

CHAPTER 1

INTRODUCTION

1.1 Background of the study

The term commercial bank refers to a financial institution that accepts deposits, offers checking account services, makes various loans, and offers basic financial products like certificates of deposit (CDs) and savings accounts to individuals and small businesses. A commercial bank is where most people do their banking. Commercial banks make money by providing and earning interest from loans such as mortgages, auto loans, business loans, and personal loans. Customer deposits provide banks with the capital to make these loans.

Bank capital is the difference between a bank's assets and its liabilities, and it represents the net worth of the bank or its equity value to investors. The asset portion of a bank's capital includes cash, government securities, and interest-earning loans (e.g., mortgages, letters of credit, and inter-bank loans). The liabilities section of a bank's capital includes loan-loss reserves and any debt it owes. A bank's capital can be thought of as the margin to which creditors are covered if the bank would liquidate its assets (Hayes, 2020).

Chishty, (2011) Capital adequacy ratio (CAR) is a measure of bank's capital. It is expressed as a percentage of bank's risk weighted credit exposures and also known as capital- to-risk-weighted assets ratio (CRAR). It is used to protect depositors and promote the stability and efficiency of financial systems around the world. There are two types of capital: tier one, which can absorb losses without a bank being required to end trading, and tier two, which can absorb losses in the event of a winding-up and so provides a lesser degree of protection to depositors. Capital adequacy ratio is a ratio which protects the banks against excess leverage, insolvency and keeps them out of difficulty. It is defined as the ratio of banks capital in relation to its current liabilities and risk weighted assets (RWA). RWA is a measure of amount of banks assets for risk. It is the ratio which determines banks capacity to meet the time liabilities and other risks such as credit risk, market risk, operational risk etc.

Bank capital represents the value of a bank's equity instruments that can absorb losses and have the lowest priority in payments if the bank liquidates. While bank capital can be defined as the difference between a bank's assets and liabilities, national authorities have their own definition of regulatory capital.

The main banking regulatory framework consists of international standards enacted by the Basel Committee on Banking Supervision through international accords of Basel I, Basel II, and Basel III. These standards provide a definition of the regulatory bank capital that market and banking regulators closely monitor. Because banks serve an important role in the economy by collecting savings and channeling them to productive uses through loans, the banking industry and the definition of bank capital are heavily regulated. While each country can have its own requirements, the most recent international banking regulatory accord of Basel III provides a framework for defining regulatory bank capital.

In the context of Nepal as per existing policy, there are four types of financial institution. These are licensed by NRB and classified as A for commercial banks, B for development banks, C for financial companies and D for micro finance institution. Commercial banks in Nepal can be categorized as public, private and joint ventures. Their main job is to accept deposits from the surplus user of fund and to available the fund to the deficit user of fund as a loan. Now there are 27 commercial banks, 33 development banks and 25 finance companies in Nepal. As well as these banks are provides remittance, card facility, letter of credit, bank guarantee and soon.

According to Nepal Rastra Bank there are 171 financial institution are operation till the end of Ashoj 2076, total branches of financial institution are 8805, total deposit account are 278 lakh 67 thousand. The banking facility are reaching to 180 lakh people in the country. Which is 60.9 percentage out of the total population. One branch can facilitate on average 3300 people. 739 local level reaches the banking facilities out of the 753. The Nepalese financial institution provides 3316 ATM service. 6708521 debit cards and 123146 credit cards are distributed till the date end of Ashad 2076. Similarly, 84 lakh 47 thousand mobile banking service, 91 lakh e banking service and 1530 branchless facilities are providing by the Nepalese financial with in the country. Among them this research is based under six commercial banks of Nepal.

The concept of capital adequacy refers to the requirement that bank holds adequate capital to protect them against insolvency. Therefore, capital must be sufficient to protect bank's deposit and counter parties from the risks.

1.1.1 Introduction of sample banks

Himalayan Bank Limited (HBL)

Himalayan Bank was established in 1993 in joint venture with Habib Bank Limited of Pakistan. Despite the tough competition in the Nepalese Banking sector, Himalayan Bank has been able to maintain a lead in the primary banking activities- Loans and Deposits. Legacy of Himalayan lives on in an institution that's known throughout Nepal for its innovative approaches to merchandising and customer service. Products such as Premium Savings Account, HBL Proprietary Card and Millionaire Deposit Scheme besides services such as ATMs and Tele-banking were first introduced by HBL. Other financial institutions in the country have been following our lead by introducing similar products and services. Therefore, we stand for the innovations that we bring about in this country to help our Customers besides modernizing the banking sector. With the highest deposit base and loan portfolio amongst private sector banks and extending guarantees to correspondent banks covering exposure of other local banks under our credit standing with foreign correspondent banks, we believe we obviously lead the banking sector of Nepal. The most recent rating of HBL by Bankers' Almanac as country's number 1 Bank easily confirms our claim (HBL, 2021).

Nepal SBI Bank (NSBI)

NSBL was established in July 1993 and has emerged as one of the leading banks of Nepal, with 991 skilled and dedicated Nepalese employees (as on 09.02.2021) working in a total of 116 outlets that include 88 full-fledged branches, 19 extension counters, 7 Province offices, 1 Intouch Outlet and Corporate Office . With presence in 51 districts in Nepal, the Bank is providing value added services to its customers through its wide network of 122 ATMs (including 2 Mobile ATMs and 4 CRMs), internet banking, mobile wallet, SMS banking, IRCTC Ticket Online Booking facility, etc. NSBL is one of the fastest growing Commercial Banks of Nepal with more than 1 million satisfied deposit customers and over 6.50 lakhs ATM/Debit cardholders. The Bank enjoys leading position in the country in terms of penetration

of technology products, viz. Mobile Banking, Internet Banking and Card Services. The Bank is moving ahead in the Nepalese Banking Industry with significant growth in Net Profit with very nominal NPLR. As of 31st Ashad, 2077, the Bank has deposits of Rs. 110.45 billion and advances (including staff loan) of Rs. 94.43 billion, besides investment portfolio (including investment on subsidiary) of Rs. 1.48 billion (NSBI, 2021).

Nepal Bangladesh Bank (NBB)

Nepal Bangladesh Bank Ltd. is a leading 'A' class commercial bank licensed by Nepal Rastra Bank. Nepal Bangladesh Bank was registered with Office of Company Registrar (50-050/051, Dated January 14, 1994) as a public company limited by shares. Nepal Bangladesh Bank started its banking operation from 6th June, 1994. Nepal Bangladesh Bank was established as a joint venture bank with IFIC Bank Ltd., Bangladesh. Shares of the bank are listed in Nepal Stock Exchange Ltd. since 1995 (NBB, 2021).

Everest Bank Limited (EBL)

Catering to more than 10 lacs customers, Everest Bank Limited (EBL) is a name you can depend on for professionalized & efficient banking services. Founded in 1994, the Bank has been one of the leading banks of the country and has been catering its services to various segments of the society. With clients from all walks of life, the Bank has helped the nation to develop corporately, agriculturally & industrially. Punjab National Bank (PNB), our joint venture partner (holding 20% equity) is one of the largest nationalized bank in India having presence virtually in all important centers. Owing to its performance during the year 2012-13, the Bank earned many laurels & accolades in recognition to its service & overall performance (EBL, 2021).

Nepal Credit and Commerce Bank (NCC)

Nepal Credit & Commerce Bank Ltd. (NCC Bank) formally registered as Nepal - Bank of Ceylon Ltd. (NBOC), commenced its operation on October 14, 1996 as a Joint Venture with Bank of Ceylon, Sri Lanka. It was then the first private sector Bank with the largest authorized capital of NRS. 1,000 million. The Head Office of the Bank is located at Bagbazar, Kathmandu. The name of the Bank was changed to Nepal Credit & Commerce Bank Ltd., (NCC Bank) on 10th September, 2002, due to

transfer of shares and management of the Bank from Bank of Ceylon, to Nepalese Promoters (NCC, 2021).

Machhapuchhre Bank Limited (MBL)

Machhapuchchhre Bank Limited registered in 1998 as the first regional commercial bank from the western region of Nepal. The 'A' class commercial bank started its banking operations from its own head office located in the foothills of Mount Machhapuchchhre in the town of Pokhara since year 2000. Now with a paid up capital of over 8.46 billion rupees, 160 Branch Offices, 160 Branchless Banking Units, 5 Extension Counters and 199 ATMs spread all across the country, it is one of the full fledged national level commercial banks operating in Nepal. It takes pride in having its own buildings for its Head and Corporate Office in Lazimpat, and Branch offices in Naya Bazar, Pokhara, Jomsom, Baglung and Damauli (MBL, 2021).

1.2 Problem statement

Every business form can take advantage through appropriate capital mix because long run profitability depends on its capital structure besides other factors. The depositors deposit their money in a bank for security of their money. Banking and financial statistics shows that the amount deposited in various banks of the country is Rs. 3,809 billion in February 2021. But the question arises, if the bank go bankrupted, what happen to the depositors of such money? Thus an adequate capital fund is required to safeguard the money of depositors. NRB issued a new set of directives to commercial banks consisting of twenty-one parts. Out of twenty-one directives, the directives no.1 has been issued for norms on capital adequacy to be followed by commercial banks. The capital adequacy ratio is based on the total risk weighted assets. According to NRB directives; commercial banks should maintain 6% core capital and 11% minimum total capital, including conservation buffer, NRB (2015).

The major concern of bank regulators worldwide remains the safety of depositor's and the biggest achievement in the Financial Sector has been the upward review of the of the capital base of banks. Banks provide both liquid and relatively low risk savings facilities and credit in flexible amount to households, business concern and government and promote the payments system both by providing major form of exchange such as demand depository (Chishty, 2011). Capital adequacy refers to the amount of equity capital and other securities which a bank holds as reserves against

risky assets as a hedge against the probability of bank failure. Capital adequacy is used to determine whether a bank has enough capital to support the risk on its balance sheet i.e. it is used to mitigate bank solvency problem. However, the assessment of capital adequacy for precautionary purposes is problematic at best due to rapidly changing economic and financial services industry. Capital level is used by most regulators to restrict credit expansion. That explains why bank management are inspired to determine the correlation between variables like Total credit loan, Demand deposit, Inflation rate, Political instability, Money supply, Liquidity risk, Investment etc (Agbeja, etal 2015) .

Due to the lack of capital adequacy structure, Nepalese banks are under the international standards. It is obviously increase competition for the survival which might leads to keen rivalry among them to occupy the larger market share. Such situation may endanger the deposits of general public and brings economic instability in the country. In order to safe guard the public deposit and ensure economic stability in the country. NRB issues directive from time to time to commercial banks. The directives are related to various performances of the banks and the bank need to follow the directives. There are sixteen directives related to the bank supervision and regulations. Every part of financial sector is facing one or more problems which ultimately affect the development and enhancement of deposit mobilization sectors in Nepalese banking sector. Due to differences in economic, political and financial situations, legal and other restrictions, government policies, risky business, management ownership and control and other environmental variables, provisions of capital adequacy may be different in different years.

The research questions are addressed as follows:

1. What is the capital adequacy position of commercial banks in Nepal?
2. What is the impact of capital adequacy indicators (Debt-equity, loan and advances, non-performing loans, government securities and capital adequacy ratio) on commercial banks profitability?
3. What is the relationship between capital adequacy and profitability of commercial bank?

For smooth operation of the financial institution, NRB has been playing a vital role since its establishment. The NRB directives are foremost guidelines for any financial institutions to operate in an effective manner. Also implementing these directives becomes must for all financial institutions.

1.3 Objectives of the study

The main objective of the study is to analyze, examine and interpret the capital adequacy adopted by selected commercial banks. NRB has under taken various activities for the banking and financing development since its establishment. It has issued various directives for regulation, supervision and monitoring. The special attention is given to the capital adequacy and its impact on the profitability under this study. The study also compares the profitability performance measured in terms of Return on Assets (ROA) and Return on Equity (ROE) of selected commercial banks. The specific objectives of this study are given below:

1. To assess the capital adequacy position of commercial banks in Nepal.
2. To investigate the impact of capital adequacy indicators (Debt-Equity, loans and advances, non-performing loans, capital adequacy ratio and government securities) on the profitability of commercial banks.
3. To examine the relationship between capital adequacy and profitability.

1.4 Hypothesis

This study attempts to find out the relationship between the capital adequacy and its impact on the profitability of commercial banks in Nepal. The following hypotheses are formulated:

- H1: There is significant positive relation between Capital Adequacy Ratio and profitability of bank
- H2: There is significant negative impact between debt-equity ratio and banks profitability
- H3: There is significant relation between loans and advances and profitability of banks.
- H4: There significant relation between government securities and profitability of banks.

H5: There is an insignificant negative relation between non-performing loans and banks profitability.

1.5 Rationale of the study

Banks are the essential support to the financial sector, which facilitate the proper utilization of financial resources of the country. The banking sector is increasingly growing and has witnessed a huge flow of investment. Sundararajan (2002) argues that the financial system, the bank in particular, is exposed to a variety of risks that are growing more complex nowadays. In order to cope with the complexity and the mix of risk exposure to banking system properly, responsibly, beneficially and sustainably, it is of great importance to evaluate the overall performance of banking supervision framework. One of such measure of supervisory information is the capital adequacy framework as per NRB. The findings of this research provides a valuable contribution to the development and enhancement of deposit mobilization sectors in Nepalese banking sector through various means as follows:

1. This research is useful for decision makers and policy planners both at banking and other financial sectors.
2. This study is useful for future researches and references purpose.
3. This study offers overall background of Nepalese financial sector and NRB regulation on commercial banks for commercial banks to mitigate risk.
4. It analyzes how the banks are complying with various policies and legislations regulating the financial sector.
5. Customers aided by this study to know best who should keep their money for them in terms of banks offering best customer series satisfaction.
6. It helps the management of various banks to know where they fall behind and where they are doing better.

Actually, the banks should have adequate capital fund though there are plenty of investment opportunities. Currently, raising capital is a tough task. The increasing nonperforming assets, being the main headache of commercial banks, meeting the capital adequacy is very tough, however it is not impossible. It has been observed that any study has not been undertaken regarding the capital adequacy norms for commercial bank. Raising capital is a tough task at present. The increasing

nonperforming assets, is the main problem of commercial banks due to which meeting the capital adequacy is very tough, although it is not impossible.

1.6 Limitations of the study

Beside the above-mentioned procedure and strengths, there are some limitations, which cannot be ignored. The study has limited resources and it is difficult to researcher to find out new aspects. Reliability of statistical tools used and lack of research experience are the major limitation and some other limitations enlisted as follows:

1. This study concentrates only on firm specific indicators, which are related with the capital adequacy of Nepalese commercial banks. It ignores Macro economics indicators like GDP, Inflation etc.
2. Only six Nepalese commercial banks are considered for the study.
3. For analyzing and presenting the data only some important financial and statistical tools as correlation and regression are used.
4. The profitability of commercial bank are influenced by several factors, however this study mainly focuses only on the capital adequacy.

1.7 Chapter plan

This Study is divided into five chapters.

Chapter 1: Introduction

This chapter is introductory one which includes the background information of the subject matter of research undertaking to provide a general idea of its history. Background of the study and introduction of selected commercial banks are described in this chapter. Objective, limitation and significance of the study are also presented in this chapter.

Chapter 2: Literature review

This chapter reviews the existing literature on the concept of determinants of financial performance analysis. It also includes the conceptual review of the related books, journals, articles and the published and unpublished research works as well as thesis.

Chapter 3: Research methodology

Research methodology is an important aspect of any research which is presented separately in the third chapter. It shown what kind of data is used for the study,

methods and techniques used in data collection, sample & population of the study, adopted tools of analysis are also presented in this chapter.

Chapter 4: Results and discussion

In this chapter collected and processed data are presented, analyzed and interpreted with using financial tools.

Chapter 5: Summary and conclusion

The whole study is concluded in the fifth chapter with summary, conclusion and meaningful suggestion made to improve the selected banks and banking sectors. Here recommendation is also given to the government and the NRB for better and updated rules and regulation on banking sector. In the last appendices & references are also presented.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

In this chapter, the review of various articles, research studies, journals and books has been made to have a clear understanding about the impact of capital adequacy on profitability on the Nepalese commercial bank and its relevance in different part of the world. This chapter will help to recall the theories and previous studies made by various researches in different part of the world. Literature review is basically a stock taking work of available literature. The purpose of literature review is thus to find out what principle are established and what research studies have been conducted in the field of study and what remains to be done.

