CAPITAL ADEQUACY

OF

COMMERCIAL BANKS IN NEPAL

(With reference to Standard Chartered Bank Limited, NIC Asia Bank Limited, Himalayan Bank Limited, Citizens Bank International Limited and Rastriya Banijya Bank Limited)

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RECOMMENDATION

This is to certify that the thesis

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has been prepared and approved by the department in the prescribed format of faculty of management. The thesis is forwarded for examination.

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VIVA-VOCE SHEET

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And found the thesis to be the original work of the student written in accordance with the prescribed format. We recommended the thesis to be accepted as partial fulfillment of the requirement for

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DECLARATION

I hereby declare, this submission of thesis entitled "CAPITAL ADEQUACY OF COMMERCIAL BANKS IN NEPAL (With reference to Standard Chartered Bank Limited, NIC Asia Bank Limited, Himalayan Bank Limited, Citizens Bank International Limited and Rastriya Banijya Bank Limited)"to office of the dean, faculty of management, Tribhuvan University, is my original work and to the best of my knowledge and belief, it contains no material previously published or written by another person nor materials which to a substantial extent has been accepted for the award of any other degree of a university or other institution of higher learning, expect where due acknowledgements.

I also certify that the thesis has been written by me. Any help that I received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the reference section of the thesis.

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Sincerely,
Kristi Shrestha
Public Youth Campus

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ABBREVIATIONS

ALCO	Assets Liability Management Committee
BAFIA	Banks and Financial Institutions Act
BCBS	Basel Committee on Banking Supervision
BIA	Basic Indicator Approach
BIS	Bank for International Settlements
BOANL	Bank of Asia Nepal Ltd.
BS	Bikram Sambat
CAR	Capital Adequacy Ratio
CCB	Capital Conservation Buffer
CCR	Capital to Credit Ratio
CCF	Credit Conversion Factor
CDR	Credit to Deposit Ratio
CRM	Credit Risk Mitigants
CET 1	Common Equity Tier 1
CV	Coefficient of Variation
d.f.	Degree of Freedom
DSM	Dispute Settlement Mechanism
ECA	Export Credit Agencies
EPS	Earning Per Share
FY	Fiscal Year
G-10	Group of Ten
GDP	Gross Domestic Products
GI	Gross Income
HBL	Himalayan Bank Limited
IAS	International Accounting Standards
ICAAP	Internal Capital Adequacy Assessment Process
IRB	Internal Ratings Based
LBL	Laxmi Bank Limited
M.B.S.	Master of Business Studies
MCDBs	Micro Credit Development Banks
MTM	Marked to Market
NABIL	Nabil Bank Limited

NAS	Nepal Accounting Standard
NBA	Non-Banking Assets
NBL	Nepal Bank Limited
NICASIA	NIC ASIA Bank Limited
NICB	Nepal Industrial and Commercial Bank
NIDC	Nepal Industrial Development Corporation
NLA	Net Liquid Assets
NPA	Non-Performing Assets
NPL	Non-Performing Loan and Advances
NRB	Nepal Rastra Bank
PCA	Prompt Corrective Action
PE	Probable Error of Correlation Coefficient
PFE	Potential Future Exposure
PDI	Perpetual Debt Instruments
PNCPS	Perpetual Non-Cumulative Preference Share
PSEs	Public Sector Entities
Rs.	Rupees
RBB	Rastriya Banijya Bank
RBC	Risk Based Capital
RNCPS	Redeemable Cumulative Preference Shares
ROE	Return on Equity
SCBNL	Standard Chartered Bank Nepal Limited
SD	Standard Deviation
SLR	Statutory Liquidity Ratio
SSA	Simplified Standardized Approach
TRWA	Total Risk Weighted Assets
UK	United Kingdom
USA	United States of America.

CHAPTER I
INTRODUCTION

1.1 Background of the Study

Capital Adequacy Ratio (CAR) is also known as Capital to Risk (Weighted) Assets Ratio**,** is the ratio of a bank's capital to its risk. National regulators track a bank's CAR to ensure that it can absorb a reasonable amount of loss and complies with statutory Capital requirements. It is a measure of a bank's capital. It is expressed as a percentage of a bank's risk weighted credit exposures. This ratio is used to protect depositors and promote stability and efficiency of financial systems around the world.

Two types of capital are measured: tier one capital, which can absorb losses without a bank being required to cease trading, and tier two capital, which can absorb losses in the event of a winding-up and so provides a lesser degree of protection to depositors. Capital adequacy is the measure of banks capital. The concept of capital adequacy refers to the requirement that banks hold adequate capital to protect themselves against insolvency. Capital adequacy has become one of the most significant factors for assessing the soundness of banking sector. Raise and channeling of funds are the primary functions of commercial banks. As such, commercial banks collect a large amount of deposits from general public. The depositors think that depositing their money in a bank is safe and relaxing. But, what does happen if the bank does not have enough capital funds to provide buffer against future unexpected losses? Therefore, capital must be sufficient to protect a bank’s depositors and counterparties from the risks like, operational, credit and market risks. Otherwise the banks use all the money of depositors in their own interest and depositors will have to suffer loss.

Capital Adequacy is one of the most fundamental and elusive concepts. It is simply the adequacy and magnitude of arithmetic difference between assets and liabilities, which is also known as net worth or shareholders’ equity. Thus, a bank is solvent if the difference between assets and liabilities is positive and vice versa. Mainelli (2004) emphasizes the importance of Capital and Capital Adequacy by arguing that “capital is pivotal to everything that a bank does, and changing it has wide-ranging implications for bank

management and bank investors." Specifically, he suggests that changing adequacy level of capital requirements has the effect of changing banks' behavior towards risk because capital adequacy levels (i) constrain a key performance measure (return on equity); (ii) influence a bank's ability to lend and spend; and (iii) limit dividends and capital repatriation. Capital, therefore, is the cushion that protects banks from insolvency. But bank failure may occur because of illiquidity even if a bank is solvent.

Benink and Wihlborg (2002) point out the Capital Adequacy is important because capital serves three significant functions: (i) it is a buffer against unexpected losses causing bankruptcy; (ii) equity capital creates incentives for managing risk appropriately from the perspective of the shareholders; and (iii) equity capital of sufficient magnitude signals that lenders to the firm will not be taken advantage of. Under limited liability for shareholders the third function is particularly important from lenders' point of view. Without sufficient capital shareholders have the incentive to invest in excessively risky projects, because the project risk will be borne primarily by lenders.

Capital adequacy ratio is the ratio which determines the bank's capacity to meet the time liabilities and other risks such as credit risk, operational risk etc. In the simplest formulation, a bank's capital is the "cushion" for potential losses, and protects the bank's depositors and other lenders. Banking regulators in most countries define and monitor CAR to protect depositors, thereby maintaining confidence in the banking system. CAR is similar to leverage; in the most basic formulation, but unlike traditional leverage, however, CAR recognizes that assets can have different levels of risk.

Capital Adequacy has become one of the most significant factors for assessing the soundness of the banking sector. Raise and utilization of the fund are the primary functions of the commercial banks. As such, commercial banks collect a large amount of deposits from general public. The depositors think that depositing their money in a bank is safe and relaxing. But, what does happen if the bank does not have enough capital funds to provide a buffer against future, unexpected losses? Therefore, capital must be sufficient to protect a bank's depositors and counter parties from the risk like, credit and market risks. Otherwise the banks will use all the money of depositors in their interest and the depositors will have to suffer. (Shrestha, 2003)

1.2 Statement of the Problem

Given the importance of the Capital Adequacy in the banking sector, it has been necessary to study various aspect, impact and the status of the Capital Adequacy Norms and Standards in context of Nepal. Various questions arise about the subject. So the specific statements of the problems of this thesis are:

- Do the commercial banks of Nepal tend to fulfill the minimum core capital and supplementary capital and also the norms of the capital adequacy?
- What is the relationship between capital, profitability and risk exposure of the banks?
- Is there any relation between the capital requirement and the earnings of the banks?

