income ratio, bank size, and capital sufficiency all affect how well Nepalese commercial banks function. Consequently, the model has the following structure:

Model I

$ROA = \beta 0 + \beta 1CAR + \beta 2CTI + \beta 3SIZE + \beta 4DE + \beta 5LDR + \varepsilon$ …….. (1)

Model II

$NIM = \beta 0 + \beta 1CAR + \beta 2CTI + \beta 3SIZE + \beta 4DE + \beta 5LDR + \varepsilon$ …….. (2)

Where,

ROA= Return on Assets

NIM= Net Interest Margin

CAR= Capital Adequacy Ratio

CTI= Cost to Income Ratio

SIZE= Bank Size

LDR= Loan to deposit ratio

DE= Debt to Equity Ratio

B = Beta Coefficient of corresponding variables

ε = error term

3.7 Research Framework and Definition of Variables

The research framework serves as the fundamental structure upon which the entire dissertation is built. It is a logically constructed, explained, and detailed system of connections among variables that have been identified through theoretical and empirical reviews related to the research issue. This framework outlines the relationships among the variables, elucidates the theory underpinning these relationships, and specifies the nature and direction of these connections. Therefore, the study has formulated a framework to establish the relationship between independent variables (Capital Adequacy Ratio, Cost to Income Ratio, Bank Size, Debt to Equity Ratio, Loan to Deposit Ratio) and dependent variables (Return on Assets, Net Interest Margin). This theoretical framework is visually represented in Figure 3.1, showcasing the variables selected for investigation.

Flow Diagram representing impact of capital adquacy and cost income ratio on commercial banks' performance in Nepal

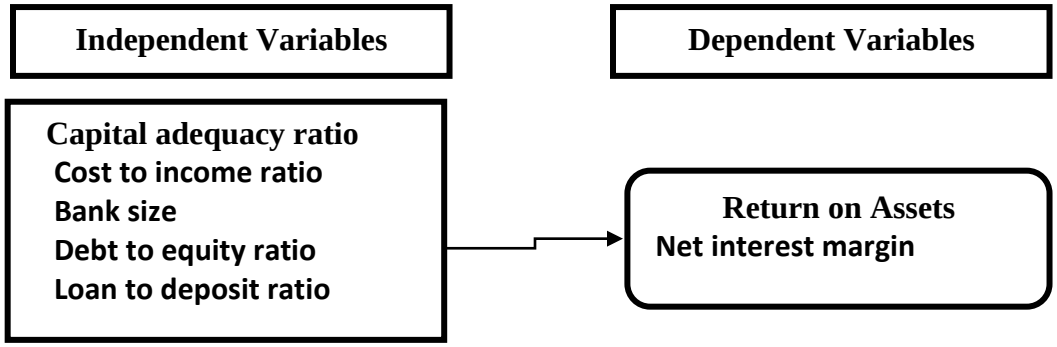

Figure 1: Schementic Diagram of the research Framework

Capital Adequacy ratio (CAR)

The phrase used to characterize or quantify capital funds in banks. It is given as a proportion of the risk-weighted credit exposure of a bank. The foundation for calculating the capital adequacy ratio is the bank's total risk-weighted assets, supplemental capital, and core capital. This ratio is used to assess the sufficiency of the total capital fund and core capital, safeguard depositors, and advance the stability and effectiveness of the global financial system. To calculate CAR, the equity to total risk weight assets ratio is used.

Debt Equity Ratio (DE)

The equity ratio is computed by dividing the entire amount of debt held by the company by its total equity. Total Debt / Total Equity is the equity ratio. It gauges how much the business depends on debt to finance its assets.

Loan to deposit ratio (LDR)

By comparing the total loans made by a bank to the total deposits made over the same period, the loan-to-deposit ratio is used to evaluate a bank's liquidity. Divide the entire number of loans made by a bank by the total amount of deposits made during the period to find the loan-to-deposit ratio.