2.2 Conceptual review

Concept of capital adequacy

The capital adequacy ratio (CAR) is a measurement of a bank's available capital expressed as a percentage of a bank's risk-weighted credit exposures. The capital adequacy ratio, also known as capital-to-risk weighted assets ratio (CRAR), is used to protect depositors and promote the stability and efficiency of financial systems around the world. Two types of capital are measured: tier-1 capital, which can absorb losses without a bank being required to cease trading, and tier-2 capital, which can absorb losses in the event of a winding-up and so provides a lesser degree of protection to depositors (Hayes, 2020).

According to Nzotta (2014), to a very large extent, the strength of a bank depends on the capital funds available to it. A bank's capital can be defined as the equity value of a bank equated to the present value of its future net earnings. Generally, banks capital represents the owners' net worth in a bank and it includes the pay in capital and all additions to the capital resources of the bank. Bank capital also ensures the safety of a bank, it helps the bank to avoid the risk of insolvency, and also to support the credit risk a bank is called upon to assume in a normal business leading. Here, the larger the capital resources, the more loans and advances the bank could grant both on the

aggregate and for single individuals. A bank's capital resources help the supervisory authorities in assessing the adequacy of its capital in relation to its loans and investments. Therefore, capital adequacy represents the amount of capital resources needed by banks for its operations, consistent with the amount of risks and risk assets it is assuming. Capital adequacy is the level of capital necessary for a bank as determined by the regulatory and supervisory authorities to assume the bank's financial health and soundness. Capital adequacy, the measure of the solvency of a bank, tells whether a bank has enough capital to support the risks in its balance sheet. Adequate capitalization is an important variable in business, and is more so in the business of using other people's money such as banking.

Adequate capital is required to the efficient operating and functioning of the firm in the modern competitive environment, is always the matter of controversial debate. In one hand holding excess capital keeps the firm in low profit position, on the other hand inadequate capital limits the firm to meet the public demand of loan and low earning capacity. Capital adequacy aims at setting minimum level of capital as a function of risks. Thus capital should be risk base, (NRB Directives, 2020)

Review of capital adequacy framework 2015

Prior to 1988, there was no uniform international regulatory standard for setting bank capital requirements. In 1988, the Basel Committee on Banking Supervision (BCBS) developed the Capital Accord, which is known as Basel I, to align the capital adequacy requirements applicable especially to banks in G-10 countries. Basel I introduced two key concepts. First, it defined what banks could hold as capital, as well as designating capital as Tier 1 or Tier 2 according to its loss-absorbing or creditor-protecting characteristics. The second key concept introduced in Basel I was that capital should be held by banks in relation to the risks that they face. The major risks faced by banks relate to the assets held on balance sheet. Thus, Basel I calculated banks' minimum capital requirements as a percentage of assets, which are adjusted in accordance with their riskiness and assigning risk weights to assets. Higher weights are assigned to riskier assets such as corporate loans, and lower weights are assigned to less risky assets, such as exposures to government.

The BCBS released the "International Convergence of Capital Measurements and Capital Standards: Revised Framework", popularly known as Basel II, on June 26,

2004. This framework was updated in November 2005 and a comprehensive version of the framework was issued in June 2006. Basel II builds significantly on Basel I by increasing the sensitivity of capital to key bank risks. In addition, Basel II recognizes that banks can face a multitude of risks, ranging from the traditional risks associated with financial intermediation to the day-to-day risks of operating a business as well as the risks associated with the ups and downs of the local and international economies. As a result, the framework more explicitly associates capital requirements with the particular categories of major risks that banks face.

The Basel II capital framework also recognizes that large, usually internationally active banks have already put in place sophisticated approaches to risk measurement and management based on statistical inference rather than judgment alone. Thus, the framework allows banks, under certain conditions, to use their own „internal“ models and techniques to measure the key risks that they face, the probability of loss, and the capital required to meet those losses. In developing the new framework, the Basel Committee incorporated many elements that help to promote a sound and efficient financial system over and above the setting of minimum capital requirements. Keeping this in mind, the Basel II framework incorporates three complementary „pillars“ that draw on the range of approaches to help ensure that banks are adequately capitalized in commensurate with their risk profile.

Again, the Basel Committee on Banking Supervision (BCBS) released a comprehensive reform package entitled “Basel III: A global regulatory framework for more resilient banks and banking systems” (known as Basel III capital regulations) in December 2010. Basel III reforms are the response of the Basel Committee on Banking Supervision (BCBS) to improve the banking sector’s ability to absorb shocks arising from financial and economic stress, whatever the source, thus reducing the risk of spill over from the financial sector to the real economy. Basel III reforms strengthen the bank-level i.e. micro prudential regulation, with the intention to raise the resilience of individual banking institutions in periods of stress. Besides, the reforms have a macro prudential focus also, addressing system wide risks, which can build up across the banking sector, as well as the procyclical amplification of these risks over time. These new global regulatory and supervisory standards mainly seek to raise the quality and level of capital (Pillar 1) to ensure that banks are better able to

absorb losses on both a going concern and a gone concern basis, increase the risk coverage of the capital framework, introduce leverage ratio to serve as a backstop to the risk-based capital measure, raise the standards for the supervisory review process (Pillar 2) and public disclosures (Pillar 3) etc. The macro prudential aspects of Basel III are largely enshrined in the capital buffers. Both the buffers i.e. the capital conservation buffer and the countercyclical buffer are intended to protect the banking sector from periods of excess credit growth.

The Basel Committees on Banking Supervision's (BCBS) recommendations on capital accord are important guiding frameworks for the regulatory capital requirement to the banking industry all over the world and Nepal is no exception. Realizing the significance of capital for ensuring the safety and soundness of the banks and the banking system, at large, Nepal Rastra Bank (NRB) has developed and enforced capital adequacy requirement based on international practices with an appropriate level of customization based on domestic state of market developments.

Eligible capital and their components

Qualifying capital in the context of financial institutions normally banks consists of Tier 1 (core) capital and Tier 2 (supplementary) capital elements, net of required deduction in capital. Thus, for the purpose of calculation of regulatory capital, banks are required to classify their capital into two parts (Basel report-2005). In order to calculate minimum capital requirement of bank, all capital component should be segregated into these two parts as follows:

Core capital (tier-1)

The key element of capital on which the main emphasis should be placed on tier 1 capital, which consists of equity capital and disclosed reserves. It includes fully paid ordinary shares/common stock and non-cumulative perpetual preferred stock (but excluding cumulative preferred stock). This emphasis on equity capital and disclosed reserves reflects the importance to secure progressive enhancement in the quality, as well as the level, of the total capital resources maintained by major banks. Notwithstanding this emphasis, there are a number of other important and legitimate constituents of a bank's capital base, which is included within the system of measurement. Individual supervisory authorities are free at their discretion to apply a policy of deduction on a case-by-case basis.

For supervisory purposes, it has been defined in two tiers in a way which have the effect of requiring at least 50% of a bank's capital base to consist of a core element comprised of equity capital and published reserves. The other element of capital (supplementary capital) is admitted to an amount equal to that of the core capital.

Elements of core capital

- Paid up Equity capital
- Irredeemable non-cumulative preference shares (fully paid-up)
- Eligible capital funds
- Share Premium
- Proposed Bonus Equity share
- General Reserve
- Retained Earnings available for distribution to shareholders.
- Un-audited current years cumulative profit
- Capital Redemption reserves
- Capital Adjustment reserve
- Dividend equalization reserve
- Any other type of reserves notified by NRB

Eligible deductions from core capital

For capital adequacy purpose banks can deduct some items from the capital components as being fully risk free and thus subject to no capital requirements. The items are as follows:

- Book value of goodwill
- Miscellaneous expenditure to the extent not written off. E.g., preliminary expenses, share issue expenses, deferred revenue expenditure, etc.
- Investment in equity of institutions in excess of prescribed limits.
- Investments arising out of underwriting commitments that have not been disposed within a year from the date of commitment.
- Reciprocal crossholding of bank capital artificially designed to inflate the capital position of the bank.
- Any other items as stipulated by Nepal Rastra Bank

Supplementary capital (tier-2)

The Supplementary (Tier 2) Capital includes reserves which have been passed through the profit and loss account and all other capital instruments eligible and acceptable for capital purposes. Elements of the Tier 2 capital is reckoned as capital funds up to a maximum of 100 percent of Tier 1 capital arrived at, after making regulatory adjustments/deductions. In case, where the Tier 1 capital of a bank is negative, the Tier 2 capital for regulatory purposes shall be considered as zero and hence the capital fund, in such cases, shall be equal to the core capital.

Elements of tier-2 capital

The Tier 2 Capital consists of the sum of the following elements:

- Preference Share Capital Instruments [Perpetual Cumulative Preference Shares (PCPS) / Redeemable Non-Cumulative Preference Shares (RNCPS) / Redeemable Cumulative Preference Shares (RCPS)] issued by the bank with the maturity of 5 years or above;
- Subordinated term debt fully paid up with a maturity of 5 years or above;
- Hybrid capital instruments combine certain characteristics of debt and certain characteristics of equity.
- Stock surplus (share premium) resulting from the issue of instruments included in Tier 2 capital;
- General loan loss provision limited to a maximum of 1.25% of total Credit Risk Weighted Exposures. General loan loss provision refers to provisions or loan- loss reserves held against future, presently unidentified losses are freely available to meet losses which subsequently materialize.
- Exchange equalization reserves created by banks as a cushion for unexpected losses arising out of adverse movements in foreign currencies.
- Investment adjustment reserves created as a cushion for adverse price movements in banks' investments falling under "Available for Sale" category.
- Revaluation reserves is eligible up to 50% for treatment as Tier 2 capital and limited to a maximum of 2% of total Tier 2 capital subject to the condition that the reasonableness of the revalued amount is duly certified by the internal auditor of the bank.

- Any other type of instruments notified by NRB from time to time for inclusion in Tier 2 capital.
- Less: Regulatory adjustments / deductions applied in the calculation of Tier 2 capital

As supplementary capital contains all the quasi-capital components which are subject to risk, there is no provision of eligible deductions from such capital. Moreover amount of Tier-2 capital is limited up to the 100% of the sum total of the Tier-1 capital net of deductions.

Capital funds

The capital fund is the summation of Tier 1 and Tier 2 capital and Tier 1 capital is the total of common equity Tier 1 and additional Tier 1 capital. A bank should compute capital ratios in the following manner:

$$\textit{Tier 1 capital ratio} = \frac{\textit{Tier 1 capital}}{\textit{Total Risk Weighted Assets}}$$

$$\textit{Capital Adequacy Ratio (CAR)} = \frac{\textit{Total capital Fund (Tier1+Tier2)}}{\textit{Total risk weighted Assets}}$$

Risk weighted assets

The Basel capital standards consider the credit risk on bank's assets. For this purpose, risk weights are assigned to each assets of bank on the basis of risk inherent in each asset. There are several credit risk classifications for banks. NRB has classified assets into different risk classes and assigned weight to each class. The risk weights assigned are: 0%, 20%, 50%, 60%, 75%, 100%, 150% and 200%. Risk weight shows the capital required to support the bank assets. The risk weighted assets by multiplying the book value of assets by the risk weight assigned to the respective assets. As the Basel Accord 2009, the items which are not recorded in the balance sheet also explore risk to the bank, and such items are called as off balance sheet items. The total risk weighted assets is the summation of total risk weighted on balance sheet items and total risk weighted off- balance sheet items.

Table 2.1*Risk* weighted off balance sheet items

Off Balance Sheet Exposure	Risk Weight
Any commitments those are unconditionally cancelable at any time by the bank without prior notice (for example bills under collection)	0%
Forward exchange contracts.	10%
Short Term Trade-related contingencies. This includes documentary letters of credit, shipping guarantees issued and any other trade-related contingencies with an original maturity up to six months.	20%
Undertaking to provide a commitment on an off-balance sheet items	20%
Unsettled securities and foreign exchange transactions between bank to bank and between bank and customer	20%
Long Term Trade-related contingencies. This includes documentary letters of credit, shipping guarantees issued and any other trade-related contingencies with an original maturity of over six months.	50%
Performance-related contingencies, Contingent liabilities, which involve an obligation to pay a third party in the event that counterparty fails to fulfill. This includes issue of performance bonds, bid bonds, warranties, indemnities, underwriting commitments and standby letters of credit	50%
Long term irrevocable Credit Commitments. (Un-drawn portion of committed credit more than 1 year). This shall include all unutilized limits of working capital loans e.g. overdraft, cash credit, working capital loan etc. except for trade finance exposures.	50%
Short term irrevocable Credit Commitments (un-drawn portion of committed credit upto 1 year). This shall include all unutilized limits e.g. overdraft, cash credit, working capital loan etc. except for trade finance exposures.	20%
Repurchase agreements, securities lending, securities borrowing, reverse	100%

repurchase agreements and equivalent transactions.

Direct credit substitutes, Any irrevocable off-balance sheet obligations which carry the same credit risk as a direct extension of credit. This includes potential credit arising from the issue of financial guarantees and credit derivatives, confirmation of letters of credit, issue of standby letters of credit, and bills endorsed under bill endorsement lines	100%
UNPLRid portion of partly paid shares and securities	100%
UNPLRid Guarantee Claim	200%
Other Contingent Liabilities	100%

Source: NRB Directive (2077)

Table 2.2

Risk weighted on balance sheets assets

On Balance Sheet Exposure	Risk Weight
Cash Balance	0%
Gold (Tradable)	0%
Balance with Nepal Rastra Bank	0%
Investments in Bonds and Shares	0%
Balance with domestic and financial institutions	20%
Balance with foreign Banks	20%
Money at call	20%
Loans provided against the guarantee of Rated licensed foreign institutions	20%
Investments in Share, Debenture and Bonds	50%
Investment in public (government owned) Enterprise	50%
Other investments	50%
Loan, Advances and Bill purchased Discounted	50%
Fixed Assets	50%
All other assets	50%

Source: NRB Directives (2077)

Minimum capital requirement

According to the Capital Adequacy Framework 2015 Commercial bank need to maintain certain percentage of capital adequacy ratio given as below:

- Banks shall maintain a minimum total capital (MTC) of 8.5% of total risk weighted assets (RWAs) i.e. capital to risk weighted assets (CRAR).
- Common Equity Tier 1 (CET1) capital must be at least 4.5% of risk- weighted assets (RWAs) i.e. for credit risk + market risk + operational risk on an ongoing basis.
- Tier 1 capital must be at least 6% of RWAs on an ongoing basis. Thus, within the minimum Tier 1 capital, Additional Tier 1 capital can be admitted maximum at 1.5% of RWAs.
- Total Capital (Tier 1 Capital plus Tier 2 Capital) must be at least 8.5% of RWAs on an ongoing basis. In case the Tier 1 capital is negative, Tier 2 capital shall be considered to be "Nil" for regulatory capital adequacy purposes and hence, in such a situation, the capital fund shall be equal to the Tier 1 capital.

2.3 Empirical review

Empirical research is based on observed and measured phenomena and derives knowledge from actual experience rather than from theory or belief. Description of the process used to study this population or phenomena, including selection criteria, controls, and testing instruments.

2.3.1 Review of international journal articles

Malgorzata, (2010) investigated on the title 'Evolution of Capital Adequacy Ratio' states the capital adequacy ratio (CAR) determines the ratio of a bank's core capital to the assets and off-balance liabilities weighted by the risk. The core capital of the bank is supposed to absorb the potential losses due to the risk of the banking activities. It has been specified that the value of this coefficient cannot be lower than 8%. Throughout the years the way of calculating the ratio has been changing, which is the subject of this paper. In the article the situation of Polish and Ukrainian banking sector has also been analyzed from the point of view of the coefficient in question.

Chishty, (2011) studied on the title 'The Impact of Capital Adequacy Requirements on Profitability of Private Banks In India' Basel accord requires banking institutions to have capital adequacy ratio maintained at 8 percent on regular basis. The funds kept as per the ratio aims at safer functioning of banks, in view of unexpected losses, consequently amounts to huge figure fetching steady income because of investment with RBI and other government securities. Since the required deposit with the regulator checks the growing advance policy of institutions, consequently it may have its impact on the profitability margins of the banks. The aim of the study is to quantify the impact and simultaneously, the result is corroborating with the hypothesis that there is no significant impact of capital adequacy, non interest income and net interest income on profitability of the private commercial banks. Various financial ratios employed along with multiple regression suggest that the null hypothesis stand committed.