1.3 Objectives of the Study

The specific objectives of the study are as follows:

a. To examine the capital adequacy of sample commercial banks.
b. To examine the relation of capital fund to the risk taking behaviour (indicated by RWA) of banks.
c. To examine the impact of Capital adequacy norms and standards in profitability of the sample commercial banks.

1.4 Significance of the Study

The study focuses on the capital funds of the commercial banks, which are supposed to be adequate as the NRB Directive no. 1 which is related with capital adequacy norms and Standards for commercial banks. This study revolves around the impact of the capital requirement. The area of the study is mainly focused on the capital adequacy aspect of the five commercial banks of Nepal. The study tends to analyze the effect of the capital adequacy framework of NRB on the commercial bank.

This study focuses on influential factors (precisely seven financial factors) over capital adequacy in Nepalese commercial banks for the period 2014/15–2018/19. The thesis

studies to establish relationship between commercial banks' behavior regarding the deposit collection, loan disbursement for making profit at the same time fulfilling the norm and standards as directed by NRB.

One of essential requirements for banks and financial institutions is adequate and sufficient capital and every banks and financial organizations must keep balance between capital and available risk in its assets in order to guarantee its stability. Thus it has become one of the most important criteria for depository institutions. Capital adequacy regulations and relationship banking have been key policies for the protection of depositors, the facilitation of banking and the stabilization of the nation's financial functions. This study offers overview of capital adequacy background of Nepal's financial services sector and NRB regulation on Capital Management for commercial banks to mitigate risks. The study is helpful to establish a link between the various financial aspects of the banking sectors and the capital regulation standards.

This study is also important to various stakeholders of the banking sectors such as management, depositors, borrowers and investors to make prudent and rational decision related to their field of interest. This study also recommends and advocates the actions that are required to be carried out for the strengthening the capital base for the stability and protection of the depositor's interest.

This study also serves as a reference to the future researchers' reference purposes.

1.5 Limitations of the Study

a) The study is mainly based on the secondary data collected from various sources and primary data could not be included.
b) Not all financial sub-sectors have been covered by the study. Institutions that have been providing micro-finance for rural development have not been covered.
c) The study is concerned with only capital aspect and does not include all the aspect of banking.
d) The study covers only five commercial bank of Nepal and study does not cover other commercial banks of Nepal.

e) The whole study is based on figures of only five years (from FY 2014/15 to 2018/2019) and figures before the FY 2014/15 have not been considered.

1.6 Organisation of the Study

The study is organized into five sections, each section deals with the specific aspects of the study that are as follows:

Chapter I: Introduction

It provides general background, statement of the problem, objective of the study, significance and limitation of the study

Chapter II: Review of Literature

The second presents the theoretical review of the related and pertinent literature available. It establishes a link in a chain of research that is developing and emerging knowledge about concerned field through a discussion on the empirical review and review of the researches work of related studies and research gap.

Chapter III: Research Methodology

The third chapter describes the methodology employed in preparing this study. It depicts research design, sources of information and data, population and sample size, nature of analysis and tools and technique used for the study.

Chapter IV: Presentation and Analysis of the Data

This chapter fulfills the objectives of the study which presents data and its analysis of commercial banks. Qualitative analyses as and when required are possible.

Chapter IV: Presentation and Analysis of the Data

The fifth chapter presents summary, findings and conclusion of the study. The major findings of the study are presented in brief for convenience of the readers and implication of such findings is stated as recommendation. A bibliography and appendices are being attached at the end of the study.

CHAPTER II
REVIEW OF LITERATURE

Review of literature is an essential part of all the studies. Review of literature is the study of past research studies and relevant materials. Various literatures relating to financial sector reforms have been referred to during the course of study. Ample literatures have been drawn from various agencies, particularly the NRB, which governs the operation of commercial banks, finance companies and cooperatives. Laws, by-laws, directives, guidelines, etc. issued by these regulatory authorities in the respective jurisdictions have been amply referred to review the impact of capital adequacy framework for commercial bank in Nepal.

Previous studies have provided mixed evidence regarding the impact of regulatory and supervisory policies on bank performance. Various studies showed empirical evidence of the impact of specific regulatory and supervisory practices on bank development and stability. Their results suggest that there is no statistically significant relationship between capital stringency, official supervisory power and bank performance. However, they found that the regulatory and supervisory practices which work best to promote bank profitability and stability insist on accurate information disclosure, empower private sector monitoring of banks, and foster incentives for private agents to exert corporate control.

Likewise, Basel II documents availed from the BIS website with regards to the banking supervision has also been reviewed. In addition, past researches relating to capital adequacy norms for commercial banks have also been referred, so has different relevant articles that have appeared in different newspapers, journals, magazines and books, among others. A huge amount of literature available in the internet has been used. References to the most relevant documents, including theoretical review and information on the capital adequacy framework, are made in this chapter.

2.1 Theoretical review

Capital adequacy is the amount of capital a bank or other financial institution has to hold as required by its financial regulator. This is usually expressed as a capital adequacy ratio

of equity that must be held as a percentage of risk-weighted assets. These requirements are put into place to ensure that the financial institutions do not take on excess leverage and become insolvent. Capital requirements govern the ratio of equity to debt, recorded on the assets side of a firm's balance sheet.

The capital adequacy ratio (CAR) is a measure of a bank's capital. It is expressed as a percentage of a bank's risk weightedcredit exposures. 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. Two types of capital are measured: tier one capital, which can absorb losses without a bank being required to cease trading, and tier two capital, which can absorb losses in the event of a winding-up and so provides a lesser degree of protection to depositors.

The reason why minimum capital adequacy ratios are critical is to make sure that banks have enough cushion to absorb a reasonable amount of losses before they become insolvent and consequently lose depositors' funds. Capital adequacy ratios ensure the efficiency and stability of a nation's financial system by lowering the risk of banks becoming insolvent. If a bank is declared insolvent, this shakes the confidence in the financial system and unsettles the entire financial market system.

Capital adequacy in the financial sector and for banks in particular is a central issue of prudential regulation. This is so because the banking publics are not in position to judge the safety and soundness of a bank or financial institution due to imperfect information and agency problems associated with the nature of the financial intermediation business. Hence, capital adequacy is aimed at ensuring that the banks are financially sound. Bank's capital may be defined as the value of its net assets (total assets minus total liabilities). Thus capital is the sum of the paid-up share capital and its accumulated capital reserves. Capital is crucial for the protection of bank depositors and for the building and maintenance of public confidence in banks' operations, and its long-term stability and growth. Capital adequacy involves setting minimum capital requirements formarket risk in the books of banks and investment companies. This includes specifying standards, covering risk management and solvency ratio requirement (Girardone and Molyneux, 2006).

Myers and Majluf (2001) revealed that in the absence of periodic adjustments in the capital ratio, banks would never hold more capital than required by the regulators or the market. In practice, however, adjusting the capital ratio may be costly. Equity issues may, in the case of information asymmetries, convey negative information to the market on the bank's economic value.

One of the most important indicators of implementation of good governance practice is capital adequacy ratio (minimum statutory requirement) that portrays long time survival capacity of business. It also reduces the chances of banks becoming insolvent (Yudistira, 2003) It is used to protect depositors and promote the stability and efficiency of financial systems around the world. Bank can provide protection and confer confidence of its depositors and creditors by ensuring bank's capital adequacy to absorb losses and financial short comings. It is used to protect depositors and promote the stability and efficiency of financial systems around the world. Bank can provide protection and confer confidence of its depositors and creditors by ensuring bank's capital adequacy to absorb losses and financial short comings.