The bank's ability to meet its financial obligations through deposits is measured by what is also known as a credit to deposit ratio (Rijal, 2019). A larger ratio would imply a greater risk for banks, as lending will reduce their reserve, but a lower ratio might mean the bank isn't making much money (Murphy, 2019). It's anticipated to be positively correlated with bank profitability.

Cost to income ratio (CTI)

It displays the expenses of a business compared to its revenue. Calculate the ratio by dividing the operational costs (which include fixed and administrative expenditures like rent and property taxes, but not written-off bad debts) by the operating income. Operating cost to revenue ratio serves as a stand-in for cost to income ratio.

Bank Size (SIZE)

One of the key factors influencing how well commercial banks perform is bank size. Total assets serve as a stand-in for bank size. It is often anticipated that bank size will increase profitability (Smirlock, 1985).

Return on Assets (ROA)

This ratio assesses how well the business performs overall in terms of turning a profit from its investments and available resources. It is the proportion of total assets to net income.

Net interest Margin (NIM)

The net return on the earning assets of the bank is expressed as net interest margin. It is calculated as the interest income divided by the interest expenses.

CHAPTER IV
RESULTS AND DISCUSSION

This chapter deals with the systematic presentation, analysis of the secondary data. The data analysis has been carried out by using the statistical and econometric models presented in chapter III. This chapter is the main body of the study through which research could generate a comprehensive result about the variables studied. This chapter deals with two sections. First section deals with results of data i.e. descriptive statistics, correlation analysis of the secondary data, regression analysis followed by simple and multiple regression analysis of collected data to know the explanatory power of independent variables on dependent variable. Second section deals with the discussion of obtained results.

4.1 Analysis of Data

4.1.1 Descriptive Analysis

A descriptive statistic is a tool used to characterize the unprocessed data that was collected. The central tendency and dispersion are the two main topics of these statistics. From 90 observations of cross-sectional data, the study's mean, standard deviation, minimum, maximum, and kurtosis values were determined. However, the study only considers the mean and standard deviations to be informative. The ROA, NIM, capital adequacy ratio, cost to income ratio, bank size, debt equity ratio, and loan to deposit ratio are among the factors analyzed in this section's descriptive statistics.

Table 5: Descriptive statics

Descriptive Statistics						
	N	Minimum	Maximum	Mean		Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic
ROA	90	.0490	.3030	.142231	.000	.0417600
NIM	90	10	28	13.02	.008	2.268
CAR	90	0	1	.42	.239	.497
CTI	90	24	27	25.21	.021	.814
SIZE	90	0	99	10.11	.077	9.845
LD	90	0	1	.01	1.041	.105
DE	90	0	1	.97	.020	.181
Valid N (listwise)	90					

Table 5, presents the descriptive summary of the data; the summary revealed that all variables exhibit a positive mean returns. Return on assets has mean of 14.2231% with 41.76% standard deviation. The mean value of Net Interest Margin is 1302% and 226.8% standard devation. The mean value of Capital adequacy ratio is 42% and 49.7 % standard deviation. Similarly, Cost to income ratio has 2521% mean with 81.4 % standard deviation. Mean of Bank size is 1011% and has 984.5% standard deviation. Mean of Debt Equity Ratio is 97% and has 18.1% standard deviation. Likewise, Loan To Deposit Ratio has 1% mean with 10.5% standard deviation. Cost to income ratio has highest mean of 2521% with a standard deviation of 81.4% and Loan To Deposit Ratio has lowest value of mean with 1% with 10.5% standard deviation values.

4.1.2Correlations Analysis

The Pearson correlation coefficient can be utilized to evaluate the connection between various independent and dependent variables. The direction and strength of the relationships between return on assets, net interest margin with capital adequacy ratio, cost to income ratio, bank size, debt to equity ratio, and loan to deposit ratio across the study period have been determined by this study using the Pearson correlation coefficient.