Abba, (2013) analyzed on title of 'Capital Adequacy Ratio and Banking Risks in the Nigeria Money Deposit Banks' capital adequacy ratio is an important measure of "safety and soundness" for banks and depository institutions because it serves as a buffer or cushion for absorbing losses. Thus, it has become one of the major benchmarks for financial institutions. This study is an attempt to empirically examine the relationship between capital adequacy and banking risks. Three independent variables were used. These variables are risk-weighted asset ratio, deposit ratio and inflation rate. Twelve banks were sampled from the population of twenty-two banks in the Nigerian banking industry as at December, 2013. Secondary data were collected from the financial statements of the banks for a period of five years, from 2007 to 2011. Value at risk theory was adopted to estimate capital adequacy ratio of the banks. The hypothesis was tested using the results of the multiple regression analysis carried out. The model is fitted as there is absence of serial correlation and multicollinearity based on the Durbin Watson result of approximately 2, tolerance values of less than 1 and VIF values of less than 10 for the coefficients of the model. Changes in capital adequacy ratio are explained by changes in the independent variables, up to 35%. It was therefore, observed that there is a significant negative relationship between risk and capital adequacy ratio of banks, which means when risk level rises, capital adequacy ratio falls in the Nigerian banking industry. In line with these findings, the study recommends that Nigerian banks should adopt a risk-based

approach in managing capital instead of the present practice of focusing on the paid-up capital and retained earnings as there is significant relationship between capital adequacy ratio and banking risks. Since the research has also provided evidence of negative relationship between deposits and capital adequacy ratio, we also recommend that Nigerian banks should adopt pragmatic approaches to guarantee the safety of depositors money since increase in deposits does not necessarily result to increase in capital adequacy ratio.

Pefan, I. K. & Ochei, A. (2013) studied on the title 'Capital adequacy, management and performance in the Nigerian commercial bank'. This study investigates the impact of bank capital adequacy ratios, management and performance in the Nigerian commercial bank (1986 - 2006). The objectives of this paper are: to determine to what extent bank capital adequacy ratios impact on bank performance and also to investigate the extent to which operation expenses has impacted on the return on capital. The study captured their performance indicators and employed cross sectional and time series of bank data obtained from Central Bank of Nigeria (CBN) and Annual Report and Financial statements of the sampled banks. The formulated models were estimated using ordinary least square regression method. The overall capital adequacy ratios of the study shows that Shareholders Fund/Total Assets (SHF/TA) which measures capital adequacy of banks (risk of default) have negative impact on ROA. The efficiency of management measured by operating expenses indice is negatively related to return on capital. The implication of this study, among others, is that adequate shareholders fund can serve as a veritable stimulant in strengthening the performance of Nigerian commercial banks and also heighten the confidence of customers especially in this era of global economic meltdown that has taken its toll in the Nigerian financial system.

Aspal and Nazeen, (2014) investigated on the title 'An empirical analysis of capital adequacy in the Indian private sector banks. Capital adequacy has an important bearing on the performance of banks. The present study investigates the determinants of capital adequacy ratio in Indian Private Sector Banks. The study examines whether specific bank performance factors particularly Loan, Asset Quality, Management Efficiency, Liquidity and Sensitivity have an impact on capital adequacy requirements among private sector banks of India. The study highlighted the impact of some risks such as credit (loan), liquidity and sensitivity on the capital adequacy of Indian

Private Sector Banks. The secondary data from the annual reports of relevant banks for a period of 5 years (2008-2012) have been analyzed, which is the most recent data available on banking sector immediate after 2007 global financial crisis. Multiple linear regression analysis is applied to explain the effect of explanatory variables; Lending (Total Advances to Assets Ratio), Asset Quality (Net NPLR to Net Advances Ratio), Management Efficiency (Expenditure to Income Ratio), Liquidity (Liquid Asset to Total Asset Ratio) and Sensitivity ($GAP = Risk\ Sensitive\ Assets - Risk\ Sensitive\ Liabilities$) on the dependent variable Capital Adequacy Ratio (CAR). The results highlighted that capital adequacy ratio is negatively correlated with proxy variables of lending (loans), asset quality and management efficiency. However, liquidity and sensitivity are positively correlated. The regression results have revealed that Loans, Management Efficiency, Liquidity and Sensitivity have statistically significant influence on the capital adequacy of private sector banks. However, the independent variable asset quality has negligible influence on capital adequacy of Indian private sector banks. Moreover the study reveals that the Indian private sector banks maintain a higher level of capital requirement than prescribed by Reserve Bank of India. Finally in the study it is also found that Indian private sector banks have excessive funds to meet their obligation and have opportunity to give more advances to public by protecting owner's stake.

Fatima, (2014) studied on the title 'Capital Adequacy' states a strong banking infrastructure plays a major role in supporting economic activity and meeting the financial needs of all the sections of society and thus contributed in the overall growth of the country. For the smooth flow of credit in an economy, it is essential that banks should be financially sound so as to meet the various requirements of other fields. Capital adequacy ratio (CAR) is one of the measures which ensure the financial soundness of banks in absorbing a reasonable amount of loss. Capital adequacy requirements have existed for a long time, but the two most important are those specified by the Basel committee of the Bank for International Settlements. This study highlights the various components of regulatory capital and outlines the basics of Basel's norms in respect to minimum capital requirements for banks. Moreover, the study analyzed the trend in CAR values for top 10 scheduled commercial banks in India. The study found out that ICICI bank maintained the highest CAR while Bank of India accounted the least position.

Akani, et al, (2015) studied on the title 'Econometrics Analysis of Capital Adequacy Ratios and the Impact on Profitability of Commercial Banks in Nigeria'. This paper examines the econometrics analysis of capital adequacy ratios and the impact on the profitability of Commercial Banks in Nigeria from 1980 – 2013. The objective is to investigate whether there is a dynamic long run relationship between capital adequacy ratios and the profitability of commercial banks. Time series data were sourced from Stock Exchange factbook and financial statement of quoted commercial banks and the Johansen co-integration techniques in vector error correction model setting (VECM) as well as the granger causality test were employed. The study has Return on Asset (ROA), Return on Investment (ROI) and Return on Equity (ROE) as the dependent variables and the independent variables are Adjusted Capital to Risk Asset Ratio (ACRR), Capital to Deposit Ratio (CTD), Capital to Net Loans and Advances Ratio (CNLAR), Capital to Risk Asset Ratio (CRA) and Capital to Total Asset Ratio (CTAR). The empirical result demonstrated vividly in the models that there is a positive long run dynamic and significant relationship between return on asset and capital to risk asset ratio and capital to deposit ratio while others are negatively correlated. The findings also revealed that there is bi-directional causality running from ROA to ACRR and ROA to CNLAR. We therefore recommend that financial policies should be strengthened to deepen the capital base of Nigerian Commercial banks to enhance bank profitability and sustain economic growth.

Agbeja, et al, (2015) examined on the title of 'Capital Adequacy Ratio and Bank Profitability in Nigeria' and capital base (2 billion) which has become grossly inadequate to meet domestic and global realities in the financial system and hence, has been upwardly reviewed to 25 billion. It examined whether or not capital adequacy ratio affects bank profitability, it also analyzes the effect of loans and advances on bank profitability as well as the impact of capital adequacy ratio on banks' exposure to credit risk. The study utilized secondary data covering five years financial statement taking case studies of five selected commercial banks. The positive and significant relationship between capital adequacy and bank's profitability suggests that banks with more equity capital are perceived to have more safety and such advantage can be translated into higher profitability. The higher the capital ratio, the more profitable a bank is. It was recommended that there should be a constant review of minimum capital requirement of deposit money banks in Nigeria to the

optimal level and Nigeria banks should be capitalized to enable them enjoy access to cheaper sources of funds with subsequent improvements in profit levels. This would go a long way in helping the public maintain confidence in the banks with the latter acquiring corresponding enablement to accommodate the credit needs of customers and safeguard depositors' funds.

Salf-Alyousfi, et al., (2017) studied in the title 'Profitability of Saudi Commercial Banks: A Comparative Evaluation between Domestic and Foreign Banks using Capital Adequacy, Asset Quality, Management Quality, Earning Ability and Liquidity Parameters' Recent banking reforms in Saudi Arabia fostered the entry of foreign banks to increase competition and improve the financial stability of the Saudi banking sector. There is, however, no comprehensive econometric study which has analyzed the profitability of domestic and foreign banks on a standalone and comparative basis. Present paper fills in this gap and assesses the profitability of Saudi banks using the parameters of the Capital Adequacy, Asset Quality, Management Quality, Earning Ability and Liquidity framework over the period 2000-2014 using pooled ordinary least square and fixed effect model. Our results indicate that domestic banks are more profitable than foreign banks. We also find that both foreign and domestic banks with higher capital are more profitable. Banks with a higher non-performing loan are less profitable: Foreign banks carry more credit risk in their portfolio. In contrast to domestic banks, operating expenses to total income for foreign banks is significant but negatively related to profitability, indicating that cost management inefficiency adversely affect the profitability of this group. Our results also indicate that banks with larger size are less profitable. We also find that steep rise in lending activities lead to increase in the profitability of domestic banks but has adversely affected the profitability of foreign banks in the country. The findings of the study have many policy implications.

Mendoza, et al, (2017) investigated on the title 'The Effect Of Credit Risk And Capital Adequacy On The Profitability Of Rural Banks In The Philippines.' This paper examines the credit risk and capital adequacy of the 567 rural banks in the Philippines to investigate how both variables affect bank profitability. Using the Arellano-Bond estimator, we found out that credit risk has a negative and statistically significant relationship with profitability. However, empirical analysis showed that capital adequacy has no significant impact on the profitability of rural banks in the

Philippines. It is therefore necessary for the rural banks to examine more deeply if capital infusion would result in higher profitability than increasing debts. The study also implies that it is imperative for the banks to understand which risk factors have greater impact on their financial performance and use better risk-adjusted performance measurement to support their strategies. Rural banks should establish credit risk management that defines the process from initiation to approval of loans, taking into consideration the sound credit risk management practices issued by regulatory bodies. Moreover, rural banks need to enhance internal control measures to ensure the strict implementation of internal processes on lending operations.

Malimi, (2017) studied on the title 'The Influence of Capital Adequacy, Profitability, and Loan Growth on Non- Performing Loans a Case of Tanzanian Banking Sector'. Study based on two central objectives, compliance of capital adequacy and non-performing loan ratios prudential requirement and analysis on the influence posed by Capital Adequacy, Profitability, and Loan Growth on Non-Performing Loans. Banking sector ratios as reported by the supervisory authority (Bank of Tanzania) were used for the purpose of this study. The banking sector ratios show that commercial banks in Tanzania had strong Capital adequacy ratio greater the 10% required by the Bank of Tanzania. However, the banking sector failed to meet non-performing loans 5% threshold. On the hand, when regression analysis was used to study the influence, it was found that, capital adequacy, profitability posed insignificant influence on non-performing loans whereas loan to asset ratio and interest margin had a significant influence.

Halit, etal, (2019) studied on the title 'The Effect of Capital Adequacy on Returns of Assets of Commercial Banks in Kosovo'. The purpose of this study is to analyze the effects of capital adequacy on the return of assets to the banking sector in Kosovo. The capital adequacy ratio measures the ability of a financial institution to meet its liabilities by comparing its capital with its assets. As the banking system is one of the strongest points of our country's economy, it is understood that the capital adequacy ratio is used by banks to determine the adequacy of their capital holdings while taking their risk exposures into account. This study is provided empirical evidence of the relationship between capital adequacy and return on commercial bank assets in Kosovo during 2008-2017. It is using secondary data obtained from audited reports of domestic banks and reports from the Central Bank of Kosovo. To measure the

empirical results during this research, these econometric methods have been used: the linear regression model, the model of the fixed effects, and the random model and the GMM model. Based on the results we can conclude that capital adequacy has a positive impact on asset returns and has a significant relationship. In addition, other factors have had a positive and negative impact on the return of commercial banks' assets in Kosovo.

Neubari, et al, (2019) studied on the title 'Dynamics of capital adequacy and profitability of internationalized deposit money banks in Nigeria'. The study examined the dynamic responses of profitability indexes to capital adequacy ratios of authorized internationalized deposit money banks in Nigeria. The data were sourced from the financial year books of the deposit money banks and analyzed with static and dynamic panel estimators. The static estimator shows that the banks have differences in managerial style, size and profitability. Also, it was revealed that return on asset and return on equity responded positively to asset size, efficiency of the use of asset and current ratio in the static models and they were highly significant. However, they were insignificant in the dynamic specifications except asset size that was significant in the return on asset model showing a weak dynamic response of profitability to capital adequacy ratios. Hence the study recommended that Banks should improve their share based as to increase the asset as this is improve profitability.

Brastama and Yadnya, (2019) investigated on the title 'The Effect of Capital Adequacy Ratio and Non-Performing Loan on Banking Stock Prices with Profitability as Intervening Variable'. This study aims to determine the role of profitability in mediating the Capital Adequacy Ratio (CAR) and Non-Performing Loans (NPL) on banking stock prices. The sample used was 4 companies listed on the Indonesia Stock Exchange in 2011-2018. Determination of the sample using purposive sampling method. The analysis used the SOBEL test to determine the indirect effect of variables and simple regression for direct analysis between variables. The results of the analysis show that the CAR variable has a positive effect on ROA, the NPL variable has a negative effect on the ROA variable. CAR variable has a positive effect on stock prices. NPL variable has a negative effect on stock prices. CAR variable has an influence on stock prices through ROA. And the NPL variable has an influence on stock prices through ROA.

Nguyen, (2020) studied on the title ‘Impact Of Bank Capital Adequacy On Bank Profitability Under Basel II Accord: Evidence From Vietnam’. This paper explores the impact of capital adequacy on bank profitability in the context of Basel II Accord implementation in Vietnam. In this study, bank profitability is measured by return on assets and return on equity. Apart from capital adequacy ratio, we also control various potential determinants of profitability including bank-specified variables (capital adequacy ratio, net interest margin, non-performing loans, non-interest income, ownership and regulatory variable proxied by the bank’s application of Basel standards), and macroeconomic indicators (growth rate of gross domestic product, inflation rate). Using panel data regression analysis with a sample of 22 Vietnamese commercial banks for the period 2010-2018, this paper shows that bank capital adequacy, net interest margin, and non-interest income measures are positively correlated with profitability indicators while non-performing loan indicator and state ownership measure negatively effect on bank profitability. This paper also provides a more in-depth analysis of the impact that bank capital adequacy imposes on profitability by dividing the sample into two subsamples of large-sized banks and small-sized banks. We find that bank capital adequacy has a positive impact on return on assets for small-sized banks meanwhile it has no significant impact on profitability for large-sized banks in Vietnam. In another aspect, the paper also finds that the large-sized banks’ return on assets, as well as return on equity, are not significantly correlated with the Basel II implementation meanwhile it is statistically meaningful to the small-sized banks’ situation. Based on the outcomes found, this study provides several policy implications. Particularly, the regulatory authority should encourage bank capital reinforcement and continuous bank ownership restructuring.

Fernandses, etal, (2020) analyzed on the title ‘Cash holdings and profitability of banks in developed and emerging markets’ with the objectives of examine the effect of cash holdings on bank profitability using a worldwide database. Unlike previous studies, we model it as a non-monotonic relationship. We consider as a proxy for banks' profitability the return on equity and the return on assets. Our results show that there is a non-monotonic relationship between the cash conversion cycle and bank portability. Also, we show that banks in emerging markets (BRICS) hold more cash than banks in developed countries (G7). Moreover, our results reveal an increase in the banks' cash holdings after the 2008 financial crisis.