Capital adequacy ratios are a measure of the amount of a bank's capital expressed as a percentage of its risk weighted credit exposures. Capital adequacy ratio for banking organizations is an important issue that has received a considerable attention in finance literature. It can be defined as a measure of a bank's risk exposure. Bank's risk is classified into credit risk, market risk, interest risk, operational risk, and exchange rate risk that are included in the calculation of capital adequacy ratio. So regulatory authorized used Capital Adequacy Ratio as an important measure of safety and soundness for banks and depository institutions because capital was viewed as buffer or cushion for absorbing losses (Abdel,1996).

The concept of Capital adequacy appeared in the middle of 1970's because of expansion of lending activities in the bank without any parallel increase in its capital, since capital ratio was measured by Total Capital divided by Total Assets. This led to the evolution of international debt crisis and the failure of one of the biggest American banks: Franklin National Bank (Koehn & Santomero, 1980). These events forced regulatory authorities to

stress more control procedures and to improve new criteria and methods to avoid bank insolvency.

Capital requirement should not be confused with reserve requirements, which govern the liabilities side of a bank's balance sheet- in particular, the proportion of its assets banks must hold in cash or highly-liquid assets. Liquid assets include cash and bank balances, money at call and short notice having placement of up to 90 days and investments in government securities (Ogboi & Unuafe, 2013).

A committee of banking regulation and supervisory practices of the Bank for International Settlement (BIS) which is called Basel Committee, met for the first time in Basel, a city of Switzerland 1n 1987. The committee included representative from G-10 countries. Central banks of G-10 countries approved the adjusted proposal about bank's capital adequacy and a way to measure capital adequacy ratio (CAR) by Total Capital divided by Risk Weighted Assets to be applied the year 1988. Major points of Basel Committee are connecting of bank capital requirements with resulted from a bank's activities, dividing capital into two Tiers: Core Capital and Supplementary Capital, classifying bank's activities into different categories according to its degree of risk.

One of the most trends that arose at the end of 1980s is the emphasis of capital. So capital adequacy has become the major benchmark for financial institutions and considered as a primary measure for safety and soundness.

2.1.1 Origin of BASEL and Capital Adequacy Ratio

Prior to 1988, there was no uniform international regulatory standard for setting bank capital requirements. In the early 1980s, the onset of the Latin American debt crisis heightened the Committee's concerns that the capital ratios of the main international banks were deteriorating at a time of growing international risks. Hence 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 specially to banks in G-10countries. Basel I introduced two key concepts. First, it defined what banks could hold as capital, as well asdesignating 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.

In June 1999, the Committee issued a proposal for a new capital adequacy framework to replace the 1988 Accord. This led to the release of a revised capital framework in June 2004. Generally known as "Basel II", the revised framework comprised three pillars:

- minimum capital requirements, which sought to develop and expand the standardized rules set out in the 1988 Accord
- supervisory review of an institution's capital adequacy and internal assessment process
- effective use of disclosure as a lever to strengthen market discipline and encourage sound banking practices

The new framework was designed to improve the way regulatory capital requirements reflect underlying risks and to better address the financial innovation that had occurred in recent years. The changes aimed at rewarding and encouraging continued improvements in risk measurement and control.

Even before Lehman Brothers collapsed in September 2008, the need for a fundamental strengthening of the Basel II framework had become apparent. The banking sector entered the financial crisis with too much leverage and inadequate liquidity buffers. These weaknesses were accompanied by poor governance and risk management, as well as inappropriate incentive structures. The dangerous combination of these factors was demonstrated by the mispricing of credit and liquidity risks, and excess credit growth. With objective of the addressing weakness of BASEL II, 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.

2.1.2 Overview of Nepal's Financial System

Nepal has a reasonably diversified financial sector relative to its small and underdeveloped economic base. Unfortunately, the financial system remains unnecessarily segmented, with a negative impact upon financial system competition. As of mid-July 2019, the NRB regulated Nepalese financial sector comprised 27 commercial banks, 19 development banks, 21 finance companies, 81 micro-credit development banks (MCDBs) (carrying limited banking activities upon the approval of NRB). Nepal has made significant progress in developing its financial sector since financial sector reforms began in 1984. At that time, Nepal had only two state-owned commercial banks. The structure of the NRB regulated Nepalese financial sector is shown inAnnexureI.

Like most of the developing countries, Nepal has a special characteristic of bank-dominated financial system. As the domestic capital and stock markets are at the initial stage of development, the banking system largely dominates the entire financial sector. As of mid-July 2018, total assets of the NRB regulated financial sector amounted to Rs. 3575 Billion. Commercial Banks occupied the largest share of 82 percent, followed by development banks 13 percent, finance companies and micro finance development bank 5 percent. Therefore, Nepalese financial system is basically dominated by the banking system particularly from the commercial banks.

2.1.3 Overview of Nepalese Commercial Bank

There are 27 commercial banks in Nepal. Likewise, there are 19 Development Banks, 21 Finance Companies and 81 micro-finance companies. Total assets of these BFIs as of mid-July 2018 were Rs. 3575 billion. The private commercial banks represent 82 percent of the banking system.

2.1.4 Nepal Rastra Bank as Central Bank and its Role

Central banks have a wide range of responsibilities, from overseeing monetary policy to implementing specific goals such as currency stability, low inflation and full employment. It is also a banker's bank and holding reserves of the country and ultimate reservoir of credit. Hence, central bank is the regulating authority for commercial banks, and other banks and financial institutions.

In the banking industry, capital is usually regulated by an apex bank to mitigate bank solvency problems. Customers are more concerned with the sufficiency of banks' capital for the safety of their deposits. Capital adequacy ratio helps a bank to absorb its realized and anticipated losses (risk) and improve their return on capital.

It is a difficult task to put aside the importance and functions of a central bank. Shekhar (1998) commented that it is difficult to lay down any hard and fast rule regarding the functions of a central bank. The powers and the range of functions of central banks vary from country to country.

The most important and the earliest functions to be discharged by a central bank is to act as a bank of issue. It is also known as a banker's bank. The central bank also acts as a lender of the last resort. In case of any problems and emergency to any of the banks operating under it, central bank comes forward to rescue them temporarily from such problems. It also plays the role of an agent, an advisor and banker to the Government. Central bank is a custodian of the nation's metallic reserves and controller of currency.

A central bank has sole right to issue national currency notes. It controls money flow in the market by imposing monetary policy. It issues notes after full analysis of unemployment, inflation, economic growth, etc. of the country. Central bank is the holder

of all the government balances. It is the holder of all the reserves of the other banks and financial institutions in the country.

Objectives between a central bank and other commercial banks are different. The main objective of a central bank is to assist the government to implement economic policies without any profit motive, where as the main objectives of other banks is to earn profit by mobilizing funds collected from the general public. The central bank also plays the role of a guardian and parent to other commercial banks.

As a regulatory body of all other banks and financial institutions, a central bank is the origin of all banking policies under which all the banks are supposed to operate. Therefore, a central bank guides and assists in operating banking system as a whole. A central bank has full authority to interfere in the banking market i.e. to all banks in terms of implementing its policies. It can penalize the banks in case they go out of the central bank's policy or the termination of the license and also can restrict their working dimensions to a large extent.

With a view to develop the NRB into a modern central bank, capable in maintaining financial sector stability, the second phase of financial sector reform is being focused on updating the information technology, supervisory capability and human resource management. Moreover, the accounting system of the NRB is being updated to comply with the requirements of international accounting standard (IAS) and Nepal accounting standard (NAS).