Table 6, reports the correlation coefficient between each pair

Table 6: Correlations Matrix of ROA and NIM with independent variables

	ROA	NIM	CAR	CTI	SIZE	LD	DE
ROA	1						
NIM	-.058	1					
CAR	-.064	.020	1				
CTI	.108	.100	-.030 S	1			
SIZE	-.118*	.101	-.014	.198	1		
LD	-.190	.026	-.004**	-.034	.269	1	
DE	-.113	-.116	.037	-.054	.085	.029	1

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

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

Table 6, shows the bivariate Pearson correlation coefficient between dependent and independent variable. Here, Return on assets (ROA) is dependent variables and independents variables are Capital adequacy ratio (CAR), Cost to income ratio (CTI),Bank size (SIZE), Debt ratio (DE) and Loan to deposit ratio (LD).Results, shows that CAR, SIZE, DE, LD has negative relationship with ROA correlation coefficient is -.064, -.118, -.190, -.113 respectively. Whereas, CTI is positively correlated with ROA, the correlation coefficient is .108.

Andalso Net interest margin is dependent variable and independents variables are Capital adequacy ratio(CAR), Cost to income ratio(CTI), Bank size(SIZE), Debt ratio(DE) and Loan to deposit ratio(LD).The result shows CAR, CTI, SIZE, LD has positive relationship with dependent variable NIM, the correlation coefficient is .020, .100, .101, .026 respectively. Whereas, DE has negative relationship with NIM, coefficient is -.116.

4.1.2 Regression Analysis

Regression analysis has been conducted of ROA and NIM with Capital Adequacy ratio, Cost to income ratio, Bank size, Debt equity ratio and Loan to deposit ratio. Regression result is presented as follows:-

Estimated result of regression line of Capital adequacy and Cost income ratio on financial performance.

Model 1:$ROA = \beta 0 + \beta 1CAR + \beta 2CTI + \beta 3SIZE + \beta 4DE + \beta 5LD + \varepsilon$

Model 2:$NIM = \beta 0 + \beta 1CAR + \beta 2CTI + \beta 3SIZE + \beta 4DE + \beta 5LD + \varepsilon$

Table 7, reports the regression result of Return on Assets (ROA) as a dependent variable and Capital Adequacy Ratio (CAR) and Cost to Income Ratio (CTI) as independent variable. As the result shows that, Cost to Income Ratio has positive impact on ROA and result is significant at 5% level (p- value< 0.05). The coefficient of Cost to Income Ratio is 0.002, which implies that 1% positive change in CTI, results into 0.2% positive change in ROA. In addition to that Capital Adequacy ratio (CAR) has positive impact with on ROA and result is significant at 5 % level of significance.

Estimated result of the regression line of ROA on CAR and CTI

Regression line**,**$ROA = \beta 0 + \beta 1CAR + \beta 2CTI + \varepsilon$……..(i)

Table 7: Estimated regression results: ROA as a function of CAR and CTI

Independent Variables	**Coeff.**	**S.E**	**t-stat**
Constant	**0.015**	**0.145**	**2.493**
CAR	**0.000**	**0.010**	**.895**
CTI	**0.002**	**0.006**	**-1.524**
R-square	**0.027**		
SEE	**0.041**		
F-stat	**1.23****		

Note '*' sign indicates that results are significant at 5% level
'**' sign indicates at results are significant at 1% level.

The R- squared of the model is 0.027, which implies that 2.7% of the change associated with ROA is explained by capital adequacy and cost to income ratio. The F- statistic 1.23 which is significant at 5% level, it implies that the explanatory power of the model is good.

The coefficient of Cost to Income Ratio is 0.002, which implies that 1% positive change in CTI, results into 0.2% positive change in ROA.

Table 8, reports the regression result of Return on Assets (ROA) as a dependent variable and Capital Adequacy Ratio (CAR), Cost to Income Ratio (CTI), Bank size (SIZE) and Debt Equity Ratio (DE) as independent variable. As the result shows that CAR, has positive relationship with ROA. The coefficient of CAR is 0.007 which implies that 1% positive changes in CAR results 0.7%, changes in ROA. Whereas, CTI, SIZE, DE has negative relationship with ROA. The coefficient of CTI, SIZE, DE is -0.008, -0.001, -0.009 respectively. All the results are significant at 1% and 5% respectively.