Olarewaju and Akande, (2020) investigated on the title ‘An Empirical Analysis of Capital Adequacy Determinants in Nigerian Banking Sector’ and analyzed the role of Capital adequacy since adequacy of capital in banks directly influences the amount of funds available for loans disbursement which invariably affects their risk appetite, efficiency and stability. This paper seeks to examine the determinants of capital adequacy in Nigerian quoted deposit money banks for the years 2005-2014. The study employs both descriptive and fixed effect panel regression. The descriptive analysis shows that the mean and median values are within the minimum values and the standard deviation shows the expected growth rate deviation for each of the identified determinants of capital adequacy. From the analysis of panel data using Cross-Sectional Specific fixed effect estimations, it is discovered that a direct relationship exists among ETA, ROA and SIZ while an inverse linear relationship that exists among ROA, CR, DEP and LIQ are statistically significant in determining the level of capital adequacy among the deposit money banks in Nigeria. The study recommends the need for all these affected banks to gear up and invest more on the significant factors that can lead to improvements in their capital adequacy in order to achieve viability, sustainability and stability in the long run.

Table 2.3

Summarized table of international journal articles

Study	Objectives	Methodology	Findings
Małgorzata, (2010)	Determines the ratio of a bank’s core capital to the assets and off-balance liabilities weighted by the risk.	Way of calculating the ratio has been changing, which is the subject of this paper.	It has been specified that the value of this coefficient cannot be lower than 8%.
Chishty, (2011)	To analyzed impact of capital adequacy requirements on profitability of private banks.	Explained that banks are required to hold capital equal to a certain percentage of the total risk-weighted assets.	Capital strength was one of main determinants of UK banks performance providing support to the argument that well capitalized banks face lower cost of going bankrupt, which reduces their cost of funding or that they have lower needs for external funding which results in higher profitability.

Abba, (2013)	To empirically examine the relationship between capital adequacy and banking risks.	Three independent variables were used. These variables are risk-weighted asset ratio, deposit ratio and inflation rate.	There is a significant negative relationship between risk and capital adequacy ratio of banks, which means when risk level rises, capital adequacy ratio falls in the Nigerian banking industry.
Pefan & Ochei, (2013)	To investigate the impact of bank capital adequacy ratios, management and performance in the Nigerian commercial bank.	The study captured their performance indicators and employed cross sectional and time series of bank data obtained from Central Bank.	The overall capital adequacy ratios shows that Shareholders Fund/Total Assets (SHF/TA) which measures capital adequacy of banks (risk of default) have negative impact on Return on Asset (ROA). This implies that the regulatory authorities should put in place measures to raise the level of this ratio to avoid future bank collapse.
Aspal,& Nazneen, (2014)	To examine whether specific bank performance factors particularly Loan, Asset Quality, Management Efficiency, Liquidity and Sensitivity have an impact on capital adequacy.	Explain the effect of explanatory variables; Lending, Asset Quality Management Efficiency Liquidity and Sensitivity on the dependent variable Capital Adequacy Ratio.	The regression results have revealed that Loans, Management Efficiency, Liquidity and Sensitivity have statistically significant influence on the capital adequacy of private sector banks.
Fatima, (2014)	Compliance of capital adequacy and non-performing loan ratios prudential requirement and analysis on the influence posed by Capital Adequacy, Profitability, and Loan Growth on Non-Performing Loans.	Various components of regulatory capital and outlines the basics of Basel's norms in respect to minimum capital requirements for banks.	Liquidity and Sensitivity have statistically significant influence on the capital adequacy of private sector banks.

Agbeja, Adedokun, & Olufemi, (2015)	To analyzed impact of capital adequacy ratio on banks' exposure to credit risk.	The positive and significant relationship between capital adequacy and bank's profitability suggests that banks with more equity capital are perceived to have more safety and such advantage can be translated into higher profitability.	This would go a long way in helping the public maintain confidence in the banks with the latter acquiring corresponding enablement to accommodate the credit needs of customers and safeguard depositors' funds.
Akani & Anyike, (2015)	To examines the econometrics analysis of capital adequacy ratios and the impact on the profitability of Commercial Banks in Nigeri.	The study has based on, Return on Asset (ROA), (ROI) (ROE) (ACRR), (CTD), (CNLAR), (CRA) and (CTAR).	The findings also revealed that there is bi-directional causality running from ROA to ACRR and ROA to CNLAR. We therefore recommend that financial policies should be strengthened to deepen the capital base of Nigerian Commercial banks to enhance bank profitability and sustain economic growth.
Malimi, (2017)	To analyzed the influence posed by Capital Adequacy, Profitability, and Loan Growth on Non-Performing Loans.	The expected growth rate deviation for each of the identified determinants of capital adequacy.	Capital adequacy, profitability posed insignificant influence on non-performing loans whereas loan to asset ratio and interest margin had a significant influence.
Mendoza, John, & Rivera, (2017)	To examines the credit risk and capital adequacy.	Data on total loan portfolio, loan loss reserves, total assets, shareholders' equity, total equity, and net profit after tax were sourced to derive the figures for credit risk and capital adequacy.	They found out that credit risk has a negative and statistically significant relationship with profitability.
Salf- Alyousfi, et	Analyzed the profitability of domestic and foreign	Assesses the profitability of Saudi banks using the	Results indicate that domestic banks are more profitable than

al.,(2017)	banks on a standalone and comparative basis.	parameters of the Capital Adequacy, Asset Quality, Management Quality, Earning Ability and Liquidity framework over the period 2000-2014 using pooled ordinary least square and fixed effect model.	foreign banks. We also find that both foreign and domestic banks with higher capital are more profitable.
Brastama & Yadnya, (2019)	To determine the role of profitability in mediating the Capital Adequacy Ratio (CAR) and Non-Performing Loans (NPL) on banking stock prices.	The sobel test to determine the indirect effect of variables and simple regression for direct analysis between variables.	The analysis show that the CAR variable has a positive effect on ROA, the NPL variable has a negative effect on the ROA variable. CAR variable has a positive effect on stock prices. NPL variable has a negative effect on stock prices.
Nenubari, & Emeka, (2019)	To examined the dynamic responses of profitability indexes to capital adequacy ratios of authorized internationalized deposit money banks in Nigeria.	The static estimator shows that the banks have differences in managerial style, size and profitability.	It was revealed that return on asset and return on equity responded positively to asset size, efficiency of the use of asset and current ratio in the static models and they were highly significant.
Shabani, Morina & Misiri (2019)	To analyze the effects of capital adequacy on the return of assets to the banking sector in Kosovo.	The capital adequacy ratio measures the ability of a financial institution to meet its liabilities by comparing its capital with its assets.	Capital adequacy has a positive impact on asset returns and has a significant relationship. In addition, other factors have had a positive and negative impact on the return of commercial banks' assets in Kosovo.
Fernandes, , Mendes & Leite, (2020)	To examine the effect of cash holdings on bank profitability.	They consider as a proxy for banks' profitability the return on equity and the return on assets.	there is a non-monotonic relationship between the cash conversion cycle and bank portability.

Olarewaju, & Akande, (2020)	To examine the determinants of capital adequacy in Nigerian quoted deposit money banks.	They consider the expected growth rate deviation for each of the identified determinants of capital adequacy.	The direct relationship exists among ETA, ROA and SIZ while an inverse linear relationship that exists among ROA, CR, DEP and LIQ are statistically significant in determining the level of capital adequacy among the deposit money banks.
Nguyen, (2020)	Impact of capital adequacy on bank profitability in the context of Basel II Accord implementation in Vietnam.	Determinants of profitability including bank-specified variables (capital adequacy ratio, net interest margin, non-performing loans, non-interest income, ownership and regulatory variable proxied by the bank's application of Basel standards), and macroeconomic indicators.	Bank capital adequacy has a positive impact on return on assets for small-sized banks meanwhile it has no significant impact on profitability for large-sized banks in Vietnam.

2.3.2 Review of Nepalese studies

Poudel, (2014) studied on the title 'Impact of credit risk on profitability of commercial banks in Nepal'. The main purpose of the study was to examine the impact of credit risk on profitability of the commercial banks in Nepal. Data were collected from the sample of 15 commercial banks operated in Nepali economy for the period of 2002/03 to 2014/15. One-way Fixed Effect Model (FEM) of panel data analysis is used as a major tool of analysis. The profitability of the commercial banks is measured in terms of return on equity and is regressed on bank specific variables and macro-economic variables. The results confirmed that credit risk has the significant negative impact on profitability of commercial banks in Nepal. In addition, solvency ratio, interest spread rate, and inflation have the insignificant negative impact on profitability. In contrast, capital adequacy ratio, total assets, and GDP growth have the significant positive impact on profitability of commercial banks in

Nepal. Finally, inter-bank interest rate has insignificant positive impact on profitability.

Pradhan, (2017) analyzed on the title ‘Impact of Capital Adequacy and Cost Income Ratio on Performance of Nepalese Commercial Banks.’ With analyze This study examines the effect of capital adequacy and cost income ratio on the performance of Nepalese commercial banks. The return on assets and net interest margin are the dependent variables. The independent variables are capital adequacy ratio, cost income ratio, debt to equity ratio, equity capital to assets, bank size and liquid ratio. The main sources of the data include various Banking and Financial Statistics and Bank Supervision Reports published by Nepal Rastra Bank and annual reports of the selected commercial banks. This study is based on the secondary sources of the data that are collected from 20 Nepalese commercial banks through 2009-10 to 2014-15 leading to a total of 120 observations. The regression models are estimated to test the significance and effect of capital adequacy and cost income ratio on the performance of Nepalese commercial banks. The study shows that there is positive relationship of bank size with return on assets. This indicates that larger the banks, higher would be the return on assets. However, the study shows that there is negative relationship of capital adequacy, cost income ratio, equity capital to total assets ratio and liquidity ratio with return on assets. This indicates that increase in capital adequacy ratio, cost income ratio, equity capital to total assets ratio and liquidity ratio leads to increase in return on assets. Similarly, the study observed that higher the equity capital to total assets, lower would be the return on assets. Similarly, the study observed that there is a negative relationship of cost income ratio and liquidity ratio with return on equity. This indicates that higher the cost income ratio and liquidity ratio, lower would be the return on equity. The regression results show that bank size has positive impact on bank performance. However, the study reveals that capital adequacy ratio, cost income ratio, and equity capital to total assets has negative impact on return on assets. Gautam, (2018) explored on the paper ‘Determinants Of Financial Performance: An Evidence From Nepalese Commercial Banks.’ This paper examines the determinants of financial performance of commercial bank in Nepal. In order to investigate the determinants of financial performance, 10 commercial banks have been taken as sample covering the period of time 2006/07 to 2016/17. Data are collected from annual report of the respective banks. Multiple linear regression models have been employed for the analysis of data. The result shows a positive relationship of return

on assets with capital adequacy ratio, management efficiency and gross domestic product whereas negative with assets quality and liquidity management. It is evident from the findings that financial performance of commercial banks are strongly affected by capital adequacy ratio, management efficiency, gross domestic product, liquidity management and assets quality.

Dahal, (2018) investigated on the thesis 'Impact of Capital Adequacy on the Financial Performance of Commercial Banks in Nepal'. The whole report it is found that all selected bank is able to maintained adequate capital Adequacy ratio. Sample bank mostly give attention to core capital rather than supplementary capital. They have composition of the total capital with more than 60% of the core capital and remaining that of supplementary capital. As per the finding derived the commercial banks have been maintaining the capital adequacy position as per the NRB Directive. The Capital Adequacy can be studied as per the core capital to Risk weighted Assets Ratio. As far this ratio is concerned all the sample banks have maintained standard ratio of 6%. This study also shows that there is negative relationship between the ROA and Capital Adequacy Ratio.

Gnawali, (2018) studied on the title 'Non-Performing Asset and its Effects on Profitability of Nepalese Commercial Banks'. The level of Non-performing asset(NPLR) in Nepalese banking system is very alarming. It is well known fact that the bank and financial institution in Nepal have been facing the problem of swelling non-performing assets and the issue of becoming more and more unmanageable day by day. This study examines the impact of non-performing loan on profitability of Nepalese commercial banks. Return on assets and return on equity are taken as dependent variables. Non-performing loan, loan loss provision, capital adequacy ratio, ratio of loan loss provision to total loan, ratio of total loan to total deposit and size of the firm are selected as independent variables. This study is based on the secondary data, which are collected from various issues of Banking and Financial Statistics, Bank Supervision Report published by Nepal Rastra Bank and annual reports of the banks. The study covers the period of 2010 to 2017 for 3 government banks and 10 nongovernment banks with 24 and 80 observations respectively. The regression models were estimated to test the significance and impact of non-performing loan on profitability on Nepalese commercial banks. Keywords: Non-performing Asset, ROA, ROE, loan loss provision and capital adequacy ratio

Gautam, (2019) investigated on the paper ‘Impact of Capital Adequacy and Bank Operational Efficiency on Profitability of Nepalese Commercial Bank’. For the purpose to examines the impact of capital adequacy and bank operational efficiency on profitability of Nepalese commercial banks. Descriptive and fixed effect regression was used to analyze the data. The study is conducted using panel data of 9 commercial banks operated in Nepal with 90 observations for the period 2007/08 to 2016/17. The dependent variable is return on asset while the independent variables are capital adequacy ratio, operation efficiency, loan to deposit, bank size and equity ratio. The study revealed that CAR and OEOI has negative significant relation whereas, EQR has positive significant relation with the profitability of sampled commercial bank.

Bhattarai, (2020) studied on the title ‘Determinants of Capital Adequacy Ratio of Commercial Banks in Nepal’ The study attempts to determine the capital adequacy ratio of commercial banks in Nepal. This study is based on the secondary balance panel data. The data were collected from the 11 commercial banks for the period of 2013/14 to 2017/18 leading to 55 observations. The convenience sampling technique has been used to selection of sample of the study. The study period has been made for fresh data in the analysis. The descriptive, correlation and casual comparative research design has been used for data analysis. The study assumes that the capital adequacy ratio of commercial banks depends on bank specific variable: credit risk, asset quality, management quality, return on assets, liquidity, size of bank and macroeconomics variables gross domestic products growth rate and consumer price index i.e. inflation rate. The three different model like Pooled OLS, Fixed Effects Model and Random Effects Model have been used for data analysis. The results of the study revealed that the liquidity has positive and statistically significant effects on capital adequacy ratio. Size of bank and inflation rate have negatively and statistically significant results. The others variables profitability, asset quality, credit risk, management quality and growth of gross domestic products does not effect to capital adequacy ratio. The study concluded that liquidity, size of bank and inflation have major determinants of capital adequacy ratio in Nepal.

Table No. 2.4
Summarized table of Nepalese studies

Study	Objectives	Methodology	Findings
Poudel, (2014)	To examine the impact of credit risk on profitability of the commercial banks.	The profitability of the commercial banks is measured in terms of return on equity and is regressed on bank specific variables and macro-economic variables.	The result shows capital adequacy ratio, total assets, and GDP growth have the significant positive impact on profitability of commercial banks in Nepal.
Pradhan, (2017)	To examines the effect of capital adequacy and cost income ratio on the performance of Nepalese commercial banks.	The regression models are estimated to test the significance and effect of capital adequacy and cost income ratio on the performance of Nepalese commercial banks.	This indicates that increase in capital adequacy ratio, cost income ratio, equity capital to total assets ratio and liquidity ratio leads to increase in return on assets.
Dahal, (2018)	To investigate the impact of capital adequacy on the profitability of the selected banks.	The capital adequacy and its impact on profitability of the commercial banks is the main focus of the study.	There is inverse relationship between the CAR and ROA of the commercial bank. Banks is not succeeding to increase CAR and ROA in same time.
Gautam, (2018)	To examines the determinants of financial performance of commercial bank in Nepal. In order to investigate the determinants of financial performance.	In order to investigate the determinants of financial performance, 10 commercial banks have been taken as sample.	The result shows a positive relationship of return on assets with capital adequacy ratio, management efficiency and gross domestic product whereas negative with assets quality and liquidity management.
Gnawali, (2018)	To examines the impact of non-performing loan on profitability of Nepalese commercial banks.	The tools like Mean, standard deviation, correlation and regression analysis.	This study finds that NPLR has statistically significant large negative effect on profitability measured by ROA.
Gautam, (2019)	Examines the impact of capital adequacy and bank operational	Descriptive and fixed effect regression was used to analyze the	The study revealed that CAR and OEOI has negative significant

	efficiency on profitability of Nepalese commercial banks.	data. The study is conducted using panel data of 9 commercial banks operated in Nepal.	relation whereas, EQR has positive significant relation with the profitability of sampled commercial bank.
Bhattarai, (2020)	To determine the capital adequacy ratio of commercial banks in Nepal.	The descriptive, co relational and casual comparative research design has been used for data analysis.	The study concluded that liquidity, size of bank and inflation have major determinants of capital adequacy ratio in Nepal.

