

**EFFECT OF MACRO-ECONOMIC VARIABLES ON PROFITABILITY
OF NEPALESE COMMERCIAL BANKS**

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

by

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CERTIFICATION OF AUTHORSHIP

I hereby corroborate that I have researched and submitted the final draft of dissertation entitled "**Effect of Macro-economic Variables on Profitability of Nepalese Commercial Banks.**" The work of this dissertation has not been submitted previously for the purpose of conferral of any degrees nor it has been proposed and presented as part of requirements for any other academic purposes.

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

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REPORT OF RESEARCH COMMITTEE

Mr. Saroj Dhakal has defended research proposal entitled "**Effect of Macroeconomic Variables on Profitability of Nepalese Commercial Banks**" successfully. The research committee has registered the dissertation for further progress. It is recommended to carry out the work as per suggestions and guidance of supervisor Mr. Keshar Singh Khati and submitted the thesis for evaluation and viva voce examination.

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ABBREVIATIONS

C.V.	: Co-efficient of Variation
CAR	: Capital Adequacy Ratio
e	: Correlation Co-efficient
F/Y	: Fiscal Year
GROWTH	: Company Growth
HBL	: Himalayan Bank Limited
INF	: Inflation
L/C	: Letter of Credit
LR	: Lending Ratio
Ltd	: Limited
MBS	: Masters of Business Studies
NBIL	: Nabil Bank Limited
NIM	: Net Interest Margin
NPLA	: Net Profit to loan and Advance
NRB	: Nepal Rastra Bank
OETL	: Operating Expenses to Total Loan
ROA	: Return on Asset
ROA	: Return on assets
ROE	: Return on equity
Rs.	: Rupees
S.D	: Standard Deviation
SBI	: Nepal SBI Bank Limited
SIZE	: Company Size
SPSS	: Statistical Package for the Social Sciences

ABSTRACT

Due to the vast contribution of commercial banks to the economic development in Nepal, this study examined the effect of macroeconomic variables on profitability of Commercial Banks listed at the Nepal. For years 2013 to 2023. The objective was to determine the effect of macroeconomic factors on the profitability. Panel data for the 3 listed banks in the Nepal was utilized. Panel data regression analysis with random effects was utilized on the data to examine the effects of these five macroeconomic variables which included: Capital Adequacy Ratio (CAR) Inflation, Default risk, Inflation rate, operating expenses to total loan. Return on Asset (ROA) and Return on Equity (ROE) which proxies' profitability. The study findings indicated that real inflation rate had positive significant effect on profitability of commercial banks as measured through Return on Assets (ROA) and Return on Equity (ROE). While rest of the macro-indicators do not have a significant impact on profitability measured by ROA, ROE and NIM. It is therefore indicating that internal factors are impacting the profitability of banks in the Nepal rather than external factors.

Key words: *Macroeconomic Indicators, Return on Asset (ROA), Return on Equity (ROE), Profitability Net interest margin (NIM)*

CHAPTER I

INTRODUCTION

1.1 Background of the Study

The economy pays a great deal of attention to the performance of banks, expressed in terms of competition, concentration, efficiency, productivity and profitability. The key reason is that banks are seen as special, given their pivotal role in providing credit to enterprises. Banks and other financial institutions are also regarded, particularly in the aforementioned phenomena, particularly, competition and efficiency, as difficult if not impossible to observe directly, since information on output prices (or credit rates) is rare and figures on the costs of banking products are unavailable. Due to increased pressure of globalization, deregulation, parallel competition from the non-banking financial institutions and volatile market dynamics, commercial banks constantly seek ways to remain profitable. Profitable banks can diversify their business, effectively can hedge against adverse effects and can reward its stakeholders in many ways (Sheaba & Xergaw, 2017).

The profitability, which is an important criteria to measure the performance of banks in addition to productivity, financial and operational efficiency, has come under pressure because of changing environment of banking. An efficient management of banking operations aimed at ensuring growth in profits and efficiency requires up-to-date knowledge of all those factors on which the bank's profit depends. Though literature suggests various determinants of bank profitability, little is known about the determinants of profitability in banking system of Nepal. Moreover, the Nepalese banking sector has undergone radical changes in the recent past. Accordingly, this study devoted to banks' profitability attempts to examine the key determinants of profitability of Commercial Banks in Nepal.

There are various factors that affect the profitability of banking sector in any economy. Most studies divide the determinants of commercial banks performance into two categories, namely internal and external factors. Internal determinants of profitability, which are within the control of bank management, can be broadly classified into two categories, i.e. financial statement variables and nonfinancial

statement variables. While financial statement variables relate to the decisions which directly involve items in the balance sheet and income statement; non-financial statement variables involve factors that have no direct relation to the financial statements. The examples of non-financial variables within this category are number of branches, status of the branch (e.g. limited or full-service branch, unit branch or multiple branches), location and size of the bank. External factors are those factors that are considered to be beyond the control of the management of a bank. Among the widely discussed external variables are competition, regulation, concentration, market share, ownership, scarcity of capital, money supply, inflation and size (Al-Homaidi, Tabash, Farhan, & Almaqtari, 2018).

All bank-specific determinants, except the size of the bank significantly affect the profitability of bank (Anthanasoglou, Brissimis, & Delis, 2008). Similarly, a significant impact of assets size, non-interest and the real interest rate on the performance of bank could be found (Anbar & Alper, 2011). Furthermore, various internal factors such as assets quality, liquidity, credit risk, operational efficiency, cash reserve ratio, assets size, and external factors such as gross domestic product, money supply, interest rate and inflation etc. makes significant impact on the financial performance of bank (Ongore & Kusa, 2013).

In this connection, the main research question in this study as follow: Do bank specific and macroeconomic variables have an impact on the profitability of Nepalese commercial banks?

Economics is a social science that focuses on the production, distribution, and consumption of goods and services, and analyzes the choices that individuals, businesses, governments, and nations make to allocate resources.

Microeconomics studies how individual consumers and firms make decisions to allocate resources. Whether a single person, a household, or a business, economists may analyze how these entities respond to changes in price and why they demand what they do at particular price levels. Microeconomics analyzes how and why goods are valued differently, how individuals make financial decisions, and how they trade, coordinate, and cooperate. Within the dynamics of supply and demand, the costs of producing goods and services, and how labor is divided and allocated,

microeconomics studies how businesses are organized and how individuals approach uncertainty and risk in their decision-making (Ongore & Kusa, 2013).

Economics is a social science that focuses on the production, distribution, and consumption of goods and services, and analyzes the choices that individuals, businesses, governments, and nations make to allocate resources.

1.2 Problem Statement

The impact of macroeconomic variables on the profitability of Nepalese commercial banks can be influenced by several factors. Here are some common problems or challenges associated with this relationship Interest Rate Fluctuations Changes in interest rates can significantly affect the profitability of commercial banks. In Nepal, if there are frequent fluctuations in interest rates set by the central bank, it can make it challenging for banks to manage their interest income and interest expense. This can lead to decreased profitability as banks may struggle to maintain a favorable spread between lending and deposit rates. Inflationary Pressures High inflation can erode the purchasing power of consumers and impact their ability to repay loans. In such a scenario, banks may experience a rise in non-performing loans and a decrease in loan recovery rates, ultimately affecting their profitability.

Low profitability of commercial banks is blamed on low levels of economic growth as reflected in the high interest rate spreads, high inflation rates, high interest rates, lower deposit rates to capital investment, high volatility in exchange rate, and low growth in GDP and GDP per-capita. Low profitability of the banks have continued to manifest into high levels of credit risk to private agents, poor asset quality, limited and or inadequate capitalization, operational inefficiencies, and higher incidences of non-performing loans and higher levels of liquidity risk and high cost in overall financial intermediation. This study will answer the following question.

- i. What is the existing position of profitability of Nepalese banks?
- ii. Is there relationship between macroeconomic variables and profitability of Nepalese commercial banks?
- iii. Whether there is impact of macroeconomic variables (CAR, Inflation, DR, OETL and Lending Ratio) on profitability of Nepalese commercial banks?

1.3 Objectives of the Study

The purpose of this study is to analyze the impact of bank specific and macroeconomic variables on the profitability of commercial banks of Nepal. Beside this, following are specific objectives of the study:

- i. To assess the existing position of profitability of Nepalese banks.
- ii. To examine the relationship between macroeconomic variables and profitability of Nepalese commercial banks.
- iii. To analyze impact of macroeconomic variables (CAR, Inflation, DR, OETL and Lending Ratio) profitability of Nepalese commercial banks.

1.4 Rationale of the Study

As, this study covers various internal and external factors that impact the profitability of the commercial bank, it is helpful for all types of the organization, however, the finding of this study is especially important for implication of policy of commercial banks in Nepal.

This study has provided the useful information to the policy makers, researcher, organization stakeholders, financial institution and regulatory bodies.

- i. This research helps commercial banks to reassess their strategies to cope in term of external factor.
- ii. Individuals who have keen interest in Nepalese economy and banking sector are also benefited.
- iii. This study helps researchers to fulfill the academic requirements.
- iv. This study is important to the entire stakeholder that includes customers, employees, competitor, shareholders, society, government and the regulars to know the condition of Nepalese commercial banks.

1.5 Limitations of the Study

- Out of 20 commercial banks only three banks (Himalayan Bank Limited, Nabil Bank Limited and Nepal SBI Bank Limited) are taken for the study
- This study is based on secondary data taken from annual financial report of sample banks.
- The study covers the data of 10 years from 2013/14 to 2022/23.
- This study only focus on macroeconomic variable and others are ignored.
- Only limited financial and statistical tools are used for analysis.

CHAPTER II

REVIEW OF LITERATURE

Review of literature is an essential part of all studies. It is a way to discover what other research in the area of our problem has discovered. Mainly this chapter is focused with the component exploration of the background to the work and comprehensive review of the recent and relevant literature, which deals with the relating to the topic “Impact of Macroeconomic Variables on Profitability of Nepalese Commercial Bank” in details. While preparing this thesis many books, journals articles and other related studies were reviewed. For the effective presentation many other indirect topics were also reviewed in Nepalese context and also on international scenario.

2.1 Theoretical Review

Microeconomics studies how individual consumers and firms make decisions to allocate resources. Whether a single person, a household, or a business, economists may analyze how these entities respond to changes in price and why they demand what they do at particular price levels. Microeconomics analyzes how and why goods are valued differently, how individuals make financial decisions, and how they trade, coordinate, and cooperate. Within the dynamics of supply and demand, the costs of producing goods and services, and how labor is divided and allocated, microeconomics studies how businesses are organized and how individuals approach uncertainty and risk in their decision-making (Kamande,2016).

Macroeconomics is the branch of economics that studies the behavior and performance of an economy as a whole. Its primary focus is the recurrent economic cycles and broad economic growth and development. It focuses on foreign trade, government fiscal and monetary policy, unemployment rates, the level of inflation, interest rates, the growth of total production output, and business cycles that result in expansions, booms, recessions, and depressions. Using aggregate indicators, economists use macroeconomic models to help formulate economic policies and strategies.

Common measures of macroeconomic factors include gross domestic product, the rate of employment, the phases of the business cycle, the rate of inflation, the money

supply, the level of government debt, and the short-term and long-term effects of trends and changes in these measures.

Monetary policy is a set of tools used by a nation's central bank to control the overall money supply and promote economic growth and employ strategies such as revising interest rates and changing bank reserve requirements. In the case of Nepal, Nepal Rastra Bank develops the monetary policy and based on the guidelines each banks are allowed to conduct their operation (Kamande, 2016).

Since banks perform intermediary functions for the real sector, they are exposed to business cycle conditions that largely determine the aggregate health of the real sector. As economic conditions worsen during stagnation and recession periods, the riskiness of intermediation tends to rise. Banks are vulnerable to adverse selection and moral hazard behavior of their borrowers. These are forms of information asymmetries, and asymmetric information and agency costs have been shown to be typically high during business cycle troughs. Furthermore, an economic slowdown is likely to have a negative effect on bank profits because typically low interest rates in a recession contribute to the erosion of banks' interest margins. Also, fee revenues are likely to fall in the environment of declining stock markets and the lack of merger and acquisition deals. In sum, it can be expected that bank risk is correlated negatively with the business cycle, rising at times when economic activity slows. Researched on the Bank specific and macroeconomic determinants of banking profitability in Nepal has analyzed bank-specific and macroeconomic determinants of the profitability of Nepalese banking sector over the time period from 2004 to 2013. Gwachha used return on assets (ROA), return on equity (ROE) and net interest margin (NIM) to measure the profitability of the bank and used total asset, ratio of equity capital to total assets, ratio of total loan to total assets, ratio of total deposit to total assets, ratio of total liquid assets to total assets as bank specific factors and used gross domestic product, consumer price index, real interest rate and stock market capitalization as macroeconomic factors. Gwachha concluded that asset size and deposit to asset have a significant positive effect, and loans portfolio have a significant negative impact on profitability of bank. Furthermore, Gwachha found a positive impact of real interest rate and stock market capitalization on the performance of banks (Gwachha, 2019).