In 2004, Bank and Financial Institution Ordinance was enacted and the new legal framework replaced different fragmented legal framework governing the operations of banks and financial institutions. In the context of promulgation of the Banks and Financial Institutions Act (BAFIA), the existing prudential regulations and directions, which were separately issued for banks and financial institutions, have already been revised and integrated into a unified directive and came into implementation from July 16, 2005. To minimize the risk involved in the financial sector, the regulation regarding risk management has already been issued. To monitor such system by the NRB, the policy of implementing risk-based supervision is also being pursued. To develop risk management system, the private sector has been encouraged to establish a credit rating agency.

In reference to the building up of appropriate infrastructure for the implementation of BASEL II Accord since 2007, necessary directives, policies and provisions for the banks and financial institutions have been formulated in compliance with the accord. Further, as per BASEL II Accord, the regulatory provision has been prepared complying with the Simplified Standardized Approach (SSA) for capital base and Basic Indicator Approach (BIA) for operational risk. Again NRB has implemented Capital Adequacy Framework 2015 in standard of BASEL III form Mid-July 2016 for all the A Class commercial Banks of Nepal.

2.2 Nepal Rastra Bank's Capital Adequacy Framework 2015

With a view of adopting the international best practices, NRB issued the Basel III implementation action plan and expressed its intention to adopt the Basel III framework, albeit in a simplified form. In line with the international development and thorough discussion with the stakeholders, evaluation and assessment of impact studies at various phases, the framework has been drafted. This framework provides the guidelines for the implementation of Basel III framework in Nepal. The Basel III capital regulations continue to be based on three-mutually reinforcing Pillars, viz. minimum capital requirements, supervisory review of capital adequacy, and market discipline of the Basel II capital adequacy framework.

Table 2.1
Prescribed Capital Adequacy Ratio

Institution	Minimum capital ratio to be maintained in respect to risk weighted assets	
	Tier 1 Capital Ratio	Capital Adequacy Ratio
A Class	7%	11%
National Level B Class	6%	10%
Others B class and C Class	5.5%	11%

Source: NRB Unified Directive (2077)

This framework is applicable to all "A" Class financial institutions licensed to conduct banking business in Nepal under the Bank and Financial Institution Act, 2073. The

transitional arrangement for capital ratios has begun from Mid-July, 2016 (Shrawan 2073). (The phase-in arrangements for banks Shown in annexure II)

The bank should compute the capital ratios in following manner:

$$\text{Common Equity Tier 1 Capital Ratio} = \frac{\text{Common Tier 1 Capital}}{\text{Total Risk Weighted Assets}}$$

$$\text{Tier 1 Capital Ratio} = \frac{\text{Eligible Tier 1 Capital}}{\text{Total Risk Weighted Assets}}$$

$$\text{Capital Adequacy Ratio (CAR)} = \frac{\text{Eligible Total Capital}}{\text{Total Risk Weighted Assets}}$$

2.2.1 The qualifying regulatory capital, it consists of the sum of the following components:

a. Tier 1 Capital (Core Capital)
   A. Common Equity Tier 1 (CET1)
   B. Additional Tier 1 (AT1)

b. Tier 2 Capital (Supplementary Capital)

The detailed description of the components of regulatory capital and their elements are as follows:

I. Tier 1 Capital (Core Capital) Consists following

A. Common Equity Tier 1 Capital

(i) Common shares issued by the bank that meet the criteria for classification as commonshares for regulatory purposes;

(ii) Stock surplus (share premium)

(iii) Statutory General Reserve;

(iv) Retained Earnings available for distribution to shareholders;

(v) Un-audited current year cumulative profit, after all provisions including staff bonus and taxes.

(vi) Capital Redemption Reserves created in lieu of redeemable instruments

(vii) Capital Adjustment reserves created in respect of increasing the capital base of the bank

(viii) Dividend Equalization Reserves;

(ix) Other free reserves if any

(x) Less: Regulatory adjustments / deductions applied in the calculation of Common Equity Tier 1 capital.

B. Additional Tier 1 Capital consists of the sum of the following elements:

(i) Perpetual Non Cumulative Preference Share (PNCPS) and Perpetual Debt Instruments (PDI) issued by the bank that meet the criteria for inclusion in Additional Tier 1 capital;

(ii) Stock surplus (share premium) resulting from the issue of PNCPS instruments included in Additional Tier 1 capital; and

(iii) Less: Regulatory adjustments / deductions applied in the calculation of Additional Tier 1 capital.

II. Tier 2 (Supplementary) Capital

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

(i) 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;

(ii) Subordinated term debt fully paid up with a maturity of 5 years or above; unsecured and subordinated to the claim of other creditors, free of restrictive clauses and not redeemable before maturity.

(iii) Hybrid capital instruments combine certain characteristics of debt and certain characteristics of equity.

(iv) Stock surplus (share premium) resulting from the issue of instruments included in Tier 2 capital;

(v) General loan loss provision limited to a maximum of 1.25 percent of total Credit Risk Weighted Exposures.

(vi) Exchange equalization reserves created by banks.

(vii) Investment adjustment reserves created for bank's investments falling under "Available for Sale" category.

(viii) Revaluation reserves

(ix) Any other type of instruments notified by NRB from time to time for inclusion in Tier 2 capital

(x) Less: Regulatory adjustments / deductions applied in the calculation of Tier 2 capital.

The eligible 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.

Table 2.2
Regulatory Capital Ratio and Buffers

Regulatory Capital	**As % of RWAs**
Minimum Common Equity Tier 1 Ratio	4.5
Capital Conservation Buffer (Comprised of Common Equity)	2.5
Minimum Common Equity Tier 1 Ratio plus Capital Conservation Buffer [(i)+(ii)]	7
Minimum Tier 1 Capital Ratio	6
Minimum Total Capital Ratio	8.5
Minimum Total Capital Ratio plus Capital Conservation Buffer	11

Sources: NRB Unified Directives (2077)

2.2.2 Total Risk Weighted Exposure is computed in following manner

Total Risk Weighted Exposure = Credit RWE + Market Risk RWE + Operational Risk RWE + Supervisory Adjustment under Pillar II

A. Credit Risk

Credit risk is the major risk that banks are exposed to during the normal course of lending and credit underwriting. Within Basel II, there are two approaches for credit risk measurement: the standardized approach and the internal ratings based (IRB) approach. Due to various inherent constraints of the Nepalese banking system, the standardized approach in its simplified form, Simplified Standardized Approach (SSA), under which commercial banks are required to assign a risk weight to their balance sheet and off-balance sheet exposures. These risk weights are based on a fixed weight that is broadly aligned with the likelihood of a counterparty default.

In order to be consistent with the Basel-II framework, the credit risk for the regulatory capital purpose shall be computed by segregating the exposure in the following 11 categories.

a. Claims on government and central bank
b. Claims on other official entities

c. Claims on banks
d. Claims on corporate and securities firms
e. Claims on regulatory retail portfolio
f. Claims secured by residential properties
g. Claims secured by commercial real state
h. Past due claims
i. High risk claims
j. Other assets
k. Off balance sheet items

Banks may use a number of techniques to mitigate the risks to which they are exposed. The prime objective of this provision is to encourage the banks to manage credit risk in a prudent and effective manner. As such, credit risks exposures may be collateralized in whole or in part with cash or securities, or a loan exposure may be guaranteed by a third party. Where these various techniques meet the minimum conditions mentioned below, banks which take eligible financial collateral are allowed to reduce their credit exposure to counterparty when calculating their capital requirements to take account of the risk mitigating effect of the collateral.