2.4 Conceptual framework

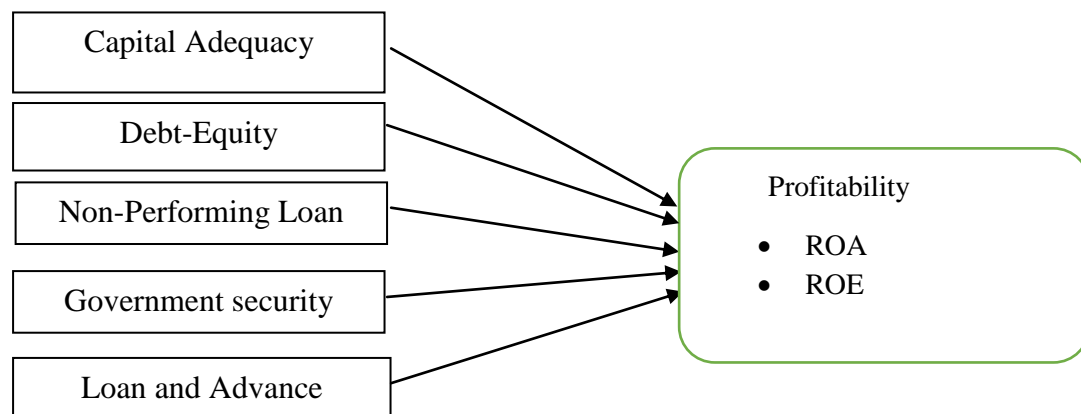
The theoretical Framework describes the relationships among the Variables, and the nature and direction of the relationship. Based on the literature review five independent variables had taken into consideration that had influenced the capital adequacy impacts on profitability of commercial bank. The dependent and independent variables are as follows:

Figure 2.1

Conceptual framework

Independent variables

Dependent variables



Adapted from: Chishty (2011), Pefan (2013)

2.4.1 Introduction of variables

i) Capital to risk weighted assets ratio (CRAR): In Nepal, as per the capital adequacy framework 2015, all the commercial banks were required to maintain a CRAR of 8.5%, otherwise the bank treated as undercapitalized. Higher the CRAR, lower the need to external funding and therefore higher profitability. It is also seen that well capitalized banks face lower costs of going bankrupt and then cost of funding is reduced. It is given by:

$$CRAR = \frac{\text{Total capital Fund}}{\text{Total Risk weighted Assets}}$$

Whereas,

Capital Fund = Tier 1 capital + Tire 2 capital

ii) Debt-equity ratio: This ratio indicates the degree of leverage of a bank. It indicates how much of the bank business is financed through debt and how much is financed through equity. It is arrived by dividing total borrowing and shareholders net worth which includes equity capital and Reserves & Surplus. It indicates how much times are debt to equity. Higher ratio indicates less protection for the creditors and depositors of the bank. It is given by:

$$D - E \text{ ratio} = \frac{\text{Total debt}}{\text{Total shareholder's equity}}$$

iii) Loans and advances to assets ratio: This ratio shows the aggressiveness of bank in lending funds which ultimately results in better profitability. This ratio is arrived at by dividing Advances by Assets. It indicates how much proportion or alternative percentage of Total Assets is utilized in the form of Advances. Higher ratio means that there are more advances as proportion of total assets. Advancing being the core function of banks so higher ratio of Advances/ Assets is preferred to lower one. It is given by:

$$AAR = \frac{\text{Total loans and advances}}{\text{Total Asset}}$$

iv) Government securities to total investments: The percentage of investment in government securities a very important indicator which shows the risk-taking ability of a bank. It indicates a bank's strategy as being High Profit - High Risk or Low Profit-Low Risk. It also gives view as the availability of alternative investment opportunities. Government securities are generally considered as the safest debt instruments, which as a result carry the lowest return. Since Government securities are risk free, the higher the government Securities to Total Investments ratio, the lower the risk involved in bank's investments. It is given by:

$$GSTI = \frac{\text{Investment in government securities}}{\text{Total Investments}}$$

Where,

Government securities= NRB Treasury Bills + NRB other Securities

v) Non-performing loan: A nonperforming loan (NPL) is a loan in which the borrower is in default due to the fact that they have not made the scheduled payments for a specified period. Although the exact elements of nonperforming status can vary depending on the specific loan's terms, "no payment" is usually defined as zero payments of either principal or interest. The specified period also varies, depending on the industry and the type of loan. Generally, however, the period is 90 days or 180 days. It is given by:

$$NPLR = \frac{\text{Non - Performing Loan}}{\text{Total loan}}$$

Profitability indicators

The quality of earnings is very important criterion which determines the ability of a bank to earn consistently. It basically determines the profitability of the banks. It also explains the sustainability and growth in earnings in the future.

i) 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. Return on assets is displayed as a percentage; the higher the ROA the better. The ROA reflects the ability of a bank's management to generate profits from the bank's assets. It shows the profits earned per birr of assets and indicates how effectively the bank's assets are managed to generate revenues, although it might be biased due to off-balance-sheet activities. This is probably the most important single ratio in comparing the efficiency and operating performance of banks as it indicates the returns generated from the assets that bank owns. It measures the ability of the bank management to generate income by utilizing company assets at their disposal. It is given by:

$$ROA = \frac{\text{Net Profit}}{\text{Total Assets}}$$

ii) Return on equity (ROE): 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 the profitability of a corporation in relation to stockholders' equity. The ROE is said to measure the rate of

return on the bank's shareholders equity and it is calculated by dividing banks net income after tax by total equity capital which includes common and preferred stock, surplus, undivided profits, and capital reserve.

$$ROE = \frac{\text{Net Profit}}{\text{Total shareholder's equity}}$$

Where,

Shareholders equity= Share capital + reserve & fund

2.5 Research gap

CAR is critical to ensure that banks have enough cushion to absorb a reasonable number of losses before they become insolvent. CAR is used by regulators to determine capital adequacy for banks and to run stress tests. Agbeja, et al (2015) study on the title 'Capital Adequacy Ratio and Bank Profitability in Nigeria' to examine whether or not capital adequacy ratio affects bank profitability, it also analyzes the effect of loans and advances on bank profitability as well as the impact of capital adequacy ratio on banks' exposure to credit risk. The study utilized secondary data covering five years financial statement taking case studies of five selected commercial banks. The positive and significant relationship between capital adequacy and bank's profitability suggests that banks with more equity capital are perceived to have more safety and such advantage can be translated into higher profitability.

This study based on the capital adequacy indicators like debt equity ratio, advance to asset ratio, capital adequacy ratio and non-performing loan. It has been experienced that till date either sample has been limited to single or more bank in arbitrary manner, as a sample in order to draw conclusion. Here the effort has been made to draw the nearest conclusion over impact of on the profitability ROA and ROE. Mostly the study related to bank profitability are based on various and broad indicators including capital adequacy with asset quality, management, earnings and liquidity but very few studies are done in term of one particular indicator on profitability performance, and also used correlation, regression as well as VIF test, so it is unique in this sense also.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

Research methodologies used by researcher is presented in this study. It includes research design, population, sampling methods, sample size, data collection instruments and processing procedures.

3.2 Research design

Research design is a plan structure and strategy of investigation conceived so as to obtain answers of question and to control variance. The analysis of this study is based on certain research design keeping in mind on the objective of the study, Generally, research design means definite procedure and technique which guide in studying profound ways for research viability. The main objective of the study is analyze the impact of capital adequacy on profitability of Nepalese commercial banks. It emphasizes on descriptive study of the collected data of profit and loss account and balance sheet (i.e., financial statement) over a period of time. Information of data of a ten-year period collection from the bank is tabulated. Analysis with different statistical and financial tools has been conducted to find out the necessary result also.

3.3 Population and sample

The population for this study comprises all the commercial banks in Nepal. There are 27 commercial banks operating in Nepal with their branches located in different parts of the country. Out of the population, total six leading commercial banks are selected as sample on the basis of their establishment between the periods from 2011 to 2020. This sample comprises of 22.22% of the total population of commercial banks in Nepal. Convenience sampling method is use in this study. The sample banks that are used for this research are as follows:

1. Himalayan Bank Limited
2. Nepal SBI Bank Limited
3. Nepal Bangladesh Bank Limited
4. Everest Bank Limited
5. Nepal Credit and Commerce Limited
6. Machhapuchhre Bank limited

3.4 Source of data

To comply with the objective, the study is based on the secondary data. The required data for this study such as balance sheet, profit and loss statement etc. are collected through annual report of the sample commercial banks and other structured document review. Mostly the annual reports of the selected sample banks and NRB reports is used as a major source of data. Beside the annual reports of sample banks, information is be supplemented from various publications of Nepal Stock Exchange (NEPSE) and browsing of official web site of sample banks, NRB and NEPSE.

3.5 Data collection & processing procedure

Different tools and techniques were adopted while collecting and processing data for the study. The data needed for conducting this study includes all the secondary sources. The degree of reliability and validity of the data used for the study depends on the degree of accuracy of the data maintained by the sample banks in their respective reports or accounts. However the data can be ensured through crosschecking the source. The data collected using data collection sheet were edited, coded and re-arranged as per the need of the study. Data are analyzed by using calculator, Microsoft Excel as well as SPSS software. The collected data are entered using SPSS software and analysis of descriptive, correlation and regression are done as per the requirement of study.

3.6 Data analysis plan

The gathered information was grouped as per the need of research work in order to meet research purpose. In this study, data were analyzed using following statistical and financial tools and techniques.

a. Financial Analysis

1. Capital to risk weighted assets ratio
2. Debt-equity ratio
3. Loans and advances to assets ratio
4. Government securities to total investments ratio
5. Non-Performing loan ratio
6. Return on assets
7. Return on equity

b. Statistical analysis

1. Mean
2. Standard deviation
3. Coefficient of correlation
4. Regression analysis

Arithmetic mean

The mean or average value is a single value within the range of the data that is used to represent all the value in the series. Since an average is somewhere within the range of the data. It is also called a measure of central value. It is calculated by

$$\text{Mean (x)} = \frac{\sum x}{N}$$

Where,

\bar{x} = Arithmetic mean

$\sum x$ = Sum of value of all times

N = Number of items

Standard deviation

The standard deviation is the measure that is most often used to describe variability in data distribution. It can be thought of as a rough measure of the average amount by which observation deviation on either side of the mean. Denoted by Greek letters (read as sigma), standard deviation is extremely useful for judging the representative of the mean. Standard deviation is calculated as:

$$\text{Standard deviation } \sigma = \sqrt{\frac{\sum_{i=1}^N (x - \bar{x})^2}{N}}$$

Where,

σ = standard deviation

$\sum (x - \bar{x})^2$ = sum of squares of the deviation from arithmetic average

N = Number of items

Correlation analysis

Correlative is defined as the relationship or association between at least one dependent variable and one independent variable. If the two variables are so related that the change in the value of one independent variable results the change in the value of dependent variable then they are said to have correlation to each other. For example, an increase in the monthly income results in increase in monthly

expenditure. Hence the two variables, income (independent) and expenditure (dependent) are said to be positively correlation.

Thus correlation is a statistical tools, with the help of which it can be determined whether or not two or more variable are correlated and if they are correlated the degree (extent) and direction of correlation is determined. The co efficient of correlation (r) can range between -1 and +1. A positive r indicates that the two variables move in same direction whereas a negative r value indicates that the two variables move in opposite directions. In this study, correlation analysis has been done between ROA and ROE with CAR, NPLR, GSTIR,AAR and D/E ratio . The formula used for determining the correlation co efficient between these variables is a following.

$$\text{Correlation co efficient (r)} = \frac{\sum XY - n\bar{X}\bar{Y}}{\sqrt{\sum X^2 - n\bar{X}^2} \sqrt{\sum Y^2 - n\bar{Y}^2}}$$

Where,

n= number of observation in series x and y

$\sum x$ = Sum of observation in series x

$\sum Y$ = Sum of observation in series Y

$\sum x^2$ = Sum of squared observation in series x

$\sum y^2$ = Sum of squared observation in series Y

Probable error of correlation coefficient is a measure of testing the reliability of an observed value of correlation coefficient. It is calculated to find the extent to which correlation coefficient is dependable as it depends upon the condition of random sampling.

$$\text{As, } P.E(r) = \frac{\sqrt{(1-r)^2}}{N}$$

Where,

r = Standard error, n = 0.6745

Reason for taking 0.6745 is that in a normal distribution 50% of observation lie in the range 0.6745 where, u and a denote the population mean and standard deviation. E® is used to test it an observed value of sample correlation coefficient is significant of any correlation in the population. If $r < P.E$, correlation is not at all significant, If $r > P.E$, r is definitely significant.

Multiple regression analysis

In the statistical modelling, regression analysis is a statistical process for the estimating relationship among variables. It includes many techniques for modelling and analyzing several variables and one or more independent variables regression analysis is a mathematical measure of average relationship between two variables or more variables in terms of original unit of data. The general purpose of multiple regressions is to learn more about the relationship between several independent or predictor variables and a dependent criterion variable. In this study, the dependent variable is ROA and independent variables are CAR, NPLR, GSTIR, D-E and AAR.

The line of regression is $Y = a + bx$

Multiple Regression Model

$$ROA = a + b_1(CRAR) + b_2(DER) + b_3(AAR) + b_4(GSTIR) + b_5(NPLR) + \varepsilon \dots \dots \dots (i)$$

$$ROE = a + b_1(CRAR) + b_2(DER) + b_3(AAR) + b_4(GSTIR) + b_5(NPLR) + \varepsilon \dots \dots \dots (ii)$$

In this analysis, the researchers have used 5% level of significance to test the Hypothesis.

Whereas,

CRAR= Capital to risk weighted asset ratios

DER= Debt-equity ratio

AAR= Advance to assets ratio

GSTIR= Government securities to total investment ratio

NPLR= Non performing loan ratio

ε = Estimation of error term

CHAPTER 4

RESULTS AND DISCUSSION

Data analysis is an important source of the research process. The purpose of analyzing the data is to change its from an unprocessed from to an understandable presentation. Raw data conveys little information thus the data must be compiled, analyzed and interpreted carefully before its full meaning and implications can be understood. The data is thus transformed into information. This process of transforming data is called analysis: the examination and interpretation of data to draw conclusion (Pant, 2015).

4.1 Presentation and analysis of data

Under this analysis, the annual report of HBL, NSBI, NBB, EBL, NCC and MBL since 2011 to 2020 and other essential data available from different organization have been presented with the help of table.

4.1.1 Descriptive analysis

Descriptive statistics are brief descriptive coefficients that summarize a given data set, which can be either a representation of the entire or a sample of a population. Descriptive statistics are broken down into measures of central tendency and measures of variability (spread). Measures of central tendency include the mean, median and mode, while measures of variability include standard deviation, variance, minimum and maximum variables. The table indicates the bank's profitability indicators like ROA & ROE. This table shows the relationship between the independent variables like CAR, D-ER, AAR, GSTIR & NPLR and individual dependent variable.

Table: 4.1*Descriptive statistics of variables*

Variables	N	MIN	MAX	AVG	SD
Capital Adequacy Ratio	60	0.1019	0.1571	0.1258	0.0163
Debt-Equity Ratio	60	4.2291	17.1581	9.173	2.7918
Loan and Advance Ratio	60	0.4443	0.7525	0.6604	0.0701
Government Security to Total Assets	60	0.1415	0.9673	0.6532	0.2508
Non-Performing Loan Ratio	60	0.0031	0.0971	0.0236	0.0185
Return on Assets	60	-0.0099	0.0401	0.0162	0.0069
Return on Equity	60	-0.0614	0.3047	0.1598	0.0621

Table 4.1 shows the descriptive analysis of the study. The average value of capital adequacy (CAR) is 0.12.58 or 12.58% with standard deviation of 0.0163 or 1.63%. The minimum capital adequacy ratio is 0.1019 or 10.19% and the maximum is 0.1571 or 15.71%. The average value of debts equity 9.173 times with standard deviation is 2.7918. The minimum debt equity ratio is 4.2291 times and maximum is 17.1518 times. The average value of AAR is 0.6604 or 66.04% with standard deviation is 0.0701 or 7.01%. The minimum AAR is 0.4443 or 44.43%. times and maximum is 0.7525 or 75.25%. The average value of GSTIR is 0.6532 or 65.32% with standard deviation is 0.25.08 or 28.08%. The minimum GSTIR ratio is 0.1415 or 14.15% and maximum is 0.9673 or 96.73%. The average value of NPLR is 0.0236 or 2.36% with standard deviation is 0.0185 or 1.85%. The minimum NPLR ratio is 0.0031 and maximum is 0.0971 or 9.71%.