2.1.1 Laws of Macro Economy

Law No. 1: Private investment is determined by monetary policy, and government investment is determined by fiscal and taxation policies

If the economy wants to grow, investment comes first. Investment is divided into government investment and private investment, but the growth of these two parts is determined by different policies. The growth of private investment is mainly related to monetary policy, and the growth of government investment fundamentally depends on fiscal and taxation policies. Private investment mainly relies on loans from financial institutions.

The financial environment is loose and private investment can expand dramatically. As the financial environment is tightening, private investment must shrink significantly. Therefore, the expansion and contraction of private investment are basically consistent with the expansion and contraction of financial policies. Although government investment can also rely on debt financing, it is fundamentally dependent on fiscal taxation. Therefore, fiscal and taxation policies are very important. The growth of fiscal and tax revenue is the fundamental factor that determines how much government investment can increase (Steven et al., 2020).

Law No. 2: Infrastructure determines a country's industrial growth, and real estate determines a country's consumption growth

For the country's economic development, the development of infrastructure and real estate can play a leading role. The development of infrastructure and real estate is directly related to the development of other industries. There is an industrial repression theory in my economics, which is about the mutual repressive relationship between the developments of different industries. Infrastructure construction can suppress the development of all industries. If there are no highways, railways, power grids, and high-speed rail infrastructures that are improved first, there is almost no way for a country's industry to develop. Infrastructure is the carrier of industrial development. Wherever the infrastructure is connected, the industry will develop and the market will expand. The efficiency of the infrastructure is as high as the efficiency of the market economy, so the infrastructure is a prerequisite for industrial development. The development of consumption mainly depends on the development of real estate. Real estate is the carrier of consumption. The better the development of

the real estate, the better the development of consumption. The higher the quality of real estate, the higher the quality of consumption. The development of the macro-economy is mainly to seize the two bull noses of real estate and infrastructure construction so that both industry and consumption can develop. Infrastructure and real estate are completed by the government and the private sector. Both should be given equal attention (Steven et al., 2020).

Law No. 3: The macro-economy determines the life and death of an enterprise, and the micro economy determines the size of the enterprise

Entrepreneurs must pay attention to both the macro-economy and the micro-economy when they are doing business. They must look up to the sky and look down on the road. Enterprises tend to become trends and fail in cycles. Macroeconomics determines the vents and dividends of the economy, determines the rise and fall of the industry, and fundamentally determines whether an enterprise can grow larger. The success of entrepreneurs is the product of trends. Standing on the vent of the macro-economy, coupled with personal talent and hard work, it is easy to succeed, and otherwise, it is easy to fail.

Enterprise development should take advantage of the trend, rather than go against the trend. The failure of enterprises is often not a business problem, but a macroeconomic cycle problem. Entrepreneurs not only face the once-in-decade macroeconomic cycle but also always face the government's macroeconomic regulation and control. If these macroeconomic changes cannot be predicted in time, then It's easy to fail. The micro-economy only determines the quality of business operations and determines how large the business can be. No matter how great a company is, its success or failure is the product of macroeconomics. To be good at studying macroeconomics, entrepreneurs must keep up with the pace of macroeconomics (Steven et al., 2020).

Law No. 4: The backward companies are mostly eliminated by micro-competition, and the best companies are eliminated by the macroeconomic crisis

Competition is a basic mechanism of the market economy, and the competition mechanism ensures the survival of the fittest at the micro-level.

When a macroeconomic crisis occurs, the best companies are often eliminated. Financial austerity often occurs during macroeconomic crises, and the more

outstanding companies are affected, the greater the impact, because the more outstanding companies tend to be more leveraged. This is because the better the company, the better the credit, and all financial institutions are willing to lend to them. Therefore, the better the company, the higher the debt leverage ratio. The richest man is generally the first loser. However, when the economic crisis comes and the finances are suddenly tightened, the bigger the enterprise, the easier it is to have problems first. Therefore, the economic crisis eliminated many excellent companies, and these companies are often important carriers of a country's production capacity and technological innovation.

Problems in these companies can cause a country's economic vitality to be severely damaged. It will take a long time for the national economy to recover. Therefore, macroeconomic stability is very important. We must not mistake the macroeconomic crisis as a means to eliminate backward companies. From a modern perspective, the cyclical contraction and expansion of currency are already the biggest risk source of macroeconomic risks. Every round of the currency cycle will eliminate a large number of outstanding companies. Therefore, Experts proposed single fiscal regulation and advocated economic growth without fluctuations. The government only needs to control its own investment in cycles, rather than controlling private investment. This can smooth the economic cycle without destroying private productivity (Steven et al., 2020).

Law No. 5: Economic growth brings about endogenous inflation, and money growth brings about exogenous inflation

The economic experts innovated the inflation theory and divided inflation into endogenous inflation and exogenous inflation. In fact, endogenous inflation is brought about by economic growth and has nothing to do with monetary factors. Endogenous inflation is mainly caused by the increase in labor costs caused by the improvement of labor productivity. Endogenous inflation is directly proportional to economic growth. The endogenous inflation rate is generally half of the economic growth rate. The exogenous inflation is mainly caused by the shortage of production factors and currency factors. The inflation caused by the oversupply of currency is often heard as exogenous inflation.

Endogenous inflation is an inevitable situation in economic growth and generally does not need to be governed. Only when economic growth is too fast and inflation is particularly obvious can the inflation pressure be eased through an economic slowdown. Exogenous inflation needs to be governed. If it is caused by too much currency, money needs to be reduced. If it is caused by a shortage of production factors, industrial policies need to be used to increase the supply of production factors.

Law No. 6: The more money is used, and the less finance is used

To govern the macroeconomy, you cannot use fiscal thinking to understand monetary thinking. The law of currency operation is completely different from that of fiscal. Most currencies are not issued but used. The issued currency is the base currency, which is used. Currency is a derivative currency. Most of the currency used for corporate investment is derivative currency. The less fiscal is used, the more money is used.

Government investment not only has no crowding-out effect on private investment, but also promotes as a result, government loans will simultaneously create distribution funds, and these distribution funds can be used for private investment. Strictly speaking, the quantity theory of money only applies to the era before the emergence of banks. After the emergence of banks, it has been largely Failure, of course, is not a complete failure. Those who use fiscal thinking to understand the operation of currency are those who do not understand macroeconomics. If one does not understand the difference between the laws of currency and fiscal operations, macroeconomic governance cannot be achieved.

Law No. 7: Insufficient demand will cause a productive economic crisis, the insufficient currency will cause a financial-economic crisis, and insufficient taxation will cause a government debt-type economic crisis

The experts divide the macroeconomic crisis into three types, namely the overproduction economic crisis, the financial bubble economic crisis, and the national debt economic crisis. The three crisis outbreak mechanisms and governance methods are different. Among them, the nineteenth-century economic crisis is based on overproduction.

The economic crisis of the 20th century is dominated by financial bubble-type economic crises, and the economic crisis of the 21st century is dominated by government debt-type economic crises. In the nineteenth century, there were few industries, and the technological revolution caused sharp fluctuations in the production capacity of a new industry, which would lead to prosperity or crisis in the entire economy, so it was easy to break out of overproduction economic crises.

By the twentieth century, there were enough industry categories, and fluctuations in a single industry could no longer cause overall economic fluctuations, but they could spread to various industries through capital market bubbles, thus forming a financial and economic crisis. For example, the Internet bubble burst in the last century, etc. Therefore, the economic crisis of the twentieth century is mainly financial-economic.

In the 21st century, there will be more industry categories, more and more complex economies, more demand for government services, and a greater proportion of government expenditures in the economy. If the country cannot adjust its fiscal and taxation structure in time to meet the expansion of government expenditures, the country will there be in a debt crisis. Therefore, in the 21st century, government debt-type economic crises have become the norm in various countries' economic crises.

Keynes attributed the cause of the economic crisis to insufficient demand, which is suitable for managing overproduction economic crises. Friedman's monetary school attributed the economic crisis to insufficient currency, which is more suitable for managing financial bubble-type economic crises. The economics experts put forward the concept of government debt-type economic crises, thinking that fiscal Insufficiency led to a government debt crisis, so the new fiscal and taxation economics is suitable for managing government debt-type economic crises (Steven et al., 2020).

Law No. 8: The excess of products with low supply difficulty leads to an economic crisis, and the increase of products with high supply difficulty and high difficulty can manage the economic crisis

In the theory of balanced economics, the products on the market are divided into two categories, one is products with high difficulty in supply, and the other is products with low difficulty in supply. Products with high supply difficulty are generally in short supply in the market, and products with low supply difficulty are always in a

state of surplus in the market. In general, when an economic crisis occurs, the oversupply is generally low-supply difficulty products, and the oversupply of products with high supply difficulty rarely occurs.

When the economic crisis comes, there is no need to reduce production capacity, because the economic cycle is very short, and the removed production capacity will need to be doubled to recover within a year or two. Whether it is an active or passive reduction of overcapacity will cause a huge waste of social resources, and for a developing country that has not reached a developed state, there is no real excess capacity.

In an economic crisis, only need to increase the supply of products with high supply difficulty, the economy can restore balance and let the economy get out of the crisis. Products with high supply difficulty include large-scale transportation infrastructure, energy facilities, water conservancy facilities, military facilities, environmental protection facilities, and large-scale scientific and technological research and development projects.

As the supply of these products with high supply difficulty increases, the economy will naturally return to balance. To promote faster economic growth, measures can also be taken to increase the supply of products that are difficult to supply (Steven et al., 2020).

Law No. 9: The growth of economic volume depends on addition, and the growth of economic quality depends on multiplication

There are two ways of economic growth, namely additive growth and multiplying growth. Traditional economic growth is driven by the “troika” of investment, consumption, and exports. This is additive growth, additive growth More is to bring about economic growth. The real economic growth should be multiplicative growth, which depends on the improvement of economic efficiency. Therefore, the experts put forward the “new troika” theory of stimulating economic growth, which is the improvement of production efficiency, the improvement of transaction efficiency, and the improvement of commodity abundance, and the relationship between the three is a multiplier.

The combination of production efficiency and transaction efficiency can be called supply efficiency. As long as an economy can produce more and more types of products, and the production efficiency and transaction efficiency of products continue to improve, the economy will develop better and better. Only economic growth based on improved production efficiency and transaction efficiency is true multiplicative growth. Therefore, economic management should focus on the management of economic efficiency. As economic efficiency increases, the economy will naturally grow.

Law No. 10: The emergence of new products will only increase the cost of survival of the people, and the improvement of products production efficiency can increase people's income

The economists propose in survival economics that the happiness index depends on the ratio of income to the cost of survival. The higher the income, the stronger the sense of happiness, the higher the cost of survival, and the lower the happiness index. In the process of economic development, the emergence of new products is the cause.

The reason for the increase in the cost of survival, and the increase in product labor productivity is the reason for the increase in people's income, because any new product will become a part of the people's cost of survival after it appears, and we need to use our income to buy it, which will be called survival part of the pressure will reduce happiness, and the increase in product production efficiency can increase the income of the people, because the increase in the income of a country's people is proportional to the country's labor productivity, and the increase in labor productivity can increase the people's income and improve happiness (Steven et al., 2020).

2.1.2 Variables of Macro-economy

Unemployment Rate

The unemployment rate reveals the number of people in the labor force who can't find employment. When an economy sees growth the unemployment rates are generally low. With growing GDP levels, that is, increasing productivity, more workers are usually required to support the increased output.

These new employees now have more income, so they spend more. They might go on more vacations, buy new homes, upgrade their personal belongings, etc. This creates

demand in other areas of the economy and those companies need to also hire more people which, in turn, also contributes to a lower unemployment rate.

If the economy produces less (GDP goes down), it usually indicates that fewer employees are needed. This affects incomes and eventually consumption.