Estimated result of the regression line of ROA on CAR, CTI, SIZE and DE
Regression line**,** $ROA = \beta 0 + \beta 1CAR + \beta 2CTI + \beta 3SIZE + \beta 4DE + \varepsilon$……..(ii)

Table 8: Estimated regression results: ROA as a function of CAR, CTI, SIZE and DE

Independent Variables	**Coeff.**	**S.E**	**t-stat**
Constant	0.345	0.147	2.335
CAR	0.007	0.010	.710
CTI	-0.008	0.006	-1.288
SIZE	-0.001	0.000	-1.589
DE	-.009	0.024	-.362
R-square	0.057		
SEE	0.041		
F-stat	1.28*		

Note '*' sign indicates that results are significant at 5% level
'**' sign indicates at results are significant at 1% level.

The R- squared of the model is 0.057, which implies that 5.7 % of the change associated with ROA is explained by capital adequacy, cost to income ratio, bank size and Debt Equity Ratio. The value of F- statistic is 1.28 which significant at 5 % level.

Table 9, reports the regression result of Return on Assets (ROA) as a dependent variable and Capital Adequacy Ratio (CAR), Cost to Income Ratio (CTI), Bank Size (SIZE), Debt Ratio (DE), and Loan to Deposit Ratio (LD) as independent variable. Results shows that Capital Adequacy Ratio has positive impact on ROA The coefficient is 0.007, it implies that 1% positive change inCAR results into 0.7 % positive change in ROA. In addition to that Cost to

Income Ratio (CTI), Bank size (SIZE), Debt Equity Ratio (DE) and Loan to Deposit Ratio(LD), has negative correlation with on ROA. The coefficient of CTI, SIZE, DE and LD is -0.008, -0.001, -0.009, -0.031 respectively, which implies that 1% change in CTI, SIZE, DE and LD results into 0.8%, 0.1%, 0.9% and 3.1% negative change on ROA respectively.

Estimated result of the regression line of ROA on CAR, CTI, SIZE, DE, LD
Regression line**,** $ROA = \beta 0 + \beta 1CAR + \beta 2CTI + \beta 3SIZE + \beta 4DE + \beta 5LD$……..(iii)

Table9: Estimated regression results: ROA as a function of CAR, CTI, SIZE, DE and LD

Independent Variables	**Coeff.**	**S.E**	**t-stat**
Constant	0.337	0.147	2.287
CAR	0.007	0.010	.765
CTI	-0.008	0.006	-1.224
SIZE	-0.001	0.000	-1.656
DE	-.009	0.024	-.351
LD	-.031	0.043	-.729
R-square	0.063		
SEE	0.041		
F-stat	1.127**		

Note '*' sign indicates that results are significant at 5% level
'**' sign indicates at results are significant at 1% level.

The R- squared of the model is 0.063, which implies that 6.3 % of the change associated with ROA is explained by capital adequacy, cost to income ratio, bank size, Debt Equity Ratio and Loanto Deposit Ratio. The F- statistic 1.127 which is significant at 5% level, it implies that the explanatory power of the model is good.

Table 10, reports the regression result of Net Interest Margin (NIM) as a dependent variable and CAR, CTI as independent variable. As the result shows that, Capital adequacy ratio and Cost to Income Ratio has positive impact on NIM and result is significant at 5% level. The coefficients are 0.001 and 0.04 respectively, which implies that 1% change in CAR and CTI results into 1 % and 40% positive change in NIM.

Estimated result of the regression line of NIM on CAR and CTI
Regression line**,** $NIM = \beta 0 + \beta 1CAR + \beta 2CTI + \varepsilon$……..(iv)

Table 10: Estimated regression results: NIM as a function of CAR and CTI

Independent Variables	**Coeff.**	**S.E**	**t-stat**
Constant	0.008	0.055	0.137
CAR	0.001	0.004	0.214
CTI	0.040	0.042	0.945
R-square	0.011		
SEE	0.081		
F-stat	0.464		

Note '*' sign indicates that results are significant at 5% level
'**' sign indicates at results are significant at 1% level.