Similarly, the average ROA is 0.0162 or 1.62% with standard deviation 0.0069 or 0.69%. The minimum ROA is -0.0099 or -0.99% and maximum is 0.0401 or 4.401%. The average ROE is 0.1598 or 15.98% and standard deviation is 0.0069 or 0.69%. The minimum ROE is -0.0614 or -6.14% and maximum is 0.0614 or 6.14%.

4.1.2 Capital adequacy ratio

The capital adequacy ratio (CAR) is a measurement of a bank's available capital expressed as a percentage of a bank's risk-weighted credit exposures. The capital adequacy ratio, also known as capital-to-risk weighted assets ratio (CAR), is used to protect depositors and promote the stability and efficiency of financial systems around the world. Two types of capital are measured: tier-1 capital, which can absorb losses

without a bank being required to cease trading, and tier-2 capital, which can absorb losses in the event of a winding-up and so provides a lesser degree of protection to depositors (Hayes, 2020).

Table 4.2

Capital adequacy ratio

Year	HBL	NSBI	NBB	EBL	NCC	MBL
2011	0.1068	0.1152	0.1019	0.1043	0.1348	0.1079
2012	0.1102	0.1143	0.1186	0.1102	0.1177	0.1504
2013	0.1155	0.1264	0.1161	0.1159	0.1176	0.1254
2014	0.1123	0.1368	0.1144	0.1115	0.1151	0.1063
2015	0.1114	0.1403	0.1131	0.1333	0.1129	0.1224
2016	0.1084	0.1349	0.1096	0.1266	0.1192	0.1236
2017	0.1215	0.1571	0.1510	0.1469	0.1072	0.1682
2018	0.1246	0.1515	0.1403	0.1420	0.1118	0.1536
2019	0.1260	0.1455	0.1363	0.1374	0.1430	0.1279
2020	0.1489	0.1555	0.1359	0.1338	0.1384	0.1302
Mean	0.1186	0.1378	0.1237	0.1262	0.1218	0.1316
SD	0.0126	0.0154	0.0159	0.0148	0.0124	0.0200

Source: Annual report from 2011 to 2020

Table 4.2 shows the capital adequacy ratio of selected sample banks for year 2011 to 2020. The average capital adequacy ratio of NSBI is higher among the sample i.e., 0.1378 or 13.78% and lower is HBL i.e., 0.1186 or 11.86%. The lower SD of among sample bank is NCC which is 0.0124 or 1.24%.

4.1.3 Debt-equity ratio

The debt-to-equity (D/E) ratio is calculated by dividing a company's total liabilities by its shareholder equity. These numbers are available on the balance sheet of a company's financial statements. The ratio is used to evaluate a company's financial leverage. The D/E ratio is an important metric used in corporate finance. It is a measure of the degree to which a company is financing its operations through debt versus wholly-owned funds. More specifically, it reflects the ability of shareholder equity to cover all outstanding debts in the event of a business downturn (Frenando, 2020).

Table 4.3*Debt-equity ratio*

Year	HBL	NSBI	NBB	EBL	NCC	MBL
2011	10.70	15.01	5.22	13.85	6.60	10.00
2012	11.74	17.16	5.83	12.62	8.67	8.20
2013	10.54	16.06	5.10	12.62	9.99	9.83
2014	11.10	12.47	6.51	11.91	8.59	11.59
2015	10.90	9.50	7.07	13.39	9.11	11.22
2016	10.32	10.35	6.73	12.38	8.36	10.13
2017	8.16	8.59	4.45	9.09	9.34	6.96
2018	8.45	7.01	4.23	7.98	7.66	7.19
2019	7.32	7.36	5.14	8.65	6.39	8.37
2020	7.86	7.96	5.85	8.93	6.36	9.75
Mean	9.71	11.15	5.61	11.14	8.11	9.32
SD	1.58	3.78	0.95	2.22	1.30	1.58

Source: Annual report from 2011 to 2020

Table 4.3 shows the Debt-Equity ratio of selected sample banks from the year 2011 to 2020. The highest Debt-Equity ratio of NSBI i.e., 11.15 is higher than the other banks and lower ratio is NCC i.e., 8.11. The SD of NSBI is higher i.e., 3.78 and lower is NBB i.e., 0.95. So, the fluctuation of Debt-Equity ratio of NCC is less risky due to the lower fluctuation.

Table 4.1.4 Long term debts to total equity ratio

The long-term debt to equity ratio is a method used to determine the leverage that a business has taken on. To derive the ratio, divide the long-term debt of an entity by the aggregate amount of its common stock and preferred stock.

Table 4.4*Long term debts to total equity ratio*

Year	HBL	NSBI	NBB	EBL	NCC	MBL
2011	0.4555	0.2756	0.1075	0.6407	0.3263	0.3997
2012	1.4321	0.4769	0.0891	0.6448	0.0971	0.0615
2013	0.5247	0.4926	0.1072	0.6613	0.4308	0.1298
2014	0.4655	0.4529	0.2570	0.5277	0.1180	2.0760
2015	0.3312	0.3548	0.1551	1.3327	0.1073	1.1678
2016	0.4197	0.9221	0.1276	1.6129	0.0862	0.3414
2017	0.2280	0.7490	0.2652	0.9419	1.3588	0.3388
2018	0.4174	0.4305	0.1412	0.8159	1.2487	0.3175
2019	0.4857	0.4405	0.3280	1.2933	0.8057	0.7841
2020	0.7409	0.4853	0.7782	1.2255	0.8286	0.7627
Mean	0.5501	0.5080	0.2356	0.9697	0.5408	0.6379
SD	0.3369	0.1893	0.2070	0.3718	0.4889	0.6067

Source: Annual report from 2011 to 2020

Table 4.4 shows the long-term debts to equity ratio of selected sample banks from the year 2011 to 2020. The higher long-term debts to equity ratio are EBL i.e., 0.9697 or 96.97% and lower is NBB i.e., 0.2356 or 23.56%. The SD of MBL is higher i.e., 0.6067 than other banks and NSBI is lower i.e., 0.3369 or 33.69%.

4.1.5 Loan and advance to total assets ratio

This ratio shows the aggressiveness of bank in lending funds which ultimately results in better profitability. This ratio is arrived at by dividing Advances by Assets. It indicates how much proportion or percentage of Total Assets is utilized in the form of Advances. The aggressive lending policy of commercial bank is one of the reasons for the better profitability of the banks (Chishty, 2011).

Table 4.5*Loan and advance to total assets ratio*

Year	HBL	NSBI	NBB	EBL	NCC	MBL
2011	0.6754	0.4636	0.6036	0.6717	0.6661	0.7349
2012	0.6432	0.4503	0.5122	0.6434	0.6692	0.6406
2013	0.6496	0.4443	0.5876	0.6601	0.6198	0.6986
2014	0.6159	0.5776	0.6038	0.6753	0.6845	0.7134
2015	0.6458	0.6744	0.6416	0.5494	0.6958	0.7027
2016	0.6784	0.5983	0.6849	0.5967	0.7112	0.7339
2017	0.7123	0.6318	0.6479	0.6634	0.7525	0.7424
2018	0.6680	0.7337	0.6885	0.6504	0.7257	0.7460
2019	0.7320	0.7492	0.7133	0.6586	0.7127	0.7177
2020	0.6846	0.7132	0.6767	0.6435	0.7000	0.7431
Mean	0.6705	0.6036	0.6360	0.6412	0.6938	0.7173
SD	0.0343	0.1179	0.0603	0.0391	0.0367	0.0319

Source: Annual report from 2011 to 2020

Table 4.5 shows the loan and advance to total assets ratio of selected sample banks from the year 2011 to 2020. The higher loan and advance to total assets ratio are MBL i.e., 0.7173 or 71.73% and lower is NSBI i.e., 0.6036 or 60.36%. The SD of NSBI is higher i.e., 0.1179 or 11.79% than other banks and MBL is lower i.e., 0.0319 or 3.19%.

4.1.6 Government security to total investment

The percentage of investment in government securities is a very important indicator which shows the risk-taking ability of a bank. It indicates a bank's strategy as being High Profit – High Risk or Low profit- low risk. Government securities are generally considered as the safest debt instrument, which as a result carries the lowest return. Since government securities are risk free, the higher the G-Sec to investment ratio, the lower the risk involved in a bank's investments.

Table 4.6
Government security to total investment

Year	HBL	NSBI	NBB	EBL	NCC	MBL
2011	0.7306	0.2948	0.8888	0.9227	0.8200	0.8787
2012	0.9133	0.1864	0.9628	0.7718	0.8500	0.8496
2013	0.7610	0.1415	0.9673	0.7544	0.8900	0.8810
2014	0.6140	0.3372	0.8348	0.3912	0.8900	0.8581
2015	0.5606	0.2744	0.2040	0.5686	0.9000	0.5899
2016	0.4875	0.3032	0.3702	0.5694	0.8900	0.7361
2017	0.4443	0.3632	0.4678	0.7136	0.7600	0.4837
2018	0.6640	0.8519	0.3104	0.9471	0.8900	0.7627
2019	0.2683	0.4557	0.2459	0.9599	0.8900	0.8445
2020	0.2898	0.4837	0.6313	0.9630	0.8700	0.7883
Mean	0.5733	0.3692	0.5883	0.7562	0.8650	0.7673
SD	0.2063	0.1997	0.3057	0.1983	0.0443	0.1332

Source: Annual report from 2011 to 2020

Table 4.6 shows the Government Security to Total Investment ratio of the selected sample banks from year 2011 to 2020. The higher Government Security to Total Investment ratio is NCC i.e., 0.8650 and lower is NSBI i.e., 0.3692. The higher SD of Government Security to Total Investment is NBB i.e., 0.3057 and lower is NCC i.e., 0.0433.

4.1.7 Non-performing loan ratio

A non-performing loan (NPL) is a loan in which the borrower is in default and has not paid the monthly principal and interest repayments for a specified period. Non-performing loans occur when borrowers run out of money to make repayments or get into situations that make it difficult for them to continue making repayments towards the loan (Kenton, 2020). Lower Non-performing ratio is good sign for banks performance.

Table 4.7*Non-performing loan ratio*

Year	HBL	NSBI	NBB	EBL	NCC	MBL
2011	0.0422	0.0110	0.0180	0.0343	0.0382	0.0417
2012	0.0209	0.0054	0.0429	0.0840	0.0273	0.0284
2013	0.0289	0.0372	0.0133	0.0625	0.0280	0.0284
2014	0.0196	0.0255	0.0135	0.0971	0.0275	0.0178
2015	0.0322	0.0185	0.0133	0.0663	0.0193	0.0064
2016	0.0123	0.0139	0.0071	0.0384	0.0091	0.0055
2017	0.0085	0.0101	0.0076	0.0254	0.0077	0.0038
2018	0.0144	0.0247	0.0127	0.0206	0.0397	0.0044
2019	0.0116	0.0293	0.0126	0.0167	0.0285	0.0031
2020	0.0104	0.0208	0.0109	0.0223	0.0293	0.0053
Mean	0.0201	0.0196	0.0152	0.0468	0.0255	0.0145
SD	0.0111	0.0098	0.0102	0.0287	0.0107	0.0138

Source: Annual report from 2011 to 2020

Table 4.7 shows the non-performing loan ratio of selected sample banks from year 2011 to 2020. The higher non-performing loan ratio is EBL i.e., 0.0468 or 4.68% and lower is MBL i.e., 0.0145 or 1.45%. The higher SD of EBL is 0.0287 or 2.87% and lower SD of NSBI, is 0.0098 or 0.98%.

4.1.8 Return on assets ratio

Return on total assets (ROA) is a ratio that measures a company's earnings before interest and taxes (EBIT) relative to its total net assets. It is defined as the ratio between net income and total average assets, or the amount of financial and operational income a company receives in a financial year as compared to the average of that company's total assets. The ratio is considered to be an indicator of how effectively a company is using its assets to generate earnings. EBIT is used instead of net profit to keep the metric focused on operating earnings without the influence of tax or financing differences when compared to similar companies (Kenton, 2020). Higher ROA shows the best performance for the bank.

Table 4.8*Return on assets ratio*

Year	HBL	NSBI	NBB	EBL	NCC	MBL
2011	0.0191	0.0101	-0.0099	0.0201	0.0167	0.0046
2012	0.0176	0.0083	0.0401	0.0195	0.0096	0.0157
2013	0.0154	0.0119	0.0357	0.0224	0.0143	0.0049
2014	0.0130	0.0151	0.0240	0.0220	0.0155	0.0112
2015	0.0134	0.0180	0.0206	0.0159	0.0116	0.0126
2016	0.0194	0.0170	0.0257	0.0152	0.0206	0.0151
2017	0.0203	0.0154	0.0211	0.0172	0.0073	0.0189
2018	0.0161	0.0197	0.0186	0.0178	0.0183	0.0147
2019	0.0208	0.0194	0.0208	0.0180	0.0115	0.0161
2020	0.0166	0.0117	0.0139	0.0136	0.0114	0.0102
Mean	0.0172	0.0147	0.0211	0.0182	0.0137	0.0124
SD	0.0027	0.0040	0.0134	0.0029	0.0041	0.0047

Source: Annual report from 2011 to 2020

Table 4.8 shows the return on assets ratio of selected sample banks from year 2011 to 2020. The higher return on assets ratio is NBB i.e., 0.0211 or 2.11% and lower is MBL i.e., 0.0124 or 1.24%. The higher SD of MBL is 0.0047 and lower SD of HBL is 0.0027 or 0.27%.

4.1.9 Return on equity ratio

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 the profitability of a corporation in relation to stockholders' equity (Frenando, 2020). Higher ROE shows the better performance of the banks.

Table 4.9
Return on equity ratio

Year	HBL	NSBI	NBB	EBL	NCC	MBL
2011	0.2235	0.1613	-0.0614	0.2991	0.1266	0.0501
2012	0.2070	0.1502	0.2740	0.2611	0.0924	0.1443
2013	0.1781	0.2031	0.2179	0.3047	0.1567	0.0531
2014	0.1577	0.2035	0.1806	0.2840	0.1493	0.1405
2015	0.1598	0.1887	0.1664	0.2285	0.1176	0.1544
2016	0.2194	0.1925	0.1984	0.2032	0.1929	0.1682
2017	0.1861	0.1480	0.1150	0.1738	0.0759	0.1503
2018	0.1521	0.1581	0.0975	0.1600	0.1581	0.1207
2019	0.1728	0.1620	0.1279	0.1733	0.0850	0.1510
2020	0.1471	0.1044	0.0951	0.1350	0.0842	0.1092
Mean	0.1804	0.1672	0.1411	0.2223	0.1239	0.1242
SD	0.0280	0.0306	0.0912	0.0621	0.0396	0.0418

Source: Annual report from 2011 to 2020

Table 4.9 shows the return on equity ratio of selected sample banks from year 2011 to 2020. The higher return on equity ratio is EBL i.e., 0.2223 or 22.23% and lower is NCC i.e., 0.1242 or 12.42%. The higher SD of NBB i.e., 0.0621 or 6.21% and lower SD of HB is 0.0280 or nearly 2.80%.

4.1.10 Correlation analysis

The degree of association is measured by a correlation coefficient, denoted by r . It is sometimes called Pearson's correlation coefficient after its originator and is a measure of linear association. If a curved line is needed to express the relationship, other and more complicated measures of the correlation must be used.

The correlation coefficient is measured on a scale that varies from + 1 through 0 to - 1. Complete correlation between two variables is expressed by either + 1 or -1. When one variable increase as the other increases the correlation is positive; when one decreases as the other increases it is negative. Complete absence of correlation is represented by 0. (McLeod,2020). The positive and significant relationship between capital adequacy and bank's profitability suggests that banks with more equity capital are perceived to have more safety and such advantage can be translated into higher profitability.