Interest Rate

Interest rate risk associated with changes in market interest rates constitutes a central source of market risk for banks. Besides, a rise in market interest rates, whose direct effect is an increase in bank returns for newly made or variable interest loans, nonetheless bears a danger of increased credit risk. In the light of asymmetric information theories, higher interest rates tend to exacerbate the problem of adverse selection – that is, in the context of credit relationships, the selection of borrowers with high probability of adverse project outcomes, or “bad risks.” High interest rates will deter potential borrowers with safe projects, so that the risk composition of the pool of loan applicants will shift toward bad risks. Moreover, a rise in interest rates will change the ex post incentives for borrowers inducing them to take on riskier projects (borrowers’ moral hazard). Thus, in a setting of information asymmetries a rise in interest rates will ceteris paribus increase credit risk on banks’ balance sheets.

GDP Growth Rate

GDP growth rate is also a critical macroeconomic determinant of NPLs. Umar and Sun (2018) proved inverse relation between GDP growth rate and NPLs; shows higher economic growth will decrease the ratio of NPLs in the country. A similar relation between GDP growth and NPLs is obtained by Buncic and Melecky (2013). NPLs decrease with a rise in GDP growth and increase with a fall in GDP growth due to recession in economy (Fernández de Lis and Saurina 2000). The following relationship is expected based on prior studies.

Inflation

An increased rate of inflation diminishes real rates of return on bank assets and therefore induces credit rationing. Consequently, high inflation countries will have less financial intermediation (Boyd, Levine, & Smith, 2001). While there is evidence that higher rates of inflation lead to a decrease in the quantity of bank assets and thus the quantity of credit risks, higher inflation can have a negative impact on earnings of

existing borrowers thereby impairing the quality of previously extended loans. If the credit rationing effect proves to be stronger, higher inflation rates may result, ceteris paribus, in banks taking fewer risks on their balance sheets.

On the other hand, not only high inflation, but also disinflation can have a detrimental impact on the financial sector and increase bank risk. Rapid disinflation in a previously high-inflation environment will result in high real interest rates that will exert a contracting influence on the economy and raise credit risk both due to shrinking profits of borrowers and increased risk incentives similar to those accompanying a rise in nominal interest rates (Mishkin, 1996).

Money Supply

The money supply is a measure of the amount of money in circulation. The more economic activity there is, the more money is required to support it. The money supply is measured as liquid instruments (including all cash and deposits) in a country's economy at a given point in time.

A central bank may increase the money supply to offset the growing demand for money and rising interest rates in a growing economy. It may also increase the money supply to stimulate economic growth. When the money supply increases, businesses tend to increase production because of increased consumer spending due to lower interest rates, driving up profits and demand for labor.

Government Debt Levels

If government debt levels are high, the chances of a nation's standard of living may decrease, as tax revenue goes towards debt payments rather than government services. Increased government borrowing can also push up interest rates in general, which makes consumption more expensive. In less stable countries, the increased debt can make it riskier and thus costlier to do business in the country.

Monetary Policy

Monetary policy is a set of tools used by a nation's central bank to control the overall money supply and promote economic growth and employ strategies such as revising interest rates and changing bank reserve requirements. In the case of Nepal, Nepal

Rastra Bank develops the monetary policy and based on the guidelines each banks are allowed to conduct their operation.

Related Theories

Since banks perform intermediary functions for the real sector, they are exposed to business cycle conditions that largely determine the aggregate health of the real sector. As economic conditions worsen during stagnation and recession periods, the riskiness of intermediation tends to rise. Banks are vulnerable to adverse selection and moral hazard behavior of their borrowers. These are forms of information asymmetries, and asymmetric information and agency costs have been shown to be typically high during business cycle troughs. Furthermore, an economic slowdown is likely to have a negative effect on bank profits because typically low interest rates in a recession contribute to the erosion of banks' interest margins. Also, fee revenues are likely to fall in the environment of declining stock markets and the lack of merger and acquisition deals. In sum, it can be expected that bank risk is correlated negatively with the business cycle, rising at times when economic activity slows.

Bank Specific Factors

Bank Size

Bank size is considered as an important determinant of non-performing loans (Lu et al. 2005). There is mixed evidenced from literature about direction of relation between bank size and NPLs. Stern and Feldman (2004) identify that larger banks follow liberal credit policy, the chances of NPLs are higher as compare to smaller banks. On the other hand, some of the studies (Ozili 2019) find that larger banks have better management skills to recover loans from borrowers, hence the negative impact of bank size on NPLs. Based on prior studies, we are expecting the following relationship.

Bank Profitability

Maximization of profit is the core objective of commercial banks and it is observed that highly profitable banks have fewer chances to engage in high-risk activities; resultantly profitability has the inverse impact on NPLs (Gurbuz et al. 2013). Contrary to this, Bonin and Huang (2002) describe that credit policy is not only determined by earnings of banks, but it also effected by reputation of management and force to

follow liberal credit policy, which shows a positive relation between profitability with NPLs. Similarly, Messai and Jouini (2013) shows negative relation between banks' profitability and NPLs. Based on prior studies, we are expecting the following relationship.

Net Interest Margin

Net interest margin is also an essential bank-specific determinant of NPLs. The latest research by (Bonin et al. 2005) asserts that net interest margin has a strong positive association with NPLs. Similarly, some other studies (Ozili 2019; Adusei 2018) argue that net interest margin has a positive association with the NPLs, because higher net interest margin increases the interest burden. Banks increase their interest margin to minimize their default risk, in this way a direct relationship is expected between interest margin and NPLs (Cavallo and Majnoni 2002). Based on the literature, the following relationship is expected.

Return on Assets (ROA)

ROA is the indicator of profitability of the enterprises and it is widely used variable to measure the financial performance of the enterprises. It simply compares the firm's profit relative to total assets. Thus, return on assets shows how efficiently the firm is able to use its resources to generate income. In other words it shows the efficiency of management for generating income using assets of the organization. Return on assets is generally considered as a good indicator to evaluate the profitability of the assets of a bank in comparison to other banks in the banking industry.

Default Risk (DR)

Default rate is the term for a practice in the financial services industry for a particular lender to change the terms of a loan from the normal terms to the default terms that is, the terms and rates given to those who have missed payments on loan. Default risk is a ratio that measures the proportion of non-performing loans as against the total loans for a period. It gives an assessment of the total borrowers default on the conditions of loans and advances for a given period.

Capital Adequacy Ratio (CAR)

Capital Adequacy Ratio is a measure of the amount of bank's capital expressed as a percentage of its risk weighted credit exposure. Capital adequacy ratio is calculated

dividing capital fund by risk weighted assets. As per the NRB guideline, commercial banks in Nepal must maintain the capital adequacy ratio above 10 percent. Capital adequacy increases the strength of the bank which improves the solvency of the bank and capacity to absorb the loan loss and protect bank from bankruptcy. Bhattarai (2017) has found that capital adequacy ratio was significant and negative effect on bank profitability. In this scenario, a negative relationship is expected between capital adequacy ratio and bank profitability.

ROE

The Return on Equity ratio is perhaps the most important of all the financial ratios to investors in the company. It measures the return on the money the investors have put into the company. This is the ratio potential investors look at when deciding whether or not to invest in the company.

Macro-Economic Factors

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2.2 Empirical Review

The study was conducted in many countries around the world to examine the impact of bank specific variables and macroeconomic indicators on profitability. Most of the studies consider internal factors (i.e., bank's specific characteristics) and external factors (i.e., financial industry and economic environment).

2.2.1 Review of Journal and Articles

Mahmoud (2023) examined the impact of macroeconomic variables (economic growth, public debt growth, inflation, foreign direct investment, and balance of payments) on the performance of Islamic banks (return on assets, return on equity, and return on equity). The study used multiple linear regression analyses of periodic data for Jordanian Islamic banks in Jordan during the period (2007-2021). The findings demonstrated a positive correlation between macroeconomic factors and performance, except for foreign direct investments, which have a negative effect on

performance because they require the use of external financial resources. This means that the country's use of expansionary fiscal policy or expansionary monetary policy leads to better performance

Lyimo (2022) examined the impact of macroeconomic variables on performance of banks (ROA): A Case of Commercial Banks in Tanzania. Findings of this study unveiled that economic growth has significant relationship with commercial banks performance. Results of this study indicated that exchange rate has insignificant relationship with commercial banks performance. Findings of this study revealed that interest rate has insignificant relationship with commercial banks performance. Also, results of this study indicated that, money supply has insignificant relationship with commercial banks performance. Future studies should be conducted into challenges facing the commercial banks. This will explain help to reveal how best the challenges can be overcome hence promoting efficient implementation, monitoring and evaluation of commercial banks. Moreover, further research could be carried out on other commercial banks in the East African region to establish the impact of macroeconomic variables on performance of banks.

Isayas (2021) investigated the key firm-specific and macroeconomic determinants of profitability of commercial banks in Ethiopia. The empirical analysis is carried out using the generalized method of moments (GMM) estimation of dynamic panel data from 14 banks covering 12 years of operation from 2008 to 2019. A quantitative approach and explanatory design were employed to realize the stated objectives. To achieve the study objective, secondary data were collected from annual audited financial statements of sampled banks for the stated period. The model results of the study revealed that firm size, liquidity ratio, asset tangibility, capital adequacy, leverage and real GDP growth rate have a positive and statistically significant effect on the profitability of banks, while firm age and the inflation rate have a negative but statistically insignificant effect on the profitability of banks in Ethiopia. Future studies are suggested to be conducted in this research area by incorporating variables that are other than variables used in this study and unlike this study, all other financial institutions need to be included.

Keo (2020) studied the criteria affecting the profitability of commercial banks which are bank-specific and macroeconomic determinants is imperative for forming new

strategies and capturing useful procedures to improve financial performance. It was found that non-performing loan ratio, bank capital ratio, total loan to total asset ratio, and GDP growth for medium banks have a significant impact on return on asset, return on equity, and LNZ-SCORE for the case of Thailand while bank capital ratio, total deposit to total asset ratio, GDP growth rate for small banks, and inflation show a significant relationship with return on asset, return on equity, and LNZ-SCORE for the case of Vietnam

Gwachha (2019) analyzed bank-specific and macroeconomic determinants of the profitability of Nepalese banking sector over the time period from 2004 to 2013. Gwachha used return on assets (ROA), return on equity (ROE) and net interest margin (NIM) to measure the profitability of the bank and used total asset, ratio of equity capital to total assets, ratio of total loan to total assets, ratio of total deposit to total assets, ratio of total liquid assets to total assets as bank specific factors and used gross domestic product, consumer price index, real interest rate and stock market capitalization as macroeconomic factors. Gwachha concluded that asset size and deposit to asset have a significant positive effect, and loans portfolio have a significant negative impact on profitability of bank. Furthermore, Gwachha found a positive impact of real interest rate and stock market capitalization on the performance of banks.

Al-Homaidi, Tabash, Farhan and Almaqtari (2018) researched on bank specific and macro-economic determinants of profitability of Indian commercial banks: A panel data approach used return on assets, return on equity and net interest margin as proxy of profitability, bank size, assets quality, capital adequacy, liquidity, operating efficiency, deposits, leverage, assets management and number of branches as proxy of bank specific factors and gross domestic product, inflation rate, interest rate and exchange rate as proxy of macroeconomic variables. Al-Homaidi et al. concluded that all bank specific factors except the number of branches has significant impact on profitability measured by net profit margin. Further they concluded that all the macroeconomic variables used in the study have significant negative impact on profitability. Finally, they concluded that bank size, number of branches, assets management ratio and leverage ratio have significant impact on profitability of Indian commercial banks measured by return on assets.

Teshome(2018) researched on macro-economic determinant of financial performance of commercial banks in Ethiopia: Special emphasis on private commercial banks aims at examining the determinants of the financial performance of private commercial banks in Ethiopia. The study uses secondary data for eight private banks which are in the industry for more than ten years. These banks are chosen from sixteen private commercial banks which are currently functional in Ethiopia banking industry. The data for this study is obtained from annual reports of the banks, minutes and the national bank report. Correlation and multiple linear regressions of panel data for the eight banks for the years 2007 to 2016 is analyzed using random effect model. E-Views 9 software was used for analyzing the data. Return on Asset and Return on Equity are the selected dependent variables while non-performing loan, capital adequacy ratio, bank size, leverage ratio, credit interest income ratio, loan loss provision ratio and operation cost efficiency were the independent variables. Results show that Capital Adequacy Ratio (CAR), Credit Interest Income (CIR) and Size of the bank (SIZE) have positive and statistically significant effect on financial performance. Non-performing Loans (NPLs), Loan Loss Provision (LLP), Leverage Ratio (LR) and Operational Cost Efficiency (OCE) have negative and statistically significant effect on banks' financial performance. The study suggests that Ethiopian commercial banks are advised to manage their loan loss, be cost efficient, and fix their leverage ratio at maximum level to enhance their profitability.