The R- squared of the model is 0.011, which implies that 1.1 % of the change associated with NIM is explained by capital adequacy and cost to income ratio. The F- statistic is 0.464 which is insignificant.

Table 11, reports the regression result of Net Interest Margin (NIM) as a dependent variable and Capital Adequacy Ratio (CAR), Cost to Income Ratio (CTI), Bank Size (SIZE) and Debt Equity Ratio(DE) as independent variable. As the result shows that, all independent variables have positive relation with NIM, the coefficients are 0.001, 0.030, 0.011, and 0.000 respectively. This implies that 1% change in CAR, CTI, SIZE and DE results respectively 0.1%, 3%, 1.1%, 0% positive change into Net Interest Margin.

Estimated result of the regression line of NIM on CAR, CTI, SIZE and DE
Regression line**,** $NIM = \beta 0 + \beta 1CAR + \beta 2CTI + \beta 3SIZE + \beta 4DE + \varepsilon$……..(v)

Table 11: Estimated regression results: NIM as a function of CAR, CTI, SIZE and DE

Independent Variables	**Coeff.**	**S.E**	**t-stat**
Constant	-.249	0.307	-0.811
CAR	0.001	0.004	0.215
CTI	0.030	0.043	0.689
SIZE	0.011	0.012	0.885
DE	0.000	0.001	-1.116
R-square	0.032		
SEE	0.081		
F-stat	0.695		

Note '*' sign indicates that results are significant at 5% level
'**' sign indicates at results are significant at 1% level.

The R- squared of the model is 0.032, which implies that 3.2 % of the change associated with ROA is explained by capital adequacy, cost to income ratio, bank size and Debt Equity Ratio. The F- statistic is 0.695 and not significant.

Table 12, reports the regression result of Net Interest Margin (NIM) as a dependent variable and Capital Adequacy Ratio (CAR), Cost to Income Ratio (CTI), Bank Size (SIZE), Debt Ratio (DE) and Loan to Deposit Ratio (LD) as independent variable. As the result shows that all independent variables have positive impact on NIM, coefficients are 0.001, 0.030, 0.011, 0.000, 0.002 respectively. It implies that 1% change in CAR, CTI, SIZE, DE and LD results 0.1%, 3%, 1.1%, 0% and 0.2% positive change into dependent variables i.e. NIM.

Estimated result of the regression line of ROA on CAR, CTI, SIZE, DE and LD
Regression line**,** $ROA = \beta 0 + \beta 1CAR + \beta 2CTI + \beta 3SIZE + \beta 4DE + \beta 5LD$……..(vi)

Table 12: Estimated regression results: NIM as a function of CAR, CTI, SIZE, DE and LD

Independent Variables	**Coeff.**	**S.E**	**t-stat**
Constant	-.246	0.313	-.788
CAR	0.001	0.004	.212
CTI	0.030	0.044	.686
SIZE	0.011	0.013	.831
DE	.000	0.001	-1.109
LD	.002	0.049	.047
R-square	0.032		
SEE	0.082		
F-stat	0.550		

Note '*' sign indicates that results are significant at 5% level
'**' sign indicates at results are significant at 1% level.

The R- squared of the model is 0.032, which implies that 3.2% of the change associated with NIM is explained by capital adequacy, cost to income ratio, bank size, debt equity ratio and loan to deposit ratio. The F- statistic 0.550

4.2 Discussion

The results of analysis may contradict between the obtained result and the priori expected sign. Contradiction may cause due the variables of study, study period and methodology used for the analysis of data. From the correlation analysis used to assess the relationship between CAR, CTI, SIZE, DE and LD with ROA, the results shows that bank size, debt equity ratio and loan to deposit ratio has negative impact on ROA. This result is supported by the finding of Ihnatov (2018), the study was reported bank size have negative relationship with performance. Finding of this study is also agree with the finding of Hutchinson & Cox (2006) and Syafri (2017). Whereas, cost to income ratio negatively correlated with ROA. In addition to that CAR has positive impact on NIM whereas CTI, SIZE and LD have negative relation with NIM.