Table 4.10*Correlations between ROA and independent variables*

	ROA	NPLR	GSTIR	CAR	D/E	Loan to Assets
Pearson Correlation	1	-0.0618	-0.2396	-0.0565	-0.0439	0.1221
Sig. (2-tailed)		0.6390	0.0452	0.6682	0.0389	0.3528
N	60	60	60	60	60	60
Results		Insig	Sig.	Insig.	Sig.	Insig.

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

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

The ROA is positively and negatively correlated with the independent variables. The correlation coefficient between ROA and Loan to assets is positively correlated and NPLR, GSTIR, D/E and CAR is negatively correlated. Positive correlation shows the increasing the ratio increasing the ROA and Negative correlation shows increase in ratio decreasing the ROA. The p value of GSTIR, D-E statically significant and NPLR, CAR and Loan and to assets ratio is insignificantly statistics. The positive and significant relationship between capital adequacy and bank's profitability suggests that banks with more equity capital are perceived to have more safety and such advantage can be translated into higher profitability.

Table 4.11*Correlation between ROE and independent variables*

	ROE	NPLR	GSTIR	CAR	D/E	Loan to Assets
Pearson Correlation	1	-0.210	0.428**	-0.274	-0.128	0.445**
Sig. (2-tailed)		0.108	0.001	0.034	0.328	0.000
N	60	60	60	60	60	60
Results		Insig	Sig.	Sig.	Insig.	Sig.

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

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

The ROE is positively and negatively correlated with the independent variables. The correlation coefficient between ROE and NPLR, CAR and D-E is negatively correlated and GSTIR and Loan to Assets Ratio is positively correlated. Positive correlation shows the increasing the ratio increasing the ROE and Negative

correlation shows increase in ratio decreasing the ROE. The p value of GSTIR, CAR and Loan to Assets ratio statically significant except D/E, and NPLR. The positive and significant relationship between capital adequacy and bank's profitability suggests that banks with more equity capital are perceived to have more safety and such advantage can be translated into higher profitability.

4.1.11 Regression analysis

As stated in research design and methodology section, the study used four model to estimate the qualitative effect of Capital Adequacy ratio, Debt-Equity ratio, Advance to Assets ratio, Government Securities to total investment ratio & Non-performing loan ratio on the profitability of Nepalese commercial banks measured by ROA and ROE. The model 1 shows the relationship between ROA and explanatory variables. The model 2 shows the relationship between ROE and Explanatory variables.

A. Regression model I

Table 4.12

ROA and independent variables

Model	Unstandardize d coefficients		Standardize d Coefficients	T	Sig(p)	Collinearity Statistics		Resu lts
	B	Std. Error				Beta	Toleranc e	
Constant	0.041	0.013		3.29	0.002			
CAR	-0.025	0.060	-0.059	-0.42	0.678	0.777	1.287	Insig.
D/E	-0.001	0.000	-0.447	-2.95	0.005	0.680	1.471	Sig.
AAR	-0.018	0.015	-0.180	-1.18	0.043	0.667	1.500	Sig.
GSTIR	-0.004	0.004	-0.139	-0.97	0.336	0.763	1.310	Insig.
NPLR	0.093	0.051	0.250	1.813	0.045	0.820	1.219	Sig.
		$R^2 = 0.158^a$	$Adj.R^2 = 0.080$	$F = 2.022$	$F(sig) = 0.090^b$			

Table 4.12 shows the coefficient of regression model I (ROA and independent variables), The coefficient of multiple determination R^2 is 0.158 which is 15.8%. It

indicates that 15.8% of the total variations in average ROA is explained by regression equation and remaining 84.2% is due to the effects of other factor. Value of F is 2.022 and F(sig) is 0.090 so the variable are significantly statics.

The regression line for ROA, the constant is 0.041, CAR is -0.025, D/E is 0.001, AAR is -0.018, GSTIR is -0.004 and NPLR is 0.093 times responsible for the change a point of ROA. All of the independent variable is less than p-value except CAR and GSTIR ratio, so CAR and GSTIR ratio variable is insignificantly statics at 0.05 level of Significant remaining are significant. All of the collinearity statistics of variables of VIF is less than 10 so it is significantly statistics.

The Regression equation is:

$$Y_{ROA} = 0.041 - 0.025 \text{ CAR} - 0.001 \text{ D/E} - 0.018 \text{ AAR} - 0.004 \text{ GSTIR} + 0.093 \text{ NPLR}$$

B. Regression model II

Table 4.13

ROE and independent variables

Model	Unstandardized coefficients		Standardized Coefficients	T	Sig(p)	Collinearity Statistics		Results
	B	Std. Error	Beta			Tolerance	VIF	
Constant	0.182	0.102		1.77	0.082			
CAR	-0.510	0.488	-0.134	-1.04	0.530	0.777	1.287	Insig.
D/E	0.006	0.003	0.251	1.84	0.072	0.680	1.471	Insig.
AAR	-0.014	0.122	-0.016	-0.11	0.908	0.667	1.500	Insig.
GSTIR	-0.041	0.032	-0.166	-1.29	0.002	0.763	1.310	Sig.
NPLR	1.171	0.416	0.349	2.814	0.007	0.820	1.219	Sig.
		$R^2 = 0.316^a$	Adj.R ² = 0.253	F = 5.000	F(sig) = 0.001 ^b			

Table 4.13 shows the coefficient of regression model II (ROE and independent variables), the coefficient of multiple determination R^2 is 0.316 which is 31.6%. It indicates that 31.6% of the total variations in average ROE is explained by regression equation and remaining 68.4% is due to the effects of other factor. Value of F is 5.00 and F(sig) is 0.001 so the variable are significantly statics.

The regression line for ROE, the constant is 0.182, CAR is -0.510, D/E is 0.006, AAR is -0.014, GSTIR is -0.041 and NPLR is 0.1.171 times responsible for the change a point of ROE. All of the independent variable is less than p-value except GSTIR and NPLT is insignificantly statics at 0.05 level of Significant remaining are significant. All of the collinearity statistics of variables of VIF is less than 10 so it is significantly statistics.

The Regression equation is:

$$Y_{ROE}=0.182 -0.510 \text{ CAR} +0.006 \text{ D/E} -0.014 \text{ AAR} -0.041 \text{ GSTIR} +1.171 \text{ NPLR}$$

4.2 Major findings

From the above analysis the major findings for the purpose of Capital Adequacy

Analysis of Nepalese Commercial Banks are as follows:

1. The average capital adequacy ratio of NSBI is higher among the sample i.e., 0.1318 or 13.18% and lower is HBL i.e., 0.1186 or 11.86%. The lower SD of among sample bank is NCC which is 0.0124 or 1.24%.
2. The highest Debt-Equity ratio of NSBI i.e., 11.15 is higher than the other banks and lower ratio is NCC i.e., 8.11. The SD of NSBI is higher i.e., 3.78 and lower is NBB i.e., 0.95. So, the fluctuation of Debt-Equity ratio of NCC is less risky due to the lower fluctuation.
3. The higher long-term debts to equity ratio are EBL i.e., 0.9697 or 96.97% and lower is NBB i.e., 0.2356 or 23.56%. The SD of MBL is higher i.e., 0.6067 than other banks and NSBI is lower i.e., 0.3369 or 33.69%.
4. The higher loan and advance to total assets ratio are MBL i.e., 0.7173 or 71.73% and lower is NSBI i.e., 0.6036 or 60.36%. The SD of NSBI is higher i.e., 0.1179 or 11.79% than other banks and MBL is lower i.e., 0.0319 or 3.19%.
5. The higher Government Security to Total Investment ratio is NCC i.e., 0.8650 and lower is NSBI i.e., 0.3692. The higher SD of Government Security to Total Investment is NBB i.e., 0.3057 and lower is NCC i.e., 0.0433.
6. The higher non-performing loan ratio is EBL i.e., 0.0468 or 4.68% and lower is MBL i.e., 0.0145 or 1.45%. The higher SD of EBL is 0.0287 or 2.87% and lower SD of NSBI, is 0.0098 or 0.98%.

7. The higher return on assets ratio is NBB i.e., 0.0211 or 2.11% and lower is MBL i.e., 0.0124 or 1.24%. The higher SD of MBL is 0.0047 and lower SD of HBL is 0.0027 or nearly 0.27%.
8. The higher return on equity ratio is EBL i.e., 0.2223 or 22.23% and lower is NCC i.e., 0.1242 or 12.42%. The higher SD of NBB i.e., 0.0621 or 6.21% and lower SD of HB is 0.0280 or nearly 2.80%.
9. The correlation coefficient between ROA and Loan to assets is positively correlated and NPLR, GSTIR, D/E and CAR is negatively correlated. It is supported by Alkadmani (2015) it finds that banks profitability is negatively related with CAR. Positive correlation shows the increasing the ratio increasing the ROA and Negative correlation shows increase in ratio decreasing the ROA. The p value of GSTIR, D-E statically significant and NPLR, CAR and Loan and to assets ratio is insignificantly statistics.
10. The correlation coefficient between ROE and NPLR, CAR and D-E is negatively correlated and GSTIR and Loan to Assets Ratio is positively correlated. Positive correlation shows the increasing the ratio increasing the ROE and Negative correlation shows increase in ratio decreasing the ROE. (Thakur, 2019) finds that banks profitability is negatively related with CAR and there is negative but statistically insignificant relationship of CAR with ROA and ROE. Based on the finding from regression analysis, CAR indicates that there is negative and statistically insignificant relationship between Capital Adequacy ratio and profitability ratio of the selected Nepalese commercial bank over the ten year periods. The p value of GSTIR, CAR and Loan to Assets ratio statically significant except D/E, and NPLR.
11. The coefficient of multiple determination shows 15.8% of the total variations in average ROA is explained by regression equation and remaining 84.2% is due to the effects of other factor. Value of F is 2.022 and F. (sig) is 0.090 so the variable is significantly statics. The regression line for ROA, the constant is 0.041, CAR is -0.025, D/E is 0.001, AAR is -0.018, GSTIR is -0.004 and NPLR is 0.093 times responsible for the change a point of ROA. All of the independent variable is less than p-value except CAR and GSTIR ratio, so CAR and GSTIR ratio variable is insignificantly statics at 0.05 level of significant remaining are significant. Kurawa and Garva, (2014) found

insignificant relationship between capital adequacy variables and Profitability performance of banks. However Jha and Hui (2012) have found negative association between Capital Adequacy ratio and ROA. In this study the collinearity statistics of variables of VIF is less than 10 so it is significantly statistics. It is supported by Abba, (2013) collinearity statistics of variables is significantly statistics with CAR, NPLR and D/E ratio with ROA.

12. The coefficient of multiple determinations R^2 is 31.6% shows the total variations in average ROE is explained by regression equation and remaining 68.4% is due to the effects of other factor. Value of F is 5.00 and F(sig) is 0.001 so the variable are significantly statics. The regression line for ROE, the constant is 0.182, CAR is -0.510, D/E is 0.006, AAR is -0.014, GSTIR is -0.041 and NPLR is 0.1.171 times responsible for the change a point of ROE. All of the independent variable is less than p-value except GSTIR and NPLR is insignificantly statics at 0.05 level of Significant remaining are significant. (Thakur, 2019) finds that The P value of CAR is 0.962 which is higher than 0.05 and beta is -0.005. It indicates that there is negative but statistically insignificant relationship of CAR with ROE. In This study the collinearity statistics of variables of VIF is less than 10 so it is significantly statistics.

4.3 Discussion

This research mainly based on the purpose to accesses capital adequacy position, impact of capital adequacy, non-performing loan and government security on profitability. And try to analysis of relation between ROA and ROE with capital adequacy, loan and advance, NPLR, government security and debts equity ratio.

This research analyzed under descriptive research design, and describe variables characteristic as well analyze facts. 6 commercial banks are taken as sample using random sampling method for analysis purpose under the impact of capital adequacy on profitability. Data are collected through annual statement of selected sample bank, Nepal Rastra Bank Report, Unified Directives as well as others various publication. Financial ratio, Mean, Standard Deviation, Correlation coefficient and Multiple Regression are use for analysis tools and summarized the conclusion.

This research specially conducts for the study of capital adequacy of Nepalese commercial banks. The special attention is given to the capital adequacy and its impact on the profitability under this study. The study also compares the profitability

performance measured in terms of Return on Assets (ROA) and Return on Equity (ROE) of selected commercial banks. This study investigates the impact of capital adequacy indicators (Debt-Equity, loans and advances, non-performing loans, capital adequacy ratio and government securities) on the profitability of commercial banks.

The higher capital adequacy ratio is 13.78% and lower capital adequacy ratio is 11.86%. Which is above then the encoded in Basel III supervision. The CAR is negatively correlated with the ROA and ROE. Higher the capital requirement directly influences the bank's profitability.

The correlation coefficient between ROA and Loan to assets is positively correlated and NPLR, GSTIR, D/E and CAR is negatively correlated. The result shows capital adequacy is negatively impacts on profitability. The coefficient of multiple determination shows 15.8% of the total variations in average ROA is explained by regression equation and remaining 84.2% is due to the effects of other factor. Value of F is 2.022 and F(sig) is 0.090 so the variable are significantly statics. The regression line for ROA, the constant is 0.041, CAR is -0.025, D/E is 0.001, AAR is -0.018, GSTIR is -0.004 and NPLR is 0.093 times responsible for the change a point of ROA. All of the independent variable is less than p-value except CAR and GSTIR ratio, so CAR and GSTIR ratio variable is insignificantly statics at 0.05 level of Significant remaining are significant. All of the collinearity statistics of variables of VIF is less than 10 so it is significantly statistics. It is supported by Abba, (2013) collinearity statistics of variables is significantly statistics with CAR, NPLR and D/E ratio with ROA.

The correlation coefficient between ROE and NPLR, CAR, GSTIR and D-E is negatively correlated and Loan to Assets Ratio is positively correlated. The result shows capital adequacy is negatively impacts on profitability. (Thakur, 2019) finds that banks profitability is negatively related with CAR and there is negative but statistically insignificant relationship of CAR with ROA and ROE. Based on the finding from regression analysis, CAR indicates that there is negative and statistically insignificant relationship between Capital Adequacy ratio and profitability ratio of the selected Nepalese commercial bank over the ten year periods. The p value of GSTIR, CAR and Loan to Assets ratio statically significant except D/E, and NPLR.

The coefficient of multiple determinations R^2 is 31.6% shows the total variations in average ROE is explained by regression equation and remaining 68.4% is due to the effects of other factor. Value of F is 5.00 and F(sig) is 0.001 so the variable are significantly statics. The regression line for ROE, the constant is 0.182, CAR is -0.510, D/E is 0.006, AAR is -0.014, GSTIR is -0.041 and NPLR is 0.1.171 times responsible for the change a point of ROE. (Aspal and Nazeen, 2014) also finds that the regression results have revealed that Loans, Management Efficiency, Liquidity and Sensitivity have statistically significant influence on the capital adequacy of private sector banks. However, the independent variable asset quality has negligible influence on capital adequacy of Indian private sector banks. In this research all of the independent variable is less than p-value except GSTIR and NPLT is insignificantly statics at 0.05 level of Significant remaining are significant. All of the collinearity statistics of variables of VIF is less than 10 so it is significantly statistics.

CHAPTER 5

SUMMARY AND CONCLUSION

5.1 Summary

Capital adequacy is the statutory minimum reserves of capital which a bank or financial institution must have available. In order to create a sound and healthy financial system, wise and efficient regulation is important. The financial sector is primarily the means for transferring and transforming the saving of an economy into its investment. Financial institutions are those institutions that hold financial assets such as loan and advances, investment etc. and that obtain the fund for these investments by issuing liabilities such as shares, collecting deposit etc. Risks are involved when the financial system channels resources from savers to investors. Therefore, the well-functioning financial sector tries to make the most productive use of savings and monitor closely to ensure that the productivity is ascertained.