Kamande(2016) researched on the effect of bank specific factors on macro-economic variables on financial performance of Commercial banks in Kenya was to determine the effects of bank specific factors on the financial performance of commercial banks in Kenya for a period of 5 years, starting from the year 2011 to 2015. The dependent variable under investigation was return on assets (ROA). The independent variables were capital adequacy, asset quality, management efficiency, earnings ability and liquidity. The specific objectives of this research were to determine the effects of capital adequacy on the financial performance of commercial banks in Kenya, evaluate the effects of asset quality on the financial performance of commercial banks in Kenya, determine the impact of management efficiency on the financial performance of commercial banks in Kenya, determine the impact of earnings ability on the financial performance of commercial banks in Kenya and evaluate the effects of liquidity on the financial performance of commercial banks in Kenya. The choice

of this five-year period was based on the explosive growth of the banking sector in the country and the availability of complete data for that period. This study adopted an explanatory approach by using panel data research design to fulfill the objectives. The researcher collected data on published financial statements for five years from 2011 to 2015 that was analyzed to show the effect of bank specific factors on financial performance of commercial banks over that period under study. The findings were presented in tables and narratives. They show that there has been a significant decrease in capital adequacy during the five-year period. There was also a finding that asset quality affects profitability and the financial performance of banks. The study concludes that Asset quality of the bank have the highest influence on ROA of banks. The study recommends that efficient and effective management should be adopted by bank managers to ensure that banks do not become insolvent.

Simiyu (2015) researched on effect of macroeconomic variables on profitability of commercial Banks listed in the Nairobi Securities Exchange endeavors to investigate the effect of macroeconomic variables on financial profitability of listed commercial banks in the Nairobi Securities Exchange (NSE) for years 2001 to 2012. Panel data analysis using Fixed Effects model was applied on the data to examine the effects of three major macroeconomic variables which included: Gross Domestic Product (GDP), Exchange rates, and interest rates on profitability of the listed commercial banks. The study findings indicated that real GDP growth rate had positive but insignificant effect to profitability of commercial banks as measured through Return on Assets (ROA). Further, real interest rates had a significant negative influence on profitability of listed commercial banks in Kenya. While the exchange rate had a positive significant effect on the profitability of listed commercial banks on Nairobi Securities Exchange.

2.2.2 Review of Nepalese Articles

ADB (2023) revealed that macroeconomic update's theme chapter assesses customs reforms and trade facilitation program in Nepal. Being a landlocked nation, Nepal imports and exports goods using transit corridors and seaport facilities of neighboring countries. Hence, it is critical to simplify and streamline export and import processes to support supply chain activities and save time and compliance costs for legitimate trading. This report broadly makes five recommendations that would help the

government achieve its overarching goal of creating paperless customs, saving both time and money for trading. First, Nepal must tap every known source to further automate customs procedures as it is bound to lose access to trade-related preferential treatments upon graduation from the grouping of least-developed countries in 2026. Second, it must identify new risk indicators and parameters, and automate the risk management process to reduce physical inspection of goods. Third, the government must strengthen the capacity of customs administration as well as human resources to execute behind-the-border functions using modern technologies to reduce face-to-face interactions with traders at customs points. Fourth, Nepal must continue to strengthen its physical infrastructure to facilitate cross-border trade. And fifth, the government and the private sector, especially traders and customs agents, must coordinate to hash out differences that are working as barriers in creating paperless customs.

Gautam and Gautam (2021) analyzed the effect of macroeconomic indicators such as domestic products, interest rate, inflation rate, and unemployment rate on the financial performance of commercial banks in Nepal. The study result revealed significant influence of macroeconomic factors except the unemployment rate for estimating ROE of commercial banks in Nepal while no significant impact was revealed for ROA. Among the significant variables, GDP contributes more in predicting the financial performance of commercial banks in Nepal. Implication: As the study found significant role of macroeconomic variables to estimate ROE, bank administrators, government officials, and investors can focus in such variables, especially in GDP for competitive financial performance. They need to develop products based on macroeconomic variables. Besides, this study finds and tries to mitigate the gap in findings of previous empirical studies (Gautam & Gautam, 2021).

Roka (2021) examined examine the impact of bank specific and macroeconomic variables on Performance of the commercial bank. This study employs descriptive statistics to describe the profitability of Nepalese banks and its determinants. Further, the degree of correlation among different indicators of profitability and its determinants has been assessed by calculating correlation coefficient. Finally, this study has adopted a regression model to investigate the determinants and their impact on profitability of Nepalese commercial banks. The analysis reveals that the bank profitability measured by ROA, ROE and Net Margin of Nepalese commercial banks is significantly affected by concentration ratio, banking sector development, GDP

growth, inflation and exchange rate significantly in opposite direction. Another indicator of bank profitability; NIM is significantly affected only by capital adequacy, absolute number of branches and inflation rate. This study concluded that the profitability of Nepalese commercial banks measured by return on assets is significantly influenced by the external factors. Among external factors, industry specific factors have high degree of impact on return on assets whereas macroeconomic variables have quite a weak degree but significant impact on profitability of Nepalese commercial banks as measured by return on assets. Further, the profitability measured by net interest margin (NIM) is significantly influenced only by capital adequacy, absolute number of branches and annual inflation rate.

Neupane (2020) employed descriptive statistics to describe the profitability of Nepalese banks and its determinants. Further, the degree of correlation among different indicators of profitability and its determinants has been assessed by calculating correlation coefficient. Finally, this study has adopted a panel data regression model (Fixed Effect Model and Random Effect Model) to investigate the determinants and their impact on profitability of Nepalese commercial banks. The analysis reveals that the bank profitability measured by ROA of Nepalese commercial banks is significantly affected by concentration ratio, banking sector development, GDP growth, inflation and exchange rate significantly in opposite direction rather it is not significantly affected by the internal factors like bank size, capital base, deposit, loan, off-balance sheet activities and number of branches. Another indicator of bank profitability; NIM is significantly affected only by capital adequacy, absolute number of branches and inflation rate. This study concluded that the profitability of Nepalese commercial banks measured by return on assets is significantly influenced by the external factors. Among external factors, industry specific factors have high degree of impact on return on assets whereas macroeconomic variables have quite a weak degree but significant impact on profitability of Nepalese commercial banks as measured by return on assets. Further, the profitability measured by net interest margin (NIM) is significantly influenced only by capital adequacy, absolute number of branches and annual inflation rate.

Bhattarai (2019) examined the liquidity determinants of Nepalese commercial banks. The study has applied ordinary least square (OLS) regression models to a panel data of commercial banks for the period from 2013/14 to 2018/19. The banks liquidity

(liquid asset to total asset and total credit to total loan ratios) was taken as a dependent variable which functioned against both bank-specific and macroeconomic determinants. The present study seeks to fill the existing gap by empirically analyzing bank specific variables such as return on equity (ROE), non-performing loan ratio (NPL) and size (LnTA), and macroeconomic determinants such as economic activity (GDP), inflation rate (INF). The convenience sampling method was used in choosing the banks for the study. This study has adopted descriptive and causal comparative research design. The results indicated that among the bank-specific factors non-performing loan ratio is found a significant but negative impact on liquidity. With respect to macroeconomic factors, the results indicated that gross domestic products (GDP) is found a significant positive effect on liquidity (liquid asset to total assets ratio) in the model. Similarly, in the second model there is negative but significant result found between profitability (return on equity) and liquidity (credit to deposit ratio). The study recommended that bankers should consider nonperforming loan and GDP in such a way that improves banks' performance. Finally, the current study provides useful insights for bankers, analysts, regulators, investors, and other interested parties on the liquidity in Nepalese commercial banks context.

Bhattarai (2017) investigated the effect of credit risk on the profitability of commercial banks in Nepal over the period of 8 years (2009 to 2016). Panel data of six commercial banks were analyzed using pooled OLS model, fixed effects model and random effect model. The results from the estimated regression models show that default risk is significantly positively associated with banks' profitability. However, capital adequacy ratio is found significantly negatively associated to profitability. The effect of cost per loan assets seems minimal in explaining the variation of commercial banks' profitability. Thus, this study concludes that credit risk indicators like: default risk and capital adequacy ratio have significant impact on the profitability of commercial banks in Nepal.

Pradhan and Shrestha (2016) examined the impact of bank specific variables and macroeconomic variables on the performance of commercial banks of Nepal. The dependent variable is bank performance which has been specified in terms of ROA, ROE and NIM while the independent variables are capital adequacy ratio, asset quality, management efficiency, liquidity management, employee expenses, other operating expenses, credit risk, growth of gross domestic product and inflation. To

test the impact of importance of bank specific and macro-economic variables on bank performance regression models have been estimated. The study reveals that management efficiency has a very strong and positive relationship with bank performance in Nepal. The macroeconomic variables are not significant and hence there is no evidence that external forces have impact over bank performance. The study showed that all the bank specific factors are found to be significant factors affecting the bank performance.

2.3 Research Gap

In recent years, some policies have been reformed to improve banks performance and some measures have been taken to minimize on the negative effects of lending in Nepalese commercial banks context. Moreover, policy makers have focused on mergers of commercial banks to increase capital requirements and lessened the competition. Despite the some policies measures undertaken to reduce credit risk in the banking sector in Nepal, there is still increasing trend of loan defaults and nonperforming loans of Nepalese commercial banks. Thus there is the need of such study impact of bank specific and macroeconomic variables on bank performance in Nepalese context.

With the literature review a conceptual framework for this study is developed by exploring the relationship between the dependent variable (return on assets) and bank specific (default risk, cost per loan assets and capital adequacy ratio) and macroeconomic (annual growth of gross domestic product, exchange rate and inflation) are independent variables.

This research will analyze the ten years data from 2013/14 to 2022/23 of the sampled banks on the recent available data based on purposively sampling method. Similarly, the banking size of the bank will also be different from what other literature has examined.

CHAPTER III

RESEARCH METHODOLOGY

The research methodology is the systematic way of solving research problems. Research methodology refers to the overall research processes, which a researcher conducts during his/her study. It includes all the procedures from theoretical foundation to the collection and analysis of data. As most of the data are quantitative, the research is based on the scientific models. It is composed of both parts of technical aspect and logical aspect on the basis of historical data.

In it, the various steps are studied that are generally adopted by a researcher in studying his/her research problem along with the logic behind them. This section focuses on the method of research used in this study. Research methodology includes research design, population and sample of data, data collection procedures, nature of sources of data, data analysis tools & technique used. In this study, all the data are secondary and these data are analyzed using appropriate financial as well as statistical tools. Outcomes are presented in a simple way.

3.1 Research Design

Research design is the task of defining the research problem. In other words, A research design is the arrangement of conditions, for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure. In fact, the research design is the conceptual structure within which the research is conducted. General objective; of this research study is to examine and evaluate the financial performance of joint venture banks of Nepal, especially in order to achieve the objective, both descriptive and causal comparative research design has been followed. The study focuses on the examination of relationship between those variables that influence financial decisions of the sampled banks. Research design is the plan, structure and strategy of investigation conceived so as to obtain answers to research questions and to control variance. A research is the specification of methods and procedures for acquiring the information needed. It is the overall operational pattern or framework of the project that stipulates what information is to be collected from which sources by what procedures.

3.2 Population, Sample and Sampling Design

In order to achieve the objective of this study 20 commercial banks (as on August, 2024) were considered as population and only 3 banks were taken as sample of this study using convenience sampling method on the one. The bank were choose based on the available updated data and all three banks were Joint Venture Banks (JVB). Convenience sampling method was used to understand the impact on various factors on the performance of the bank especially on the JVB. Data from 2013/14 to 2022/23 was taken. The selected sample banks for the analysis are:

- Himalayan Bank Limited
- NABIL Bank Limited
- Nepal SBI Bank Limited

3.3 Source of Data

This research study is based on the secondary data. The required data for the study was collected through library research study, Internet, homepage, related links, Directives of NRB 2079, Monetary Policy, Annual report of related banks, Published articles and journals from various researchers and lecturers.

3.4 Data Collection Procedures

It shows the sources of data and how they are collected. Most of the data necessary for the research is collected from the secondary sources. Data related company's performance will be taken from the financial statements of commercial banks and their annual reports. The collection procedure is summarized below:

- Financial documents provided by the related banks on their website.
- Trading Report published by Nepal Stock Exchange Limited.
- Related websites of banks.
- Materials published in papers and magazines.
- Other related books and booklets.