Banks are eligible to claim the CRM benefit across all such exposures up to the eligible value of CRM of following collaterals:

- Cash deposit
- Fixed Deposit Receipts/Certificates of deposits/other deposits of other Banks and FIs,
- Gold.
- Securities issued by the Government of Nepal and Nepal Rastra Bank.
- Guarantee of the Government of Nepal
- Financial guarantee/counter guarantee of domestic banks and FIs who meet the minimum capital adequacy requirements subject to a haircut of 20 percent.
- Securities/Financial guarantee/Counter guarantee issued by sovereigns.

B. Operation Risk

Operational risk is the risk of loss resulting from inadequate internal processes, people, and systems, or from external events. The framework requires banks to hold capital

against the risk of unexpected loss that could arise from the failure of operational systems. Such breakdowns can lead to financial losses through error, fraud, or failure to perform in a timely manner or cause the interests of the bank to be compromised in some other way an unethical or risky manner. Other aspects of operational risk include major failure of information technology systems or events such as major fires or other disasters. Operation Risk is measured as per NRB under the basic indicator approach, banks must hold capital for operational risk equal to the average over the previous three years of a fixed percentage (denoted alpha) of positive annual gross income.

The capital charge for operational risk may be expressed as follows:

$$\mathbf{K_{BIA} = [\Sigma(GI_{1..n} \times \alpha)]/N}$$

Where,
K_{BIA} = capital charge under the Basic Indicator Approach
GI = annual gross income, where positive, over the previous three years
N = number of the previous three years for which gross income is positive
α = 15 percent.

Thus, for the purpose of capital adequacy requirements, gross income shall be summation of:

i. The total operating income comprises of:

- Net Interest Income
- Commission and Discount Income
- Other Operating Income
- Exchange Fluctuation Income

ii. Addition/deduction in the Interest Suspense during the period.

C. Market Risk

Market risk is defined as the risk of losses in on-balance sheet and off-balance sheet positions arising from adverse movements in market prices. The major constituents of market risks are:

a. The risks pertaining to interest rate related instruments;
b. Foreign exchange risk (including gold positions) throughout the bank; and
c. The risks pertaining to investment in equities and commodities.

Banks have to segregate their investment portfolio into any of following three categories:

a. Held for Trading
b. Held to Maturity
c. Available for Sale

Risk-weighted assets in respect of market risk are determined using Net Open Position Approach by multiplying the capital charges by 10 (i.e., the reciprocal of the minimum capital ratio of 10 percent) and adding together with the risk weighted exposures for credit risk.

2.2.3 Capital Conservation Buffer

The capital conservation buffer (CCB) is designed to ensure that banks build up capital buffers during normal times (i.e. outside periods of stress) which can be drawn down as losses are incurred during a stressed period. The requirement is based on simple capital conservation rulesdesigned to avoid breaches of minimum capital requirements. The banks which draw down their capital conservation buffer during a stressed period should also have a definite plan to replenish the buffer as part of its Internal Capital Adequacy Assessment Process and strive to bring the buffer to the desired level within a time limit agreed to with NRB during the Supervisory Review and Evaluation Process.

The framework of capital conservation buffer will strengthen the ability of banks to withstand adverse economic environment conditions, will help increase banking sector resilience both going into a downturn, and provide the mechanism for rebuilding capital during the early stages of economic recovery.

The Table below shows the minimum capitalconservation ratios a bank must meet at various levels of the Common Equity Tier 1 capital ratios.

Table 2.3
Level of Capital Conversion Ratio

Common Equity Tier 1 ratio	Minimum Capital Conservation Ratios
4.50% - 5.125%	100%
>5.125% - 5.75%	80%
>5.75% - 6.375%	60%
>6.375% - 7.00%	40%
>7.00%	0%

Source: NRB Unified Directive (2077)

The capital conservation buffer will be phased in between mid July 2016 and becoming fully effective on mid July 2019. It will begin at 1.25 percent of RWEs on mid July 2016, 1.5 percent on mid July 2017 and increase each subsequent year by an additional 0.50 percentage points, to reach its final level of 2.5 percent of RWAs on mid July 2019. The minimum capital conservation standards apply with reference to the applicable minimum CET1 capital and applicable CCB.

2.2.4 Counter Cyclical Buffer

Losses incurred in the banking sector can be extremely large when a downturn is preceded by a period of excess credit growth. These losses can destabilize the banking sector and spark a vicious circle, whereby problems in the financial system can contribute to a downturn in the real economy that then feeds back on to the banking sector. These interactions highlight the particular importance of the banking sector building up additional capital defenses in periods where the risks of system-wide stress are growing markedly.

The countercyclical buffer aims to ensure that banking sector capital requirements take account of the macro-financial environment in which banks operate. The primary aim of the countercyclical capital buffer requirement is to use a buffer of capital to achieve the broader macroprudential goal of protecting the banking sector from periods of excess aggregate credit growth that have often been associated with the build up of system-wide risk.

Nepal Rastra Bank has adopted the Credit to GDP ratio, macro-economic variable, as guide for reference point for taking buffer decisions. Nepal Rastra Bank will monitor

Credit to GDP ratio at least annually and calculate Credit to GDP gap, i.e. the gap between Credit to GDP ratio and its Trend. If the credit-to-GDP ratio is significantly above its trend (ie there is a large positive gap) then this is an indication that credit may have grown to excessive levels relative to GDP. The Credit to GDP gap shall be calculated as follows:

Credit to GDP Gap (t) = Credit to GDP Ratio (t) – Trend (t)

The following table shows the countercyclical buffer requirement in case of excess credit growth:

Table 2.4
Countercyclical Buffer

Countercyclical Buffer Requirement	
Credit to GDP Gap	Buffer Requirement in Terms of CET 1
Up to 5 points	0%
5 to 6 points	0.5%
6 to 7 points	1.0%
7 to 8 points	1.5%
8 to 9 points	2.0%
above 9 points	2.5%

Source: NRB Unified Directive (2077)

Table 2.4 shows the banks are required to raise level of the buffer by up to 12 months, but shall be allowed to decrease the level of the buffer with immediate effect. The bank, not being able to maintain the countercyclical buffer requirement, shall not be allowed to distribute its earning.

2.2.5 Leverage Ratio

One of the underlying features of the crisis was the build-up of excessive on- and off-balance sheet leverage in the banking system. In many cases, banks built up excessive leverage while still showing strong risk based capital ratios. Therefore, under the framework, a simple, transparent, non-risk based leverage ratio has been introduced. The leverage ratio is calibrated to act as a credible supplementary measure to the risk based capital requirements.

The leverage ratio shall be maintained on a quarterly basis. The Leverage Ratio shall be calculated as:

Leverage Ratio = Capital Measure /Exposure Measure

I. Capital Measure

a) The capital measure for the leverage ratio should be based on the definition of Tier 1 capital

b) Items that are deducted completely from capital do not contribute to leverage, and should therefore also be deducted from the measure of exposure.

II. Exposure Measure

The exposure measure for the leverage ratio should generally follow the accounting measure of exposure. In order to measure the exposure consistently with financial accounts, the following should be applied by banks:

a) on-balance sheet, non-derivative exposures will be net of specific provisions and valuation adjustments
b) physical or financial collateral, guarantees or credit risk mitigation (CRM) purchased is not allowed to reduce on-balance sheet exposures; and
c) Netting of loans and deposits is not allowed.
d) Component of Exposure Measure

(i) On-Balance Sheet Items

Banks should include all items of assets reported in their accounting balance sheet for the purposes of calculation of the leverage ratio. In addition, the exposure measure should include the following treatments for Securities Financing Transactions (e.g. repo and reverse repo agreements) and derivatives.

(ii) Repurchase agreements and securities finance

Securities Financing Transactions are a form of secured funding and therefore, an important source of balance sheet leverage that should be included in the leverage ratio.