This research mainly based on the purpose to access capital adequacy position, impact of capital adequacy, non-performing loan and government security on profitability. And try to analysis of relation between ROA and ROE with capital adequacy, loan and advance, NPLR, government security and debts equity ratio. This research analyzed under descriptive research design, and describe variables characteristic as well analyze facts. 6 commercial banks are taken as sample using random sampling method for analysis purpose under the impact of capital adequacy on profitability. Data are collected through annual statement of selected sample bank, Nepal Rastra Bank Report, Unified Directives as well as others various publication. Financial ratio, Mean, Standard Deviation, Correlation coefficient and Multiple Regression are used for analysis tools and summarized the conclusion.

This research specially conducts for the study of capital adequacy of Nepalese commercial banks. The special attention is given to the capital adequacy and its impact on the profitability under this study. The study also compares the profitability performance measured in terms of Return on Assets (ROA) and Return on Equity (ROE) of selected commercial banks. This study investigates the impact of capital adequacy indicators (Debt-Equity, loans and advances, non-performing loans, capital adequacy ratio and government securities) on the profitability of commercial banks.

The higher capital adequacy ratio is 13.78% and lower capital adequacy ratio is 11.86%. Which is above then the encoded in Basel III supervision. The CAR is positively correlated with the ROA and negatively correlated with the ROE. Higher the capital requirement directly influences the bank's profitability so the ROE is negatively correlated with the capital adequacy ratio.

The correlation coefficient between ROA and Loan and Advance is positively correlated and NPLR, GSTIR, D/E and CAR is negatively correlated. The correlation coefficient between ROE and NPLR, CAR and D-E is negatively correlated and NPLR, CAR and Loan to Assets Ratio is positively correlated. The findings show CAR is negatively impacts on profitability of bank so, bank necessary to maintains its capital adequacy in optimal rate under the NRB guidelines.

The variable are contribute to effect on ROE is 21.3%. The coefficient of multiple determination R^2 is 0.316 which is 31.6%. It indicates that 31.6% of the total variations in average ROE is explained by regression equation and remaining 68.4% is due to the effects of other factor. Value of F is 5.000 and F(sig) is 0.001 so the variable are significantly statics. The regression line for ROE, the constant is 0.182, CAR is -0.510, D/E is 0.066, AAR is -0.014, GSTIR is -0.041 and NPLR is 1.171 times responsible for the change a point of ROE. The line shows CAR negative impact on ROE, it donate when increase in CAR, decreasing in ROE. All of the independent variable is less than p-value except GSTIR and NPLT is insignificantly statics at 0.05 level of Significant remaining are significant. All of the variable's Collinearity Statistics of Tolerance is less than 1 and VIF is less than 4 so it is significantly statistics.

The coefficient of multiple determination R^2 is 15.8% indicates that the total variations in average ROA is explained by regression equation and remaining 84.2% is due to the effects of other factor. Value of F is 2.022 and F(sig) is 0.090 so the variable are significantly statics. The regression line for ROA, the constant is 0.041, CAR is -0.025, D/E is 0.001, AAR is -0.018, GSTIR is -0.004 and NPLR is 0.093 times responsible for the change a point of ROA. The line shows CAR negative impact on ROA, it donate when increase in CAR, decreasing in ROA. All of the independent variable is less than p-value except CAR and GSTIR ratio, so CAR and GSTIR ratio variable is insignificantly statics at 0.05 level of Significant remaining are

insignificant. All of the collinearity statistics of variables of VIF is less than 10 so it is significantly statistics. This research is useful for decision making and policy making both bank and financial sector as well as investor. This research also useful further researcher.

5.2 Conclusion

Every commercial bank has to meet the requirement of capital adequacy as stated by the directives. Capital adequacy is the portion of capital fund in regard of risk-weighted assets that commercial banks hold. Capital adequacy is required to the money of the depositors as the banks are playing with the money they collected from the depositors.

It is concluded that Capital adequacy ratio, have insignificant impact on ROA at 0.05 level with negative relationship; which means any increase/decrease on the value of these variables leads to an decrease/increase on profitability performance of Commercial banks (ROA). And Debt-Equity ratio and Advances to Assets ratio has significant impact on ROA at 0.05 level with positive relationship; which means any increase/decrease on the value of variables leads to an increase/decrease on profitability performance of commercial banks. The government securities to total investment have insignificant impact on ROA at 0.05 level with a positive relationship; which means any increase/decrease on the value of these variables leads to an increase/decrease on profitability performance of Commercial banks (ROA). The Non-performing loan has significant impact on ROA at 0.05 level with a negative relationship; which means any increase/decrease on the value of variables leads to a decrease/increase on the profitability performance of the commercial banks (ROA).

The ROA is impacted by 0.041 with constant, CAR by -0.025, D/E by 0.001, AAR by -0.018, GSTIR by -0.004 and NPLR by 0.093 times responsible for the change a point of ROA. The estimation line of ROE, impacted from constant is 0.182, CAR is -0.510, D/E is 0.066, AAR is -0.014, GSTIR is -0.041 and NPLR is 1.171 times responsible for the change a point of ROE.

NRB regulators must track the CAR of banks to determine how effectively it can sustain a reasonable amount of loss. NRB must also determine if a bank's current CAR is compliant with statutory capital regulations. The CAR is important to shareholders because it is an important measure of the financial soundness of a bank.

5.3 Implication

Based on the findings from the empirical analysis, the study offers the following implications through which they can work to improve banks management practice and to have effective role in increasing profitability of banks. It also includes recommendations.

1. This study focused on capital adequacy, debt- equity, advances to total assets, government securities to total investment and nonperforming loan as the independent variables and ROE and ROA as the dependent variables for evaluating of banks' profitability. But the same study could be developed by including more independent and other dependent variables to the regression model and increasing the sample size.
2. The current study fully employed secondary data obtained from financial reports of banks or through Nepal Rastra Bank which can have potential bias. Thus, future research is recommended to substantial and/or triangulate secondary by primary data.
3. This study can be replicated in other industries to know what the capital adequacy indicators that affect the profitability are. Thus, this study is in other sectors of the economy such as manufacturing sector to determine the firm specific factors that influence their profitability performance.
4. The study also suggests that another study is done in the banking industry by covering a longer period of time in order to establish trends to determine what factors may influence the bank profitability performance.
5. This research could use for the creditors and depositors, in order to investigate the situation of the commercial banks and for taking the best alternative.

Thus, it can concluded the relationship of independent variables shows very low impact on the profitability of commercial banks of Nepal. It is due to not considering the macro economic variables like GDP, inflation etc., under this study. These are the powerful indicators than the micro variables.

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APPENDIX

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Banks	Year	Capital Fund	RWA	Total Debt	Shareholder's equity	Loans and Advances	Total Assets
HBL	2011	4711243495	44124521593	42740725611	3995478273	31566976755	46736203884
	2012	5283900074	47934898606	54364427882	4632010133	34965433862	54364427882
	2013	6414437452	55520649287	55853257230	5299708123	39723805566	61152965353
	2014	7155579476	63729135353	67506434682	6083411016	45320359244	73589845698
	2015	8041967083	72183721696	75842650988	6958899626	53476229873	82801550614
	2016	9815198969	90507189794	91039239952	8823768128	67745978944	99863008080
	2017	12613817027	103796762776	95550283213	11705196753	76394259228	107255479966
	2018	14349498457	115140220166	104134155614	12328145766	77798235713	116462301380
	2019	15871587201	125984230370	117156343693	15994798380	97470071077	133151142073
	2020	20523080887	137875246204	138295665371	17589253612	106726542430	155884918983
NSBI	2011	3163395582	27460689891	43208940825	2879293150	21365771129	46088233975
	2012	3899143363	34099797190	54862248857	3197458863	26142094172	58059707720
	2013	4888637991	38686812787	60997195405	3798957417	28788146625	64796152822
	2014	5892028000	43064713000	56547173685	4535798670	35279583339	61082972355
	2015	7063688000	50363030000	53631375932	5645914521	39979173045	59277290453
	2016	8169663000	60561647000	71594882833	6920462451	46975534686	78515345284
	2017	11692078000	74408808000	89353810499	10397954975	63024815422	99751765474
	2018	13728773689	90638088761	89737566102	12801103793	75235861969	102538669895
	2019	14804827617	101751832344	104159776498	14154449362	88644724933	118314225860
	2020	17393697673	111826323256	117620062647	14781851324	94435193015	132401913971
NBBL	2011	1807570000	17735559000	11753585189	2251174904	8452738384	14004760093
	2012	2322962000	19580494000	17215789968	2953966676	10330076346	20169756644
	2013	2664288000	22951462000	18228385456	3573416034	12810147328	21801801490
	2014	3612011000	31571606000	26763374577	4110238338	18640712035	30873612915
	2015	4848885000	42870595000	34591348865	4892223335	25330818192	39483572200
	2016	6042450000	55139110000	40644919583	6039333849	31975197053	46684253432
	2017	10715863000	70981671000	46481233113	10438618663	36879932270	56919851776
	2018	11628900000	82913680000	49639587610	11737548343	42259092468	61377135953
	2019	14202230000	104232730000	63837548511	12416944818	54392954044	76254493329
	2020	15332690000	112809890000	76626318202	13096674359	60718452906	89722992561
EBL	2011	3605840000	34583547000	43122666206	3113546056	31057691462	46236212262
	2012	4574751000	41525347000	52699583001	4177302887	35910974673	55813129057
	2013	5777682000	49834045000	60913305785	4827844672	43393187065	65741150457
	2014	6328487000	56780162000	64987935385	5457147460	47572024207	70445082845
	2015	8457023000	63451114000	92276916636	6890377025	54482465225	99167293661
	2016	10094804000	79711762000	105370958290	8514088112	67955107021	113885046402
	2017	13063702000	88929577000	104965863695	11544581880	77287764142	116510445575

	2018	15616670000	110005455000	128676644028	16134507415	94182247596	144811151443
	2019	16955638000	123391104000	152452470050	17625063404	112007182134	170077533454
	2020	17780357000	132882211000	166385833244	18637356460	119069238189	185023189704
NCC	2011	1668808245	12375678828	11520614564	1744241233	8835193868	13264855797
	2012	1901134640	16145983075	16672111118	1922581891	12443108457	18594693009
	2013	2297805464	19540318034	22626583338	2264167709	15426488066	24890751047
	2014	2562362682	22270800589	22566966815	2626879676	17266570313	25223846491
	2015	3019711175	26754959470	26978719722	2961066825	20832232058	29939786547
	2016	3927019409	32936444174	30679875877	3668907525	24429639415	34348783402
	2017	7299258792	68104525365	62260105686	6665632000	51866770489	68925737686
	2018	8000958754	71554586985	64974974810	8486492525	53313197195	73461467335
	2019	11887310000	83138380000	76710789079	12008054730	63233501076	88718843809
	2020	13215590000	95501480000	83721155091	13161002598	67819453052	96882157689
MBL	2011	1900504000	17616652000	17823440203	1782433898	14408748683	19605874101
	2012	2797454000	18599024000	21709176661	2648076726	15602700843	24357253387
	2013	2923876000	23317869000	27499527519	2796675926	21164910179	30296203445
	2014	3456483000	32528811000	37488248924	3235708172	29053242779	40723957096
	2015	4351915000	35544370000	44762519393	3990975669	34261302841	48753495062
	2016	5726052792	46342575782	54115265078	5340202751	43636186147	59455467829
	2017	9091177000	54053406000	60261975676	8663762010	51167860081	68925737686
	2018	10623725000	69166248000	74430776028	10356871786	63250731379	84787647814
	2019	11308458000	88424136000	94009174826	11236871503	75535900000	105246046329
	2020	14817166000	113844889000	112934866080	11584702840	92529226532	124519568920

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Banks	Year	Government securities	Total Investment	NPL	Total loan	Net profit	Long term debts
HBL	2011	6407362541	8769938671	1391747983	32968270298	893115143	1820098581
	2012	9162223297	10031580497	751164917	35968472801	958638260	6633433973
	2013	9886760481	12992044772	1186189950	41057397533	943697990	2780937743
	2014	12182974423	19842060285	911514998	46449329430	959107241	2831586387
	2015	9593051597	17113389432	1783952501	55428007254	1112285716	2304450803
	2016	9412274304	19306073338	851375948	69100889341	1935907634	3703454103
	2017	7965617300	17929265339	661807697	77640976817	2178234893	2669168958
	2018	11579736432	17439534000	1218340321	84364473893	1875610467	5145364402
	2019	6287884146	23432946000	1098578689	94708968682	2763848475	7769283260
	2020	7733016974	26679555000	1083581602	104043450400	2586722710	13031283681
NSBI	2011	5574842520	18911021520	239299186	21718790731	464564999	793497531
	2012	4560709650	24463451958	143848188	26463671464	480105493	1524984664
	2013	3665248736	25906119814	1086918560	29193903422	771471129	1871465952
	2014	5976242154	17722395654	912370360	35714255755	922984007	2054180079
	2015	2556979750	9319697947	749242520	40471869460	1065436141	2003153978
	2016	5849950000	19291309392	659818140	47542980562	1331881801	6381363109
	2017	7641907531	21043220481	641950710	63752132089	1538850228	7787717522
	2018	8518871826	10000000000	1542526660	62470753226	2023511124	5510238718
	2019	8607710705	18888888900	2144974280	73303828808	2292524396	6235332495
	2020	9136327418	18888888900	1778710460	85459119358	1543348770	7174189830
NBBL	2011	2113799527	2378268973	184137853	10237455129	-138157849	241908465
	2012	3724943187	3868950001	469380135	10943161402	809470949	263086530
	2013	3002468283	3104021310	174491938	13137562587	778645431	383227442
	2014	2521099665	3020117579	258000286	19051313859	742342538	1056458880
	2015	1173753344	5754939170	342556474	25823846471	813976568	758652840
	2016	1665518608	4499286240	231444566	32528325232	1198297230	770685590
	2017	3739687403	7994966840	286332205	37460092611	1200381901	2768039374
	2018	14482883318	46655613311	538291106	42400600452	1144035276	1656774605
	2019	1456925648	5923669567	544597226	43138105000	1587960145	4072841163
	2020	443389071	702308088	60770378	5571921100	1244846676	10191263779
EBL	2011	7145017521	7743928321	108512928	3166184276	931303628	1994751867
	2012	6068876365	7863627165	307492696	3661683153	1090564222	2693482729
	2013	6988309619	9263858419	276198772	4419776294	1471117291	3192841153
	2014	2544736969	6504185769	470404039	4845030460	1549698560	2879799631
	2015	8587725397	15102674197	367164030	5536351883	1574352443	9183126679
	2016	10361766140	18198739944	264422150	6891154332	1730207025	13732073934
	2017	8537962547	11964561347	198904860	7828467857	2006247780	10873971690
	2018	14482883318	15292314230	187716000	9101362301	2581681778	13164938106
	2019	20575139688	21434199007	177258000	10583561305	3054122062	22794317155
	2020	27746976485	28813510026	265715000	11906923819	2516243710	22840358060

NCC	2011	1690305764	2061348493	352613637	9229807501	220883111	569182674
	2012	2618661445	3080778171	351797868	12900601644	177620536	186753648
	2013	3644057043	4094446116	448744580	16013835667	354827828	975315958
	2014	3193870294	3588618308	492273630	17873173181	392111964	310095408
	2015	2557121092	2841245658	413227605	21442486576	348254007	317589859
	2016	3084896712	3466176081	225570704	24891147772	707840700	316320817
	2017	3542935001	4661756580	192346754	24891148000	505867992	35719504672
	2018	7726665478	8681646605	2129000000	53681081096	1341516334	10597424404
	2019	7899400530	8875730933	1805000000	63233501076	1021232240	9675164756
	2020	6527336446	7502685570	1987000000	67819453052	1108473906	10905328195
MBL	2011	1238631768	1409555595	614013949	14731040287	89230030	712476799
	2012	1448865486	1705424659	455950744	16078008760	382129590	162780129
	2013	2127843500	2415155356	614303178	21652440706	148599200	362873071
	2014	2970021929	3461203698	525295941	29541409026	454687791	6717388328
	2015	2642196745	4479142514	222179730	34819452293	616372739	4660755877
	2016	4424383482	6010913137	241496528	44234231644	898222681	1823387808
	2017	2971900000	6144382453	195834545	51866770489	1302483429	2935119469
	2018	4824095023	6325073138	286384389	64365665967	1249688316	3288403387
	2019	6421560000	7603998428	290891000	95000380885	1697088243	8810772682
	2020	9406105853	11932413274	494079000	94061058538	1265150663	8835966214