3.5 Descriptive Statistics

Descriptive analyze is contain certain measures, such as measures of central tendency (mean) and dispersion or variability (standard deviation, minimum variable, maximum variable) that are used to summarize data points in a constructive way such

that patterns might emerge that fulfill every condition of the data. According to the Trochim Descriptive measures summarize a particular data set that can either represent a sample or population used for the research. In descriptive research the researcher tries to identify or describe the events. For example in descriptive research if the question is “What is the present or past state of events?” for this the researcher selects the representative sampling of the people.

3.6 Data Analysis Tools

For the accomplishment of the envisaged objectives of this research study, various financial and statistical tools will be employed in the course of the analysis of data.

Financial Tools

Various financial tools such as interest rate, ROA, REO, Net profit Margin, Capital Adequacy ratio,

a) Return on Assets (ROA)

It measures a company's success in earning a return for all providers of capital. Higher ROA means optimum utilization and management of the total assets. This ratio is calculated by dividing the net profit after tax by total assets, it can be expressed as,

$$\text{ROA} = \frac{\text{Net Profit after Tax (NPAT)}}{\text{Total Assets (TA)}} * 100\%$$

b) Return on Equity

It measures a company's success in earning a return for the common stockholders. Higher ROE indicates better utilization of capital fund. The Return on Equity ROE is derived by dividing net profit after tax by total equities. Mathematically,

$$\text{ROE} = \frac{\text{Net Profit after Tax (NPAT)}}{\text{Total Equities (TE)}} * 100\%$$

c) NIM

Net interest margin (NIM) is a measurement comparing the net interest income a financial firm generates from credit products like loans and mortgages, with the outgoing interest it pays holders of savings accounts and certificates of deposit (CDs).

$$\text{NIM} = \frac{IR - IE}{\text{Average Earning}}$$

d) Default Risk

Default risk is the risk that a lender takes on in the chance that a borrower will be unable to make the required payments on their debt obligation.

$$\text{Default Risk} = \frac{\text{Total Non Performing Loan (TNPL)}}{\text{Total Loan (TL)}} * 100\%$$

e) Capital Adequacy Ratio

The capital adequacy ratio is one of the most significant ratios, used specially to assess the bank's strength of the capital structure of the adequacy of the capital. The adequacy ratio is the primary tool to analyze the capital fund of a bank. It is based on total risk-weighted assets of the bank. Capital adequacy ratios are a measure of the amount of a capital fund ratio according to increase in deposit.

To determine the adequacy of total capital fund:

$$\text{Capital Adequacy Ratio} = \frac{\text{Total Capital Fund}}{\text{Total Risk Weighted Asscets}} * 100\%$$

Operating Expenses to Total Loan

It is the ratio of total operating expenses to total loan. It analyzes the cost of total loan.

$$\text{Operating Expenses to Total Loan} = \frac{\text{Operating Expenses}}{\text{Total Loan and Advances}}$$

Statistical Tools

Many statistical tools are often employed in the analysis and interpretation of data as an aid to management and managerial decision. For this research standard deviation, correlation coefficient is analyzed.

Statistical methods involved in carrying out a study include planning, designing, collecting data, analyzing, drawing meaningful interpretation and reporting of the research findings.

Mean

Mean is a single value that represents a group of values. It depicts the characteristics of the whole group. It is a representative of the entire mass of homogenous data, its value lies somewhere in between the two extremes, i.e. the largest and the smallest items. It is obtained by dividing the sum of the quantities by the number of items.

$$\text{Mean} = \frac{\sum X}{n}$$

Standard Deviation

Standard deviation is the measure of dispersion, that is used to quantify the amount of variation or dispersion of a set of data values. It can be defined as the positive square root of variance. A useful property of the standard deviation is that, unlike the variance, it is expressed in the same units as the data. If the data points are further from the mean, there is higher deviation within the data set. Thus, the more spread out the data, the higher the standard deviation.

$$\text{Standard Deviation} = \sqrt{\frac{\sum (X - \bar{X})^2}{n}}$$

X= Data point value

\bar{X} = Average point value

n = No. of observation

Coefficient of Variation (C.V.)

Variance is a measurement of the spread between numbers in a data set. The variance measures how far each number in the set is from the mean. Variance is calculated by taking the difference between each number in the set and the mean squaring the differences and dividing the sum of the squares by the number of values in the set. Variance is a statistical measure of how much a set of observation differ from each other. It is used in statistics for probability distribution since variance measures the variability from an average or mean.

$$CV = \frac{S.D}{\text{Mean}} \times 100$$

Correlation Analysis

Correlation is a statistical tool used to measure how strong a relation is between two variables. Correlations are useful because they can indicate a predictive relationship that can be exploited in practice. Degree and type of relationship between any two or more variables vary together over a period. Correlation value falls between -1 to +1. Values close to +1 indicate a high – degree of positive correlation, and values close to -1 indicate a high – degree of negative correlation. In this study, correlation is calculated for the responses provided in Likert scale to find the degree of relation between independent and dependent variables for all samples.

$$r = \frac{N(\sum XY) - (\sum X)(\sum Y)}{\sqrt{[N\sum X^2 - (\sum X)^2][N\sum Y^2 - (\sum Y)^2]}}$$

Where

X = Data point Value of dependent variable

Y = Data point Value of independent variable

n = Number of values

Regression Analysis

Regression analysis is a mathematical measure of the average relationship between two or more variables in terms of the original units of the data. Thus, it can be said that regression is the estimation or prediction of one variable's value from the given values of other variables. The regression model used in this study assumes that the relationship between each independent variable (CAR, INF, DR, OETL and Lending Ratio) and the dependent variable (ROA, NIM and ROE). The model used in this study would be stated as;

$$ROA = a + \beta_1 CAR + \beta_2 INF + \beta_3 DR + \beta_4 OETL + \beta_5 LR + e \quad (i)$$

$$ROE = a + \beta_1 CAR + \beta_2 INF + \beta_3 DR + \beta_4 OETL + \beta_5 LR + e \quad (ii)$$

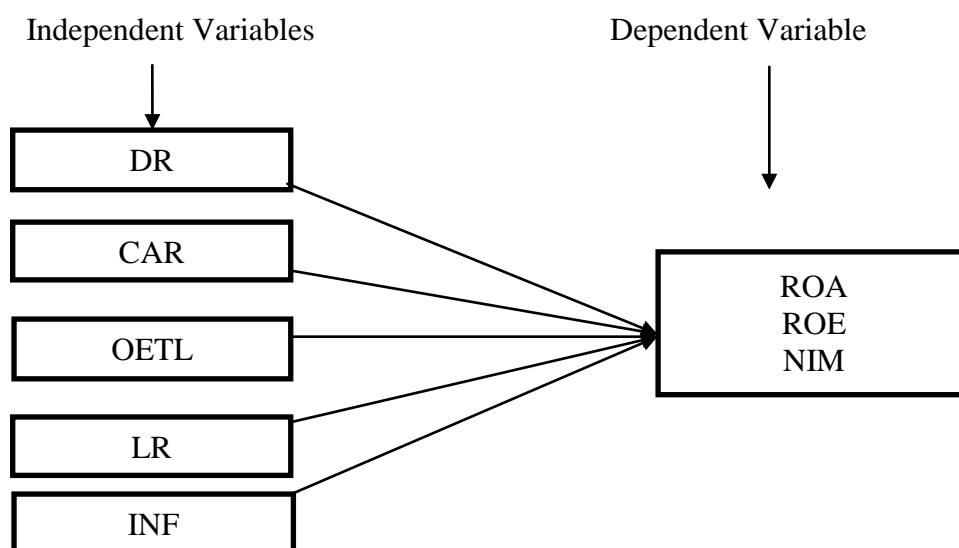
$$NIM = a + \beta_1 CAR + \beta_2 INF + \beta_3 DR + \beta_4 OETL + \beta_5 LR + e \quad (iii)$$

Where,

ROA = Return on assets, ROE = Return on equity, NIM = Net Interest Margin, CAR = Capital adequacy ratio, LR = Lending Rate, INF = Inflation, DR = Default Risk, OETL = Operational Expenses to Total Loan, a = constant term, e = error term,

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ = Beta coefficient of variables

3.7 Research Framework and Definitions of Variables



Source: Nasiku and Babu, 2016

Figure 3.1: Research Framework

Independent variables are what we expect will influence dependent variables. A Dependent variable is what happens as a result of the independent variable. In this research independent variables are Capital adequacy ratio, Lending Rate, Inflation, Default Risk and Operating Expenses to Total Loan, while the dependent variables are ROA, ROE and NIM.

Independent Variables

CAR: Capital Adequacy Ratio (CAR) is the ratio of a bank's capital in relation to its risk weighted assets and current liabilities.

Inflation: Inflation refers to a general increase in the prices of goods and services in an economy. When the general price level rises, each unit of currency buys fewer goods and services; consequently, inflation corresponds to a reduction in the purchasing power of money

DR: Default risk is the risk that a lender takes on in the chance that a borrower will be unable to make the required payments on their debt obligation.

OETL: It is the ratio of total operating expenses to total loan.

Lending Ratio: Lending Ratio means the percentage allocated to particular Eligible Security or class of Eligible Security (or any other type of Secured Property in the Bank's absolute discretion), as amended from time to time by the Bank, in its absolute discretion

Dependent Variables

ROA: The term Return on assets (ROA) refers to a financial ratio that indicates how profitable a company is in relation to its total assets.

ROE: Return on equity (ROE) is the measure of a company's net income divided by its shareholders' equity.

NIM: Net interest margin is a measure of the difference between the interest income generated by banks or other financial institutions and the amount of interest paid out to their lenders, relative to the amount of their assets.

CHAPTER IV

RESULT AND DISCUSSION

4.1 Data Presentation and Analysis

For this study capital adequacy ratio (CAR), DR, OETL, LR, IF ROE, ROA, NIM is calculated.

4.1.1 Return on Assets (ROA)

Return on assets (ROA) is an indicator of how profitable a company is relative to its total assets. ROA gives a manager, investor, or analyst an idea as to how efficient a company's management is at using its assets to generate earnings.

Table 1

Summary of the Return on Assets

	SBI	HBL	Nabil
2013/14	0.86	1.74	2.68
2014/15	1.19	1.54	3.04
2015/16	1.51	1.30	2.66
2016/17	1.80	0.14	1.81
2017/18	1.70	1.94	2.21
2018/19	1.54	2.03	2.57
2019/20	1.96	1.62	2.38
2020/21	1.94	2.08	2.11
2021/22	1.17	1.66	1.46
2022/23	0.72	1.66	1.57
Mean	1.43	1.57	2.24
SD	0.42	0.53	0.49
CV	29.62	33.56	21.90

Source: Annual Report of SBI, HBL and NABIL (2013/14 to 2022/23)

Table 1 shows that the ROA of SBI is in fluctuating trend. SBI has the highest ROA in the year 2020/21 i.e. 1.97, and lowest ROA in the year 2022/23 i.e. 0.70. The mean, SD and CV of ROA of SBI are 1.43, 0.42 and 29.62 respectively. ROA of HBL is in fluctuating trend. Similarly, HBL has highest i.e. 2.08 ROA in the year 2020/21 and

lowest i.e. 0.14 ROA in the year 2016/17. The mean, SD and CV of ROA of HBL are 1.57, 0.53 and 33.57 respectively.

ROA of NABIL is in fluctuating trend. Finally the Nabil has highest i.e. 3.04 ROA in the year 2014/15 and lowest i.e. 1.46 in the year 2021/22. The mean, SD and CV of ROA of NABIL are 2.24, 0.49 and 21.89 respectively.

The table shows that the three banks SBI, HBL and Nabil has achieved an mean of 1.43, 1.57 and 2.24 respectively in the duration of 10 years. Nabil has the highest Mean of 2.24, which indicates that Nabil bank has better performance based on ROA. The CV of HBL is highest i.e. 33.57 while NABIL is the lowest i.e. 21.89, which shows that HBL's performance is more stable. Hence based on the variance of the ROA within the period of 10 years, NABIL has better performance.

4.1.2 Return on Equity

Return on equity (ROE) is a measure of financial performance calculated by dividing net income by shareholders' equity. Because shareholders' equity is equal to a company's assets minus its debt, ROE is considered the return on net assets. ROE is considered a measure of a corporation's profitability in relation to stockholders' equity.