(iii) Derivatives

Derivatives create two types of exposure: an "on-balance sheet" present value reflecting the fair value of the contract (often zero at outset but subsequently positive or negative dependingon the performance of the contract), and a notional economic exposure representing the underlying economic interest of the contract.

(iv) Other Off-Balance Sheet Items

Banks should calculate the off balance sheet items. These include commitments (including liquidity facilities), unconditionally cancellable commitments, direct credit substitutes, acceptances, standby letters of credit, trade letters of credit, failed transactions and unsettled securities.

2.2.6 Review Process

The supervisory review process of the framework is intended not only to ensure that banks have adequate capital to support all the risks in their business, but also to encourage banks to develop and use better risk management techniques in monitoring and managing their risks. Nepal Rastra Bank recognizes the significance of the relationship between the amount of capital held by the bank against its risks and the strength and effectiveness of the bank's risk management and internal control processes.

In order to achieve the objectives of the supervisory review process, this process has been broadly divided into three parts:

a. Internal Capital Adequacy Assessment Process (ICAAP)
b. Supervisory Review
c. Supervisory Response

a. Internal Capital Adequacy Assessment Process (ICAAP)

The internal capital adequacy assessment process (ICAAP) is a comprehensive process which requires board and senior management oversight, monitoring, reporting and internal control reviews at regular intervals to ensure the alignment of regulatory capital

requirement with the true risk profile of the bank and thus ensure long-term safety and soundness of the bank. The key components of an effective ICAAP are discussed below.

- Board and senior management oversight
- Sound capital assessment
- Comprehensive assessment of risks
- Monitoring and reporting
- Internal control review

b. Supervisory Review

NRB regularly review the process by which a bank assesses its capital adequacy, risk positions, resulting capital levels, and quality of capital held by a bank. NRB evaluate the degree to which a bank has in place a sound internal process to assess capital adequacy. The periodic review can involve any or a combination of:

- On-site examinations or inspections;
- Off-site review;
- Discussions with bank management;
- Review of work done by external auditors (provided it is adequately focused on the necessary capital issues); and
- Periodic reporting.

Some of the key areas which will be reviewed during the supervisory review process are discussed hereunder

- Review of adequacy of risk assessment
- Assessment of capital adequacy
- Assessment of the control environment
- Supervisory review of compliance with minimum standards
- Significance of risk transfer
- Credit Risk Mitigants
- Operational risk and Market Risk
- Market Discipline

c. Supervisory Response:

NRB has the authority to require banks to hold capital in excess of the minimum. Supervisory adjustments in risk weighted assets and capital, after having carried out the

review process, appropriate action if they are not satisfied with the results of the bank's own risk assessment and capital allocation. In such a scenario, NRB shall be empowered to undertake any or combination of the following adjustments in the banks risk weighted assets and regulatory capital computations.

- Shortfall in provisions made by the bank against adversely classified assets shall be deducted from the Tier 1 capital.
- The loans and facilities extended to Directors, Employees (other than loans given under Employee rules), Shareholders holding more than 1 percent shares and related parties as well as loans, advances and facilities restricted by the prevailing rules and regulations shall be deducted from Tier 1 capital.
- In case the bank has provided loans and facilities in excess of its Single Obligor Limits, 10 percent of all such excess exposures shall be added to the risk weighted exposure for credit risk.
- Where the banks do not have satisfactory Assets Liability Management policies and practices to effectively manage the market risks, an additional risk weight of 1 percent of Net Interest Income shall be added to the risk weight for market risk.
- Where the bank's Net Liquid Assets (NLA) to total deposit ratio is less than 20 percent, a risk weight of 1 percent (as given in the table below) of total deposit, for each percent or portion of percent shortfall in such ratio, is added to total of the Risk Weighted Exposures.

Table 2.5

Risk Weighted Exposure for Net Liquid Assets Ratio

Net liquid asset to total deposit ratio	**A risk weight to be added to the Risk Weighted Exposures**
19% - less than 20%	1% of total deposit
18% - less than 19%	2% of total deposit
17% - less than 18%	3% of total deposit
16% - less than 17%	4% of total deposit
15% - less than 16%	5% of total deposit and so on.

Source NRB Unified Directive (2077)

For this purpose, liquid assets include cash and bank balances, money at call and short notice, placement up to 90 days and investment in government securities. Borrowing repayable up to 90 days is deducted from liquid assets to obtain net liquid assets.

- Where the banks do not adopt sound practices for the management of operational risk, an additional capital charge of 2 percent of Gross Income shall be levied for operational risks.
- Where the Gross Income determined for computation of capital charge of Operational Risk for all of the last three years is negative and where the banks themselves have not addressed the capital charge for operational risk, 5 percent of the total credit and investments net of specific provisions shall be the capital charge for operational risk.
- During the course of review, where the supervisor is not satisfied with the overall risk management policies and procedures of the bank, the total risk weighted exposures of the bank shall be increased up to 5 percent.
- In case the bank has not achieved the desired level of disclosure requirements, the total risk weighted exposures of the bank shall be increased up to 3 percent.
- Banks that do not meet the eligibility requirements to claim the benefit under credit risk mitigation techniques shall not be allowed the benefit of CRM.

Corrective Actions for Non-Compliances

The failure on part of the banks to meet the provisions of this framework shall be considered as a violation of the NRB directives and shall attract stipulated actions. The nature of the enforcement action largely depends on degree of the capital adequacy of the bank. The trigger points and the prescribed action in case of non-compliance shall be as per the provisions of Prompt Corrective Action (PCA) Byelaw 2064 propounded by Nepal Rastra Bank.

2.2.7 Disclosure

The purpose of disclosure requirements is to complement the minimum capital requirements and the review process by developing a set of disclosure requirements which will allow market participants to assess key pieces of information on the scope of application, capital, risk exposures, risk assessment processes, and hence the capital adequacy of the bank.

Banks should at minimum, disclose the following information at the stipulated time intervals. At the same time, banks shall be free to disclose any other information they consider important for its stakeholders as and when they consider necessary, beyond the prescribed requirements.

a. Banks should provide the following disclosures as at end of each financial year along with the annual financial statements.

i. Capital structure and capital adequacy

- Tier 1 capital and a breakdown of its components;
- Tier 2 capital and a breakdown of its components;
- Detailed information about the Subordinated Term Debts with information on the outstanding amount, maturity, and amount raised during the year and amount eligible to be reckoned as capital funds.
- Deductions from capital;
- Total qualifying capital;
- Capital adequacy ratio;
- Summary of the bank's internal approach to assess the adequacy of its capital to support current and future activities, if applicable; and
- Summary of the terms, conditions and main features of all capital instruments, especially in case of subordinated term debts including hybrid capital instruments.

ii. Risk exposures

- Risk weighted exposures for Credit Risk, Market Risk and Operational Risk;
- Risk Weighted Exposures under each of 11 categories of Credit Risk;
    - Total risk weighted exposure calculation table;
    - Amount of NPAs (both Gross and Net)
    - Restructure/Reschedule Loan
    - Substandard Loan
    - Doubtful Loan
    - Loss Loan

- NPA ratios
    - Gross NPA to gross advances
    - Net NPA to net advances

- Movement of Non Performing Assets (NPA)
- Write off of Loans and Interest Suspense
- Movements in Loan Loss Provisions and Interest Suspense
- Details of additional Loan Loss Provisions
- Segregation of investment portfolio into Held for trading, Held to maturity and Available for sale category

Iii. Risk Management Function

- For each separate risk area (Credit, Market and Operational risk), banks must describe their risk management objectives and policies, including:

    - Strategies and processes;
    - The structure and organization of the relevant risk management function;
    - The scope and nature of risk reporting and/or measurement systems; and
    - Policies for hedging and/or mitigating risk and strategies, and processes for monitoring the continuing effectiveness of hedges/ mitigates.