Capital adequacy showed the persistently positive relationship with return on assets when simple and multiple cross-sectional linear regressions were used. The regression results of ROA on CAR, CTI, SIZE, DE and LD reveals that except CAR all variables have negative impact on ROA.However, contradicts with the finding of Sunaryo (2020)

Empirical finding from simple and multiple regression of NIM on CAR, CTI, SIZE, DE and LD showed that all independent variables CAR, CTI, SIZE, DE and LD have positive impact on net interest margin. The finding is consistent with Syafri (2017), Torbira (2013). The study of Ben (2010) also reported positive impact of capital adequacy ratio on financial performance. Bhattarai (2010) has drawn positive of capital adequacy ratio on financial performance measured by return on assets. Whereas, contradicts with the result of Ghadimi (2017).

The correlation matrix shows negative correlation between SIZE, DE and LD with ROA. The finding contradicts with the study of Pringle (2010). However, CAR have positive correlations with ROA. Regression result of ROA with independent variables reveals CTI, SIZE, DE, LD has negative impact on ROA while CAR has positive impact on ROA. The result obtained from correlation analysis of NIM, CAR, CTI, SIZE, DE, LD shows that DE has negative correlation with NIM. Similarly, regression results show CAR, CTI, SIZE, DE and LD all independent variables have positive impact on NIM.

CHAPTER V

SUMMARY AND CONCLUSION

Throughout the chapter I to V and research issues conclusions of the study are presented in this chapter. At the end of the chapter some valuable suggestions and recommendations are mentioned as per the results and findings.

5.1 Summary

Banks and other financial institutions are important participants in the financial sector and are essential to the state of the economy of the country. The nation's economy may benefit greatly from the success of its banks. Because of the banking industry's dominance of the financial markets and the conflicting literature on the subject, the relationship between capital adequacy, operational efficiency, and bank performance has garnered significant scholarly attention in recent times. This study has been conducted as a result.

The study mainly aims at assessing effect of capital adequacy ratio, cost income ratio, , bank size, loan to deposit ratio and debt equity ratio on the financial performance of commercial bank in Nepal. The objectives of this study are: (a) To examine the status of capital adequacy, cost to income ratio, bank size, debt equity ratio, loan to deposit ratio of commercial banks in Nepal. (b)To examine the relationship between capital adequacy, cost to income ratio, bank size, debt equity ratio, loan to deposit ratio of commercial banks in Nepal. (c) To analyze the impact of capital adequacy, cost to income ratio, bank size, debt equity ratio, loan to deposit ratio of commercial banks in Nepal.

This study is based on secondary data. All the 20 commercial banks were population of this study. In this study, nine sample commercial banks have been considered for analysis based on purposive sampling method. The data have been collected for the period of 10 years (2069/70) to (2078/79) from annual reports of bank and website of the concern banks. There are total 90 number of observation has been used for the purpose of this study.

The method employed to analyze the data include descriptive analysis: mean and standard deviation.Correlation analysis has been used in the study. This study also has usedregression to identify the directions and magnitudes of relationship betweencapital adequacy ratio, cost income ratio, bank size, debt to equity ratio and loan to deposit ratio on the performance measured by net interest margin and return on assets.Parametric tests were used to test the significance of the parameters and models.