Table 2

Return on Equity

	SBI	HBL	Nabil
2013/14	0.15	0.21	0.31
2014/15	0.20	0.18	0.33
2015/16	0.20	0.16	0.30
2016/17	0.19	0.02	0.25
2017/18	0.19	0.22	0.24
2018/19	0.15	0.19	0.25
2019/20	0.16	0.13	0.19
2020/21	0.16	0.17	0.18
2021/22	0.10	0.15	0.13
2022/23	0.07	0.16	0.14
Mean	0.16	0.16	0.23
SD	0.04	0.05	0.07
CV	27.33	34.11	28.80

Source: Annual Report of SBI, HBL and NABIL (2013/14 to 2022/23)

The Table 2 shows that the ROE of SBI is in fluctuating trend. SBI has the highest i.e.0.20 ROE in the year 2014/15 and 2015/16, and lowest i.e.0.06 ROE in the year 2022/23. The mean, SD and CV of ROE of SBI are 0.16, 0.04 and 27.33 respectively.

ROE of NABIL is in fluctuating trend. Finally the Nabil has highest i.e.0.33 ROA in the year 2014/15 and lowest i.e.0.13 in the year 2021/22 and 2022/23. The mean, SD and CV of ROE of NABIL are 0.23, 0.07 and 28.80 respectively.

ROE of HBL is in fluctuating trend. Similarly, HBL has highest i.e.0.22 ROE in the year 2017/18 and lowest i.e.0.13 ROE in the year 2019/20. The mean, SD and CV of ROE of HBL are 0.16, 0.05 and 34.11 respectively. If shareholders' equity is negative, the most common issue is excessive debt or inconsistent profitability. However, there are exceptions to that rule for companies that are profitable and have been using cash flow to buy back their own shares. In the case of SBI, HBL and Nabil mean ROE is in 0.16, 0.16 and 0.23 which is a good ROE. Nabil has the highest Mean of 0.23, which indicates that Nabil bank has better performance based on ROE. Similarly, the standard deviation of SBI is the lowest i.e. 0.04. Based on the CV, the lowest is of SBI i.e. 27.33, which shows the bank is more stable in its performance.

4.1.3 Net Interest Margin

In short, net interest margin is one indicator of a bank's profitability and growth. It reveals how much the bank is earning in interest on its loans compared to how much it is paying out in interest on deposits.

Table 3*Summary of Net Interest Margin*

Fiscal year	SBI	HBL	NABIL
2013/14	1.36	1.68	1.95
2014/15	1.65	2.18	2.62
2015/16	1.78	2.11	2.92
2016/17	2.15	2.37	2.59
2017/18	2.54	3.20	3.37
2018/19	1.98	2.19	3.09
2019/20	1.84	1.80	2.23
2020/21	1.72	1.76	1.89
2021/22	1.55	1.66	1.74
2022/23	1.45	1.58	1.88
Mean	1.80	2.05	2.43
SD	0.33	0.46	0.55
CV	18.45	22.53	22.45

Source: *Annual Report of SBI, HBL and NABIL (2013/14 to 2022/23)*

The Table 3 shows that the Net Interest margin of SBI is in fluctuating trend. Net Interest margin of SBI has been highest in the year 2017/18 with 2.54 while lowest in the year 2013/14 with 1.36. The mean, SD and CV of NIM of SBI are 1.80, 0.33 and 18.46 respectively. Net Interest margin of HBL is in fluctuating trend. Similarly, HBL has the highest NI margin in the year 2017/18 with 3.20, while lowest 1.58 in the year 2022/23. The mean, SD and CV of NIM of HBL are 2.05, 0.46 and 22.53 respectively. Net Interest margin of NABIL is in fluctuating trend. NABIL has the lowest NI Margin in the year 2021/22 with 1.74, and highest in the year 2017/18 with 3.37. The mean, SD and CV of NIM of NABIL are 2.43, 0.55 and 22.45 respectively. Based on the CV and standard deviation, SBI has the lowest, i.e. 0.33 and 18.45 respectively making it more stable in terms of NIM. Nabil has the highest Mean of 2.43, which indicates that Nabil bank has better performance based on NIM. The CV of HBL is highest i.e. 22.53 while SBI is the lowest i.e. 18.46, which shows that HBL's performance is more stable.

4.1.4 Default risk (DR)

Table 4

Summary of Default Risk

Fiscal year	SBI	HBL	NABIL
2013/14	0.54	2.09	2.33
2014/15	0.37	2.89	2.13
2015/16	0.26	1.96	2.23
2016/17	0.19	3.22	1.82
2017/18	0.14	1.23	1.14
2018/19	0.10	0.85	0.80
2019/20	0.20	1.40	0.55
2020/21	0.20	1.12	0.74
2021/22	0.23	1.01	0.98
2022/23	0.24	0.49	0.84
Mean	0.25	1.63	1.36
SD	0.12	0.85	0.66
CV	48.53	52.31	48.47

Source: Annual Report of SBI, HBL and NABIL (2013/14 to 2022/23)

The Table 4 shows that the Default Risk of SBI is in fluctuating trend. The default Risk ratio of SBI is highest in the year 2013/14 with 0.54, and lowest has been in the year 2018/19 with 0.1. The mean, SD and CV of DR of SBI are 0.25, 0.12 and 48.53 respectively. Default Risk of HBL is in fluctuating trend. Similarly, DR of HBL has been highest in the year 2016/17 with 3.22 and lowest has been in the year 2018/19 with 0.85. The mean, SD and CV of DR of HBL are 1.63, 0.85 and 52.31 respectively. Default Risk of NABIL is in fluctuating trend. DR of NABIL has been highest in the year 2013/14 with 2.33 and lowest in the year 2019/20 with 0.55. The mean, SD and CV of DR of NABIL are 1.36, 0.66 and 48.47 respectively.

In a mean DR of the HBL is highest with 1.63 and lowest has been of SBI with 0.25. HBL has the highest Mean of 1.63, which indicates that HBL has better performance based on DR. The standard deviation of SBI is 0.12 while HBL is 0.85 and NABIL is 0.66, as SBI is lowest it is more stable.

4.1.5 Capital Adequacy Ratio (CAR)

Table 5

Summary of the Capital Adequacy Ratio

Fiscal year	SBI	HBL	NABIL
2013/14	11.21	11.02	11.01
2014/15	12.39	11.55	11.59
2015/16	13.28	11.23	11.18
2016/17	14.03	11.14	11.57
2017/18	13.49	10.84	11.73
2018/19	15.71	12.15	12.90
2019/20	15.15	12.46	13.00
2020/21	14.12	12.6	12.50
2021/22	15.55	14.89	13.07
2022/23	13.86	13.89	12.77
Mean	13.88	12.18	12.13
SD	1.33	1.27	0.76
CV	9.58	10.40	6.22

Source: Annual Report of SBI, HBL and NABIL (2013/14 to 2022/23)

The Table 5 shows that the Capital Adequacy Ratio of HBL is in fluctuating trend. HBL has the highest CAR in the year 2021/22 with 14.89 and lowest in the year 2017/18 with 10.84. The mean, SD and CV of CAR of HBL are 12.6, 1.27 and 10.40 respectively. Capital Adequacy Ratio of NABIL is in fluctuating trend. Similarly, NABIL has the highest CAR in the year 2021/22 with 13.07 and lowest in the year 2013/14 with 11.01. The mean, SD and CV of CAR of NABIL are 12.13, 0.76 and 6.22 respectively. Capital Adequacy Ratio of SBI is in fluctuating trend. SBI has the lowest in the year 2013/14 with 11.21 and highest in the year 2018/19 with 15.71. SBI has the highest Mean of 13.88, which indicates that SBI bank has better performance based on CAR. The mean, SD and CV of CAR of SBI are 13.88, 1.33 and 9.58 respectively. The CV of HBL is highest i.e. 10.40 while NABIL is the lowest i.e. 6.22, which shows that NABIL's performance is more stable.

4.1.6 Operating Expense to Total Loan

Table 6

Operating Expense to Total Loan

Fiscal year	SBI	HBL	NABIL
2013/14	10.46	10.43	10.56
2014/15	11.66	9.85	10.22
2015/16	13.06	13.99	7.64
2016/17	13.56	6.94	5.68
2017/18	9.47	5.85	6.25
2018/19	8.38	4.96	4.43
2019/20	7.54	6.14	5.30
2020/21	7.24	7.93	7.34
2021/22	7.78	8.89	8.27
2022/23	9.26	9.54	9.78
Mean	9.84	8.45	7.55
SD	2.16	2.55	2.04
CV	21.95	30.18	27.02

Source: Annual Report of SBI, HBL and NABIL (2013/14 to 2022/23)

The Table 6 shows that the Operating Expense to total Loan of SBI, HBL and NABIL is in fluctuating trend. During the study period of 10 years the highest Operating Expense to Total Loan had been in the year 2016/17 with 13.56 of SBI, 2015/16 with 13.99 of HBL and 2013/14 with 10.56 of NABIL. The lowest has been in the year 2020/21 with 7.24 of SBI, 2018/19 with 4.96 of HBL and 2018/19 with 4.43 of 2017/18. SBI has the highest Mean of 9.84, which indicates that SBI bank has better performance based on Operating Expense to total Loan Ratio. The CV of HBL is highest i.e. 30.18 while SBI is the lowest i.e. 21.95, which shows that SBI's performance is more stable.

4.1.7 Lending Rate

Table 7

Lending Rate

Fiscal year	Lending Rate		
	Deposit	Lending	Base Rate
2013/14	6.17	12.40	9.75
2014/15	5.25	12.09	9.83
2015/16	4.09	10.555	8.36
2016/17	3.94	9.62	7.88
2017/18	3.28	8.86	6.54
2018/19	6.15	11.33	9.89
2019/20	6.49	12.47	10.47
2020/21	6.60	12.13	9.57
2021/22	6.01	10.11	8.50
2022/23	4.65	8.43	6.86
Mean	5.68	10.42	8.70
SD	1.44	1.93	1.34
CV	25.35	18.52	15.40

Source: Economic Survey, 2022

The Table 7 shows that the mean deposit interest has been 5.68 in the duration of 10 years and lending rate has been 10.42. The base rate has been 8.70.

4.1.8 Inflation

Table 8

Inflation

Fiscal year	Inflation
2013/14	9.22
2014/15	9.45
2015/16	9.04
2016/17	8.36
2017/18	7.86
2018/19	8.79
2019/20	3.62
2020/21	4.06
2021/22	5.56
2022/23	5.05
Mean	7.52
SD	2.13
CV	28.32

Source: Economic Survey, 2022

The Table 8 shows that the There has been significant increase in the inflation each year. Nepal has reached mean inflation of 7.52 during the study period of 10 years. While the standard deviation has been 2.13.

4.2 Descriptive Analysis

Statistics Descriptive statistics computes maximum, minimum, mean, standard deviation of the study that consists of ROA, ROE, NIM, DR, CAR, OETL,LR, INF of impact by dependent variable. Table 9 reveals that there are 30 observations in the study. The observations include 8 variables Impact of Macroeconomic Variables on the Performance of Nepalese commercial banks variables are taken into consideration.

Table 9

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
ROA	30	0.14	3.04	1.75	0.61
ROE	30	0.02	0.33	0.18	0.07
NIM	30	1.36	3.37	2.10	0.53
DR	30	0.10	3.22	1.08	0.88
CAR	30	10.84	15.71	12.73	1.43
OETL	30	4.43	13.99	8.61	2.49
LR	30	6.54	10.47	8.77	1.31
INF	30	3.62	9.45	7.10	2.20

From Table 9, it can be seen that mean value of ROA, ROE, NIM, DR, CAR, OETL, LR, INF, are 1.75, 0.18, 2.10, 1.08, 12.73, 8.61, 8.77, 7.10 respectively as well as standard deviation value also 0.61, 0.07,0.53,0.88,1.43,2.49,1.31,2.20 respectively. Exhibit descriptive statistics where ROA mean of 3 commercial banks for the period of 10 years (2013/14-2022/23) is 1.75 form the range to minimum 0.14to maximum 3.04 percent, which is satisfactory since it is said to be good. As well as ROE of 3 commercial banks for the period of 10 years data (2013/14-2022/23) is 0.18 from the range to minimum 0.02 to maximum 0.33 percent. NIM, of 3 commercial banks for the period of 10 years data (2013/14-2022/23) is 2.10 from the range to minimum 1.36 to maximum 3.37

Percent. DR of 3 commercial banks for the period of 10 years data (2013/14-2022/23) is mean value 1.08; standard deviation is 0.88 from the range to minimum 0.10 to maximum 3.22 percent. As well as CAR range is minimum to 10.84 to maximum 15.71 percent

4.3 Correlation Analysis

Table 10

Correlation Analysis

	ROA	ROE	NIM	DR	CAR	OETIL	LR	INF	p-value
ROA	1								
ROE	.855**	1							.003
NIM	.482**	.536**	1						.000
DR	.071	.226	.329	1					.003
CAR	-.133	-.402*	-.409*	-.735**	1				.043
OETIL	-.245	.005	-.413*	-.022	-.006	1			.046
LR	.262	.173	-.287	.071	.024	-.117	1		.048
INF	.019	.453*	.371*	.409*	-.496**	.354	-.042	1	.034

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

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

Table 10 shows that ROA positively associated with ROA, as well as ROA is positively associated with ROE. Similarly, ROE has positively significant relationship with ROA. NIM is positively significant relationship with ROA and ROE. DR is positively significant relationship with dependent variable ROA, ROE, and NIM. LR is positively significant relationship with dependent variable ROA, ROE, and NIM. But CAR, OETL are negatively or insignificant relationship with ROA, ROE, NIM. Capital adequacy ratio is negative positively associated with bank's ROE, NIM and ROA. Operating expenses has negative correlation with ROE, ROA and NIM and positive. LR is positively associated with dependent variable ROA, ROE, but negatively associated NIM. INF is positively associated significant relationship with ROA, ROE NIM. But insignificant relationship with all the dependent variable. CAR negatively associated with dependent variable ROA, ROE, NIM with insignificant relationship. From the overall analysis, the p-value is less than 5% level of significance, hence the correlation coefficient in each variable is significant.