- Types of eligible credit risk mitigates used and the benefits availed under CRM.

b. All commercial banks should make following disclosures on a quarterly basis on their respective websites.

- Tier 1 capital and a breakdown of its components;
- Tier 2 capital and a breakdown of its components;
- Detailed information about the Subordinated Term Debts with information on the outstanding amount, maturity, and amount raised during the year and amount eligible to be reckoned as capital funds.
- Deductions from capital;
- Total qualifying capital;

- Capital adequacy ratio;
- Risk weighted exposures for Credit Risk, Market Risk and Operational Risk;
- Risk Weighted Exposures under each of 11 categories of Credit Risk;
- Total risk weighted exposure calculation table;
- Amount of NPAs (both Gross and Net)

    - Restructure/Reschedule Loan
    - Substandard Loan
    - Doubtful Loan
    - Loss Loan
    - NPA ratios

        - Gross NPA to gross advances
        - Net NPA to net advances

    - Movement of Non Performing Assets (NPA)
    - Write off of Loans and Interest Suspense
    - Movements in Loan Loss Provisions and Interest Suspense
    - Details of Additional Loan Loss Provisions
    - Segregation of investment portfolio into Held for trading, Held to maturity and Available for sale category
    - Summary of the bank's internal approach to assess the adequacy of its capital to support current and future activities, if applicable; and
    - Summary of the terms, conditions and main features of all capital instruments, especially in case of subordinated term debts including hybrid capital instruments.

c. Disclosure requirements under this framework should also be published in the respective websites of the banks. Such disclosures of the banks should also be updated to reflect the capital adequacy position of the banks after the supervisory adjustments under the review process. Banks that do not host a website yet are required to make the necessary arrangements to host a website immediately.

d. Banks are required to report to NRB their capital adequacy computations, according to the format (as specified in Annexure) on a monthly basis within one month after the

end of the month or as required by NRB from time to time. All such returns have to be validated by the internal auditor of the bank. If the monthly internal audit could not be carried out, it should be disclosed on the monthly returns. But, such returns at the end of the quarter must be submitted with the validation from the internal auditor of the bank.

Besides the returns specified above, a bank must inform NRB within 30 days of:

- Any breach of the minimum capital adequacy requirements set out in this framework together with an explanation of the reasons for the breach and the remedial measures it has taken to address those breaches.
- Any concerns it has about its capital adequacy, along with proposed measures to address these concerns.

Full compliance of these disclosure requirements is a pre-requisite before banks can obtain any capital relief

2.3 Empirical Review

2.3.1 Review of Articles and Reports

Myerss and Majluf (2001) revealed that in the absence of periodic adjustments in the capital ratio, banks would never hold more capital than required by the regulators or the market. In practice, however, adjusting the capital ratio may be costly. Equity issues may, in the case of information asymmetries, convey negative information to the market on the bank's economic value.

At the macroeconomic level, the reaction of banks to a given change in capital requirement is consistent with a "credit multiplier" model where lending is a constant multiple of available equity. Furthermore, changes in capital requirement have a real impact on corporate investment policy. Faced with a reduction in their ability to borrow, firms shrink their assets, and partly but not fully compensate for this by reducing their lending to suppliers. They ultimately reduce their productive capital. A one percentage point increase in capital requirements reduces bank lending by some 8 percent, firm borrowing by some 4 percent, total assets by 1.5 percent, trade credit to clients by 1 percent and fixed assets by 2.5 percent (Fraisse & Thesmar, 2017).

A Study of European banks in a context of financial crisis and economic downturn from 2005 to 2011 depicts i) increasing European banking regulations and supervision could improve banks' profitability and decrease their risk-taking; ii) however, the restrictions on banking activities decreases profitability, while capital adequacy and the deposit insurance system increases banks' profitability, iii) Finally, reinforcing supervisors' powers reduces risk-taking and promotes banking stability. These results can have different policy implications for bankers as well as for regulators in terms of improving regulatory measures and adapting them to the banking environment and financial context (Bouheni, 2014).

A regulation of capital requirement should be done to ensure that the risk exposures of financial institutions are founded by an adequate amount of worthy capital. The apprehension of a regulator is to guarantee the asset quality and fund availability of depository institutions to meet the claims of depositors in liquidation (Abusharba, 2014).

Torbira and Zaagha (2016) conclude that capital adequacy indicators strongly lead to financial performance of banks from the causality test result. There is also long-run equilibrium relationship between capital adequacy measures and bank financial performance indicators. These implies that sufficiency of capital and proper management of same can translate to improved financial performance of banks through the window of efficient portfolio management, efficient asset selection and the application of matching principles. From the empirical findings of this study and the conclusion reached, we recommend that bank managers should improve on the management of bank deposits and assets in order to improve on the achievement of the objective of the firm. Adequate shortterm investment should be introduced into bank investment port folios so as to improve financial performance in the short run.

Empirical study of Nigerian Banks profoundly revealed that capital adequacy is an important factor when it comes to the determination of profit ability of deposit–taking banks. Adequate capital as functioned in various ways such as providing cushion against losses not covered by current earnings. Capital Adequacy is pointed as confidence booster to the depositors, public and the regulatory authority in Nigeria. The study recommends that the regulatory authority should ensure that the gains of the banking reforms processes are sustained, the central bank should take more decisive measures aimed at tightening

the risk management framework of the Nigerian banking sector as this will have a positive effect on their profitability (Adeyinka, 2013).

Pandey (2005) sees capital adequacy as the quantum of fund which a financial institution should have and plan to maintain in order to conduct its intermediation and investment business in a prudent manner. So, adequate capital is regarded as the amount of capital that can help banks to effectively discharge its primary function and provide the ultimate protection against insolvency arising from banking risk. Capital adequacy is conceptualized as the quantity or volume of funds (capital) that a bank maintains or planning to have in order to ease and facilitate its business operations and activities effectively and protect the bank against insolvency and failure.

Capital adequacy supervision will surely affect the investment behavior of commercial banks, but the directions are still uncertain. Capital Idiosyncrasy usually fluctuates with macroeconomic, and banks with different capital idiosyncrasy will represent different actions and options while facing the same capital adequacy requirement. The reform about risk managing mechanism should be carried out initiatively, rather than being compelled to adjust to some international pact passively. Credit and macro-control policy will be more effective if most of banks in our country are able to adjust their capital elastically or own a high capital adequacy ratio (Junxun & Xian 2008).

In Year 1997, the replacement of old capital standards with risk based capital (RBC) in 1997 increased number of banks below the regulatory capital requirements from 0-14 and a number reduced to 7 in 1998. And the banks' capital deficiency amounted to 59 percent of total Korean assets in 1997 reduced to 26 percent either by raising expensive capital or by reducing risk weighted assets through substituting less risky assets such as commercial loans. So banks with the less satisfactory CARs reduced bank's lending and banks that met satisfactory CARs increased bank lending **(**Choi, 2000).

Al- Mikhlaf et al. (2004) stated that both banking risk indicators and returns are affected by bank capital adequacy and this will be reflected in the bank value. The study also revealed the need for taking necessary internal actions and measures to ensure compliance with Basel 2 decisions regarding banking capital adequacy, and finally selecting the time scheduling that is suitable for execution.

Dowd (2009) states that the imposition by regulators of minimum capital standards on financial institutions can be seen as a means of strengthening the safety and soundness of the banking system and also a response to the moral hazard problems created by deposit insurance. An information asymmetry between bank managers and depositors could produce market failure that provides a rational for regulatory authorities, i.e. Central Bank intervention in the financial system. This intervention would take the form of capital adequacy regulation to force bank to maintain stronger capital position.