Based on the analysis of the data, major finding of the study are summarized as follow:

a) a) The findings of the correlation study between return on assets, capital adequacy ratio, cost to income ratio, bank size, debt equity, and loan to deposit ratios indicate that there is a negative correlation between capital adequacy ratio, bank size, debt equity, loan to deposit ratio and return on assets, or financial performance. On the other hand, return on assets and the cost to income ratio are positively correlated. Furthermore, there is a negative and noteworthy correlation between bank size and return on assets.

b) The net interest margin, capital adequacy ratio, cost to income ratio, bank size, debt equity ratio, and loan to deposit ratio correlation matrix result demonstrates that the net interest margin and the capital adequacy, cost to income, bank size, and loan to deposit ratios all have positive relationships with financial performance. In contrast, there is a negative correlation between the debt-to-equity ratio and net interest margin, a measure of financial performance.

c) Regression results of return on assets on capital adequacy ratio and cost to income ratio reveals that capital adequacy ratio(CAR) have positive relationship with ROA with coefficient are 0.007 and cost to income ratio have negative relationship with ROA with coefficient -0.008.

d) The multiple regression results of ROA on capital adequacy ratio, cost to income ratio, bank size, debt equity and loan to deposit ratio reveals that capital adequacy ratio have positive relationship with ROA with coefficient 0.007. Whereas, Cost to income ratio, Bank size, Debt equity ratio and Loan to deposit ratio have negative relationship with return on assets the coefficient are -0.008, -0.001, -0.009, -0.031

respectively. The results are significant at 1% level of significant. F test is significant at 1%.

e) The regression result of net interest margin on capital adequacy ratio and cost to income ratio reveals the result that capital adequacy ratio and cost to income ratio both have positive relationship with return on assets, coefficient are 0.001, 0.040. F statics is statistically insignificant.

f) Multiple regression line of net interest margin on all five independent variables capital adequacy ratio, cost to income ratio, bank size, debt equity ratioand loan to deposit ratio shows that capital adequacy ratio, cost to income ratio, bank size debt equity and loan to deposit ratio have positive relationship with net interest margin. The coefficients are 0.001, 0.030, 0.011, 0.000, and 0.002 respectively. All the results are significant at 1% and 5% level of significance. Whereas, F statics is insignificant.

5.2 Conclusion

Numerous studies have been conducted on the impact of cost to income ratio and capital sufficiency on the financial performance of commercial banks in industrialized nations. In order to assess the financial performance of commercial banks as determined by return on assets and net interest margin, the study looks for empirical evidence of capital sufficiency, cost income ratio, bank size, debt equity ratio, and loan to deposit ratio. Based on the findings, the study came to the conclusion that bank size significantly and negatively affects return on assets.

The first correlation matrix's findings indicated that the cost to income ratio and return on assets are positively correlated, whereas the capital adequacy ratio, bank size, debt equity ratio, and loan to deposit ratio are negatively correlated. The second correlation matrix's conclusion demonstrates that the debt-to-equity ratio and net interest margin have a negative association. On the other hand, a positive correlation exists between net interest margin and capital adequacy, bank size, cost to income ratio, and loan to deposit ratio.

The regression result of ROA with CAR, CTI, SIZE, DE and LD revealed that cost to income ratio, bank size, debt to equity ratio and loan to deposit ratio has negative influence on

financial performance (measured by return on assets) the model is significant at 5%. Capital adequacy ratio consistently has positive effect on return on assets.In addition to that, regression line of NIM on CAR, CTI, SIZE, DE ratio revealed that capital adequacy ratio, cost to income ratio, bank size, debt equity ratio and loan to deposit ratio has positive impact on impact on financial performance measured by net interest margin. CAR, CTI consistently has positive impact on net interest margin.

5.3 Implications

Based on the major finding of this study, some recommendations have been made so thus, the following recommendations can be outlined for the concerned. These recommendations may also have some repercussions, but there is no doubt of the measures to improve the existing conditions.

a) It is recommended to future researcher to incorporate other variables like assets management efficiency, operating margin and operating cost as they also impacting the ROA, ROE, and NIM.
b) This study only has taken 10 years data for making equal times series of data, further study can be done study of more periods considering cross sectional data only.
c) Finally, furtherstudy can be carried on the effect of industry specific factors like competition, market size on profitability of commercial banks. This study has been used Return on Assets (ROA) and Net Interest Margin (NIM) to measures performance however there also other measures of performance like Net Profit Margin,Return on Equity etc. which can be applied in the banking industry to establish the effect of bank specific factors on performance.

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