4.4 Regression Analysis

This section presents the overall analysis and results of the regression analysis on the determinants of bank performance. In this study ROA, ROE and NIM is used as a main performance measure. The reason for using these variables as the measurement of effect was because these macroeconomic and bank specific variables reflect the crucial variable that measures the dividend policy effect of banks. So, it is the dependent variable in this study. The independent variables are DR, CAR, OETL, LR and INF. The regression Model results on four explanatory variables with three sample banks, out of the total population of 20 commercial banks licensed by Nepal Rastra Bank with 30 observations for the period 2013/14 to 2022/23. The table covers 2 different regression models. Test of significance criteria by comparing the P-value with common alpha level, which is 0.05. A small p-value than default alpha value ($P < 0.05$) has been interpreted as the obtained coefficient of regression of selected dependent and other independent variables or predictor is significant and vice versa. Further, F and Adj. R^2 indicates F- statistics and Adjusted R square respectively.

First Model

$$ROA = a + \beta_1 CAR + \beta_2 INF + \beta_3 DR + \beta_4 OETL + \beta_5 LR + e \dots \dots \dots (4.1)$$

Table 11

Structure of Regression Coefficients of ROA with other Independent Variables

Model Summary

Model Summary of DR, CAR, OETL, LR and INF with ROA.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.726 ^a	.527	.404	.47005

a. Predictors: (Constant), INF, LR, OETL, DR, CAR

Table 4.11 shows the model summary to show the DR, CAR, OETL, LR and INF macroeconomics variable on profitability (ROA). The value R square shows 52.7 percent variation in return on assets has been explained by the independent variables DR, CAR, OETL, LR and INF.

Table 12*ANOVA of DR, CAR, OETL, LR and INF with ROA*

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	5.666	6	.944	4.274	.005 ^b
Residual	5.082	23	.221		
Total	10.748	29			

a. Dependent Variable: ROA

b. Predictors: (Constant), INF, LR, OETL, DR, CAR

Based on ANOVA, the p-value is 0.005 which is less than alpha value 0.05. Therefore, the model is able to predict of the relationship between the dependent and independent variables. As a result, the independent variables (DR, CAR, OETL, LR and INF) are significant in explaining the variance in macroeconomic variable on profitability.

Table 13*Impact of Independent Variables on ROA*

Model		Unstandardized		Standardized	T	Sig.
		Coefficients		Coefficients		
		B	Std. Error	Beta		
1	(Constant)	-.933	1.224		-.763	.453
	DR	-.070	.077	-.197	-.907	.374
	CAR	.054	.031	.417	1.721	.099
	OETL	-.034	.047	-.137	-.720	.479
	Inflation	.138	.053	.499	2.605	.016
	Lending	.144	.080	.343	1.809	.083

a. Dependent Variable: ROA

The Table 13 shows that the p-value of inflation is 0.016 which is lesser than 0.05 shows a significant impact on ROA. Hence one unit increase in inflation will lead to 0.138 unit increase in ROA since the beta values is 0.138. However, the impact of DR, CAR, OETL and Lending Ratio on ROA is found insignificant.

Second Model

$$ROE = a + \beta_1 CAR + \beta_2 INF + \beta_3 DR + \beta_4 OETL + \beta_5 LR + e \dots \dots \dots (4.2)$$

Table 14

Structure of Regression coefficients of ROE with other independent variables.

Model Summery

Model Summery of DR, CAR, OETL, LR and INF with ROE.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
2	.751 ^a	.564	.450	.04939

a. Predictors: (Constant), INF, LR, OETL, DR, CAR

Table 14 shows the model summery to shows the, DR, CAR, OETL, LR and INF macroeconomics variable on profitability (ROE). The value R square shows 56.4 percent variation in Return on equity has been explain by the independent variables DR, CAR, OETL, LR and INF.

Table 15

ANOVA of DR, CAR, OETL, LR and INF with ROE

Model	Sum of Squares	df	Mean Square	F	Sig.
2 Regression	.073	6	.012	4.959	.002 ^b
Residual	.056	23	.002		
Total	.129	29			

a. Dependent Variable: ROE

b. Predictors: (Constant), INF, LR, OETL, DR, CAR, NIM

Table 15, F value is 4.959 and p value is 0.002 i.e., p value is less than 0.05 and is significant at 5 percent level of significance which DR, CAR, OETL, LR and INF indicates that is significantly variation the ROE of the sample bank.

Based on ANOVA, the p-value is 0.002 which is less than alpha value 0.05. Therefore, the model is able to predict of the relationship between the dependent and independent variables. As a result, the independent variables (DR, CAR, OETL, LR and INF) are significant. From the result, it can be concluded that overall regression model is significant.

Table 16*Impact of Independent Variables on ROE*

Model		Unstandardized		Standardized	T	Sig.
		Coefficients		Coefficients		
		B	Std. Error	Beta		
1	(Constant)	-.807	1.574		-.513	.613
	DR	-.155	.099	-.308	-1.563	.132
	CAR	.089	.040	.485	2.210	.037
	OETL	-.031	.060	-.089	-.519	.609
	Inflation	.054	.068	.137	.792	.436
	Lending	-.014	.102	-.023	-.136	.893

a. Dependent Variable: ROE

The Table 16 The p-value of CAR is 0.037 which is lesser than 0.05 shows a significant impact on ROE. Hence one unit increase in CAR will lead to 0.089 unit increase in ROE since the beta values is 0.089. However, impact of DR, Inflation, OETL and Lending Ratio on ROE was found insignificant.

Third Model

$$\text{NIM} = a + \beta_1 \text{CAR} + \beta_2 \text{INF} + \beta_3 \text{DR} + \beta_4 \text{OETL} + \beta_5 \text{LR} + e \dots \dots \dots (4.3)$$

Table 17*Structure of Regression coefficients of NIM with other independent variables*

Model Summery of DR, CAR, OETL, LR and INF with NIM.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
3	.780 ^a	.608	.526	.36488

a. Predictors: (Constant), INF, LR, OETL, DR, CAR

Table 17 Shows the model summery to shows the, DR, CAR, OETL, LR and INF macroeconomics variable on profitability (NIM). The value R square shows 52.6 percent variation in net interest margin has been explain by the independent variables DR, CAR, OETL, LR and INF.

Table 18*ANOVA of DR, CAR, OETL, LR and INF with NIM*

Model		Sum of Squares	Df	Mean Square	F	Sig.
3	Regression	4.955	5	.991	7.443	.000 ^b
	Residual	3.195	24	.133		
	Total	8.150	29			

a. Dependent Variable: NIM

b. Predictors: (Constant), INF, LR, OETL, DR, CAR

Table 18 presented F value is 7.443 and p value is 0.00 i.e., p value is lesser than 0.05 and is significant at 5 percent level of significance which DR, CAR, OETL, LR and INF indicates that is significantly variations the NIM of the sample bank. Based on ANOVA, the p-value is 0.00 which is less than alpha value 0.05. Therefore, the model is able to predict of the relationship between the dependent and independent variables. As a result, the independent variables (DR, CAR, OETL, LR and INF) are significant in explaining the variance in macroeconomic variable on profitability.

Table 19*Impact of Independent Variables on NIM*

Model		Unstandardized		Standardized	T	Sig.
		Coefficients		Coefficients		
		B	Std. Error	Beta		
3	(Constant)	.392	1.485		.264	.794
	DR	.279	.093	.640	2.985	.007
	CAR	.079	.038	.495	2.073	.050
	OETL	.028	.056	.094	.500	.622
	Inflation	-.032	.065	-.095	-.501	.621
	Lending	.244	.097	.471	2.520	.019

a. Dependent Variable: NIM

The Table 19 The p-value of DR and Lending is 0.007 and 0.19 which is lesser than 0.05 shows a significant impact on NIM. Hence one unit increase in DR and Lending Ratio will lead to 0.279 and 0.244 unit increase in NIM since the beta values is 0.279 and 0.244. However, the impact of Inflation, OETL and CAR on NIM is found insignificant.

4.5 Discussion

The main theme of this thesis is to investigate the impact of macroeconomics variables on profitability of share price how its differ between macroeconomic variables with different levels of profitability. In This research the key measurements of macroeconomics on profitability are Capital Adequacy, Ratio Inflation, Default risk, operating expenses to total loan, Lending Ratio, Return on assets, Return on equity, Net interest margin. This was based on the articles and previous research that was found; this were then presented and discussed in the literature review. The real interest rate affects the performance of banks negatively which has been against the view of (Anbar & Alper, 2011) but accordance with the findings of (Al Karim & ALam, 2013). AlKarim and ALam (2013) found that that bank specific variables have Negative correlation with ROA. Similarly, Inflation has a positive relationship with ROA, and negative relation with ROE, while a weak relation with NI Margin. It interprets that the higher the inflation higher will be the ROA but ROE will go down however the NI Margin will have insignificant impact which is in line with the view of lymo (2020). Operating expenses has negative correlation with ROE and CAR and positive relation with NPA. Higher NPA indicates higher operating expenses leading to negative performances of bank, which is in line with the findings of the (Yesmine & Bhuiyah, 2015; Pradhan & Shrestha, 2016). CAR has positive impact on bank profitability. The bank can increase its ROE by 0.118 times with every one unit increase in its CAR alternatively the bank profit changes positively by 11.8% with 100% change in CAR. The Impact of Macroeconomic Variables on the Performance of Islamic Banks”. The study examines the impact of macroeconomic variables (economic growth, public debt growth, inflation, foreign direct investment, and balance of payments) on the performance of Islamic banks (return on assets, return on equity, and return on equity).The study used multiple linear regression analyses of periodic data for Jordanian Islamic banks in Jordan during the period. The findings demonstrated a positive correlation between macroeconomic factors and performance, except for foreign direct investments, which have a negative effect on performance because they require the use of external financial resources. This means that the country's use of expansionary fiscal policy or expansionary monetary policy leads to better performance.

Correlation analysis shows that the result of dependent variable and independent. ROE is positively significant relationship with ROA. NIM is positively significant relationship with ROA and ROE which is in line with the findings of the lymo (2020). DR is positively significant relationship with dependent variable ROA, ROE, and NIM which is in line with the findings of the Mahmoud (2023).

LR is positively significant relationship with dependent variable ROA, ROE, and NIM. But CAR, OETL are negatively or insignificant relationship with ROA, ROE, NIM which is in line with the findings of the Mahmoud (2023). Capital adequacy ratio is negative positively associated with bank's ROE, NIM and ROA.

In regression analysis impact of independent variables on ROA. The p-value of inflation is 0.016 which is lesser than 0.05 shows a significant relationship with ROA. Hence one unit increase in inflation will lead to 0.138 unit increase in ROA since the beta values is 0.138. However, the relation between ROA with DR, CAR, OETL and Lending Ratio is found insignificant.

Impact of Independent Variables on ROE CAR is 0.037 which is lesser than 0.05 shows a significant relationship with ROE) conducted study on Impact of Macroeconomic Variables on Performance of Banks Lyimo (2022) which is in line with the findings of the (Yesmine & Bhuiyah, 2015; Pradhan & Shrestha, 2016). Hence one unit increase in CAR will lead to 0.089 unit increase in ROE since the beta values is 0.089 which is in line with the findings of the (Yesmine & Bhuiyah, 2015; Pradhan & Shrestha, 2016).

Impact of Independent Variables on NIM, DR and Lending is 0.007 and 0.19 which is lesser than 0.05 shows a significant relationship with NIM which is in line with the findings of the (Yesmine & Bhuiyah, 2015;). Hence one unit increase in DR and Lending Ratio will lead to 0.279 and 0.244 unit increase in NIM since the beta values is 0.279 and 0.244 which is in line with the findings of Thelymo (2020).

CHAPTER V

SUMMARY AND CONCLUSION

5.1 Summary

The importance of bank profitability can be appraised at the micro and macro levels of the economy. This study aimed to identify the impact of bank specific variables and macroeconomic variables on the performance of commercial banks of Nepal. It determines the impact of capital adequacy ratio, inflation, annual gross domestic product, and annual inflation as well as default risk and total operating expenses to total loan on the performance of commercial banks of Nepal.

The Pearson correlation coefficients have been computed between dependent variables and independent variable. NI Margin and the Interest has weak relation with ROA, Liquidity and ROE. Hence the increase in the interest rate will decrease the Net Interest Margin of the Bank, ROA and ROE. Hence it could be interpreted that the Interest rate has inverse relation with the Profitability of the Bank. Higher the Interest rate, lower will be the profitability of the Bank. Inflation has a strong relationship with ROA, ROE, while a weak relation with NI Margin. It interprets that the higher the inflation higher the ROA, ROE will be however the NI Margin will be inversely impact. Inflation has strong relation with NI Margin, ROA and ROE. It shows that the increase in GDP of the country will positively impact the profitability of the bank and decrease will impact negatively as well. It was found that there has been negative impact of inflation in NI, ROA and ROE. Similarly, there has been a positive relation of Inflation with ROA, and ROE while weak relation with NI. Finally, Interest Rate has significant but negative relation with NI, ROA and ROE.

The profitability of Nepalese commercial banks can be influenced by several macroeconomic variables. Here is a summary of the impact these variables can have: Interest Rates: Changes in interest rates can significantly affect the profitability of commercial banks. When interest rates rise, banks may experience higher borrowing costs, which can squeeze their net interest margins and reduce profitability. Conversely, when interest rates decline, banks may benefit from lower funding costs, leading to improved profitability.

Inflation: Inflation levels can impact banks' profitability through various channels. High inflation can erode the purchasing power of individuals and businesses, leading to increased default risks and higher loan delinquencies. Additionally, inflation can affect the cost of funds and the profitability of lending activities, as interest rates may need to be adjusted to compensate for inflationary pressures. **Economic Growth** The overall economic growth of Nepal has a significant influence on the profitability of commercial banks. During periods of robust economic expansion, banks typically experience increased demand for credit, leading to higher interest income and profitability. Conversely, during economic downturns, loan demand may decline, resulting in reduced interest income and profitability.

Exchange Rates Fluctuations in exchange rates can impact the profitability of banks, especially if they engage in foreign currency transactions. Exchange rate volatility can lead to gains or losses on foreign currency holdings, affecting banks' balance sheets and profitability. **Regulatory Environment:** The regulatory environment plays a crucial role in determining the profitability of commercial banks. Regulatory changes, such as capital adequacy requirements, reserve ratios, and lending restrictions, can impact banks' ability to generate profits. Stricter regulations may increase compliance costs and limit certain revenue-generating activities, potentially affecting profitability. **Political stability** is essential for maintaining a conducive business environment. Uncertainty or instability in the political landscape can negatively impact the profitability of banks as it can lead to reduced investor confidence, slower economic growth, and increased credit risks. **Government Policies** Government policies, including fiscal and monetary measures, can affect banks' profitability. For instance, changes in tax policies, subsidies, or government spending can have indirect effects on the overall economy and, subsequently, on banks' profitability.

It's important to note that the impact of these macroeconomic variables on the profitability of Nepalese commercial banks can vary depending on the specific circumstances, individual bank strategies, and market conditions. Therefore, a comprehensive analysis of each bank's financials and their exposure to these variables would be necessary to assess the specific impact on profitability accurately.

5.2 Conclusion

The study has been limited in different ways. The study is based on secondary data available on annual reports on websites of respective banks and ministry of finance for macroeconomic variables. In this study only, selected tools and techniques are used. The study covers only ten years period, i.e. from 2013/14 to 2022/23. The accuracy of secondary data absolutely relies on the annual report of sample banks. There are several determining factors of performance of commercial banks. The study has carried out only dependent variable return on assets ROA, ROE, NIM. The ROE, NIM and ROA for future scope of the study to select dependent variables along with this study independent Variables. However, bank specific (DR, OETL and CAR) and macroeconomic (DR, and INF) factors have been considered in this study.

Future study will be done on ROE along with ROA to see the robustness of the results for bank performance. Thus, this study hopes to be useful for academicians as a source of knowledge for further research. The study is concentrated on bank specific and macroeconomic factors to determinants of performance of commercial banks. Thus, further study should be carried out on the topic to point out the other factors that enhance mitigation of the bank specific and macroeconomic to improve performance of Nepalese commercial banks. The paper assesses the financial performance, and examines how the internal factors influence the financial performance of the commercial banks in nepal. The financial performance of commercial banks during the last 10 years keeps fluctuating and has not increased significantly. This implies that the commercial banks in Nepal have not been able to utilize their resources very efficiently. This could be attributed to the several challenges witnessed by the banks during this period, including the earthquake of 2015, liquidity crunches, large increments made in the capital-base of banks within a short period and weak corporate governance cases.

However, Nepalese commercial banks are well-capitalized and do not have solvency problems. Because of maintaining an adequate capital adequacy ratio, they can absorb unexpected losses and safeguard the depositors, investors and creditors. By reducing the non-performing assets, banks have reduced their credit risk, too. The size of the joint venture banks has grown considerably, which shows commercial banks have been expanding their businesses. This is attributed to the regulatory imposed of paid-

up capital increment provision, which ultimately increased the total assets of the banks. However, the banks have not been able to achieve economies of scale as employee expenses and operating expenses have also been increased along with the increase in size. Though the banks had experienced a hard time during the liquidity crunch Vol. XI, December 2023 Janapriya Journal of Interdisciplinary Studies 71 Impact of Bank-Specific Variables on Financial Performance of commercial Banks in Nepal period, in the rest period, they have been able to manage comfortable liquidity.

The result of this research provides an opportunity to assess the performance of Nepalese commercial banks and to identify the major bank-specific variables that influence the performance of the banks. More specifically, the focus of management is needed on these bank-specific factors: ROE, ROA, NIM, CAR and OETL as they influence significantly the performance of Nepalese commercial banks. This study has used only bank-specific variables to assess the impact on the financial performance of banks. Inclusion of macro-economic variables like inflation, exchange rate, remittance and broad money supply, and industry level variables like concentration and banking sector development may provide an important insight to identify the determinants of financial performance. Therefore, future studies are recommended to include these variables as well. This study can be extended further by including development banks in the sample and using the bank-specific variables over a longer period. It would be equally useful to examine other underdeveloped and least developed countries to generalize the empirical results found in this study.

5.3 Implication

The finding of this study is important for implication of policy of commercial banks in Nepal. The commercial banks should strictly follow the prevailing NRB Directive as well as Basel III Accord while managing credit risk. Compliance with the Basel III Accord means a sound approach to tackling credit risk and this ultimately improves bank performance. Even though there are a number of important determinant variables which have significant influence on the financial and operating performance of any company such as political affairs, management philosophy, organizational culture etc., they were not considered in this study. Therefore, future research works should be done by considering all these determinant variables. The profitability of Nepalese commercial banks can be significantly influenced by various

macroeconomic variables. Here are some major implications of the impact of these variables.

- **Interest Rates:** Changes in interest rates can have a direct impact on a bank's profitability. When interest rates increase, banks may experience higher borrowing costs, which can reduce their net interest margin (the difference between interest earned on loans and interest paid on deposits). Conversely, when interest rates decrease, banks may experience increased lending activity and higher profitability.
- **Inflation:** Inflation can affect banks' profitability through multiple channels. Higher inflation can erode the purchasing power of borrowers, leading to an increase in default rates and non-performing loans, which can negatively impact banks' profitability. Additionally, inflation can affect the value of assets and liabilities on banks' balance sheets, potentially impacting their profitability.
- **Economic Growth:** The overall economic growth of a country can influence the profitability of commercial banks. During periods of robust economic growth, there is typically higher demand for credit, which can lead to increased lending activity and higher profitability for banks. Conversely, during economic downturns or recessions, banks may face higher credit risk and reduced lending, which can negatively affect profitability.
- **Exchange Rates:** Nepal has a significant reliance on remittances from Nepalese workers abroad, which are typically received in foreign currencies. Exchange rate fluctuations can impact the profitability of commercial banks involved in currency exchange and remittance services. If the local currency depreciates, banks may face higher costs for foreign currency conversion, potentially reducing profitability.
- **Government Policies and Regulations:** Government policies and regulations play a crucial role in shaping the banking industry and can have implications for profitability. Changes in regulatory requirements, such as capital adequacy ratios, loan classification norms, or interest rate regulations, can impact banks' profitability. Additionally, fiscal and monetary policies implemented by the

government can influence overall economic conditions, which in turn affect banks' profitability.

It's important to note that the impact of these variables on profitability can be interconnected and vary over time. Additionally, other factors specific to individual banks, such as management efficiency, risk management practices, and market competition, also play a significant role in determining profitability.

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APPENDIX 1

Year	Bank	ROA	ROE	NIM	DR	CAR	OETL	LR	INF
2013/14	SBI	0.82	0.15	1.36	0.54	11.21	10.46	9.75	9.22
2014/15	SBI	1.19	0.2	1.65	0.37	12.39	11.66	9.83	9.45
2015/16	SBI	1.51	0.2	1.78	0.26	13.28	13.06	8.36	9.04
2016/17	SBI	1.8	0.19	2.15	0.19	14.03	13.56	7.88	8.36
2017/18	SBI	1.7	0.19	2.54	0.14	13.49	9.47	6.54	7.86
2018/19	SBI	1.54	0.15	1.98	0.1	15.71	8.38	9.89	8.79
2019/20	SBI	1.97	0.16	1.84	0.2	15.15	7.54	10.47	3.62
2020/21	SBI	1.94	0.16	1.72	0.2	14.12	7.24	9.57	4.06
2021/22	SBI	1.17	0.1	1.55	0.23	15.55	7.78	8.5	5.56
2022/23	SBI	0.7	0.06	1.47	0.23	13.86	9.26	6.86	5.05
2013/14	HBL	1.75	0.21	1.68	2.09	11.02	10.43	9.75	9.22
2014/15	HBL	1.54	0.18	2.18	2.89	11.55	9.85	9.83	9.45
2015/16	HBL	1.3	0.16	2.11	1.96	11.23	13.99	8.36	9.04
2016/17	HBL	0.14	0.02	2.37	3.22	11.14	6.94	7.88	8.36
2017/18	HBL	1.94	0.22	3.2	1.23	10.84	5.85	6.54	7.86
2018/19	HBL	2.03	0.19	2.19	0.85	12.15	4.96	9.89	8.79
2019/20	HBL	1.61	0.13	1.8	1.4	12.46	6.14	10.47	3.62
2020/21	HBL	2.08	0.17	1.76	1.12	12.6	7.93	9.57	4.06
2021/22	HBL	1.66	0.15	1.66	1.01	14.89	8.89	8.5	5.56
2022/23	HBL	1.68	0.15	1.58	0.48	13.89	9.54	6.86	5.05
2013/14	NABIL	2.67	0.31	1.95	2.33	11.01	10.56	9.75	9.22
2014/15	NABIL	3.04	0.33	2.62	2.13	11.59	10.22	9.83	9.45
2015/16	NABIL	2.66	0.3	2.92	2.23	11.18	7.64	8.36	9.04
2016/17	NABIL	1.81	0.25	2.59	1.82	11.57	5.68	7.88	8.36
2017/18	NABIL	2.21	0.24	3.37	1.14	11.73	6.25	6.54	7.86
2018/19	NABIL	2.57	0.25	3.09	0.8	12.9	4.43	9.89	8.79
2019/20	NABIL	2.36	0.19	2.23	0.55	13	5.3	10.47	3.62
2020/21	NABIL	2.11	0.18	1.89	0.74	12.5	7.34	9.57	4.06
2021/22	NABIL	1.46	0.13	1.74	0.98	13.07	8.27	8.5	5.56
2022/23	NABIL	1.57	0.14	1.89	0.85	12.76	9.79	6.85	5.06

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ABSTRACT Due to the vast contribution of commercial banks to the economic development in Nepal, this study examined the effect of macroeconomic variables on profitability of Commercial Banks listed at the