NRB Annual Bank Supervision Report (2010) brought the several forms of discrepancies into limelight. The supervision report pinpoints heavy accumulated loss and capital below prescribed limit in Public banks, cases on accounting treatment of Debt Instruments, improper calculation of risk weighed exposure, weak overall risk management, Credit Risk Mitigation Criteria not fulfilled, weak infrastructure to implement Capital Adequacy Framework etc.

The report further state the capital of the Nepalese banking industry depicted a favorable trend during 2009/10. There were various reasons for this improvement. The banks, during the period, on an average have performed well and some of them have raised capital from the market, which improved the overall capital position of the industry. All banks were able to post handsome profits. Some banks were able to distribute cash dividends and bonus shares to their shareholders. At the same time, some banks raised funds from the market through issuance of right shares during the year.

Baral (2016) finds that return on assets is positively related to CAR and CCR indicating that higher the return on assets, higher would be the CAR and CCR. However, there is a negative relation between customer deposits, loan loss provision, non-performingloan and advances (NPA) with CAR and CCR. The regression result shows that beta coefficient of return on assets is positive with CAR and CCR while beta coefficients of customer deposits, loan loss provision, non-performing loan and loan and advances are negative with CAR and CCR.

Shekhar (1998) describes that the central bank as “the lender of the last resort,” in article ‘Changing Role of Central Bank’ which means that the central bank is responsible for providing its economy with funds when commercial banks cannot cover a supply shortage. In other words, the central bank prevents the country’s banking system from

failing. However, the primary goal of central banks is to provide their countries' currencies with price stability by controlling inflation. A central bank also acts as the regulatory authority of a country's monetary policy and is the sole provide and printer of notes and coins in circulation. Time has proven that the central bank can best function in these capacities by remaining independent from government fiscal policy and therefore uninfluenced by political concerns of any regime. The central bank should also be completely divested of any commercial banking interests.

Strokes (2003) has mentioned that banks hold capital in excess of reserve requirements to provide a buffer against future, unexpected losses. Such losses are brought about by the credit, market, and operational risks inherent in the business of lending money. Problems created by an insolvent bank are important enough that bank regulators enforce minimum capital standards on banks in an effort to safeguard depositors and ensure the ongoing viability of the financial system. However, from a bank's perspective holding idle capital is an expensive safeguard against risk because the bank's shareholders demand a return on their investment and idle capital provides no such return. For this reason, bankers and regulators can have divergent opinions about the amount of capital a banks should hold making the problem of determining a bank's risk-based capital a complex and important question.

In the context of Nepal, Udas (2007) revealed that there was significant impact on NRB directives of capital adequacy on the various aspects of the commercial banks and it also helped in maintaining the stability of commercial banks in the financial market and to uplift the banking sector in Nepal to international standard.

Patricia and Jackson (1998) examined how banks adjust their balance sheets when their capital ratios are constrained by regulation are varied and conclude the approach banks take to adjusting capital ratios is likely to depend on the business cycle and the bank's financial situation. Nevertheless, there is evidence that in some cases undercapitalized banks raise new equity capital. There is also evidence that weakly capitalized banks sometimes substitute away from high risk weighted assets and reduce their lending, although the studies reviewed generally have difficulty distinguishing the effects of regulation from market discipline or other factors. On balance, it seems reasonable to conclude that banks attempt to respond in the least costly way to binding capital constraints. Whether or not banks raise Tier 1 or Tier 2 equity may depend in part on

which capital constraint is most binding. When it is costly to increase capital, it appears that banks may adjust the composition or level of lending.

Keijser and Haas (2010) have summarized as the Basel Capital Accord of 1988 was an important first milestone in the regulatory treatment of collateralized transactions. However, the role played by risk mitigating factors in this Accord, such as the use of financial collateral, is still rather limited. The same holds for the European directives and national regulations derived from the Basel Accord. The regulatory treatment of collateral has recently entered a new phase, in the form of the proposed revision of the Basel Accord. The use of a wider range of collateral will be allowed in the new Accord and banks will be able to choose either the comprehensive or the simple approach for the treatment of collateral. Whereas the simple approach resembles the current Basel substitution methodology in its treatment of collateral, the comprehensive approach is more innovative. It assigns a central role to collateral haircuts, which may be based on banks own internal estimates of collateral volatility. By making a wider range of collateral available for credit risk mitigation and making the calculation of risk-weighted assets more risk-sensitive, the revision of the Basel Accord is intended further to align regulatory capital which banks must hold and their actual economic risk structure.

Jha and Hui (2012) revealed that return was significantly influenced by capital adequacy ratio, interest expenses to total loan and net interest margin, while capital adequacy ratio had considerable effect on return on equity.

The implementation of the Basel Accords (i.e., Basel I and II) over the 1990–2000 s gave rise to a large body of literature focusing on the consequences of capital rules on bank behavior, and in particular on the relationship between bank capital and lending behavior. Following the 2008 financial crisis, in recognition of the need for banks to improve their liquidity management and financial stability, the Basel Committee on Banking Regulation and Supervision developed an international framework for liquidity assessment in banking in addition to more stringent capital adequacy rules. Among the several guidelines, the Basel III accords include the implementation of a regulatory leverage ratio in addition to the risk-weighted capital ratio concomitant to liquidity ratios. To comply with regulatory standards, banks would have to strengthen their capitalization and modify the structure of their balance sheet improving the liquidity of their assets and the stability of their funding. The broad array of bank activities may be affected, and notably – one of

their core functions as liquidity providers – their credit activities. Loans are subject to higher risk weights than trading securities. In addition, they are qualified as semi liquid and even illiquid assets compared to marketable assets which are qualified as liquid assets (Berger and Bouwman, 2009).

Capital ratios have significant and negative impacts on large European bank-retail-and-other-lending-growth. In the context of deleveraging and "credit crunch" in Europe over the post-2008 financial crisis period, more stringent capital adequacy rules encourage substitution out of retail-and-other loan assets into risk-free, more liquid government bond securities. One additional finding of this study is that liquidity indicators have positive but also perverse effects on bank-lending-growth. These results emphasize the inability of European banks regardless of their size to reduce their commercial loans amid pressures to shrink their assets when holding a buffer stock of liquid assets. However, large European banks are taking advantage of their extensive market activities to hold buffer stock of marketable liquid assets helping them to reduce their retail-and-other-lending activities amid pressures to shrink their assets. Finally, the ratio of available amount of stable funding to total assets is not significant in the determination of European bank-lending-growth regardless of their size. This result underlines the importance of funding structure as a driver of bank-lending-behavior (Roulet, 2017)

Barth (2010) indicated that tighter restrictions on bank activities exert a negative impact on bank efficiency, while greater capital restrictions are marginally and positively associated with bank efficiency. Authors also found that although there is no significant relationship between official supervisory power and bank efficiency, there is a significant and positive relationship between the latter and supervisory authority independence.

Morrison and White (2001) found that if the regulator's reputation is poor, then economy will exhibit multiple rational equilibriums. The regulator can follow a loose regulation policy which will maximize the size of banks and so allow the largest possible amount of funds to be channeled in to profitable investments.

From about 1900 to the late 1930s, the most frequently cited measure of capital among US regulators was the ration capital to deposits, rather than the now familiar ratio of capital to assets or risk-weighted assets. A number of state banking regulators required this capital/deposit ratio to be at least 10 percent (Orgler & Wolkowitz 1976). The office

of the Comptroller of the Currency adopted the same minimum ration for national banks in 1914 and even proposed amending the National Banking Act to make this a statutory requirement.

The evolution of capital adequacy regulation in Basel Committee countries in the late 1970s and early 1980s reveals two points of some significance in evaluating the Basel II approach as a substantive regulatory paradigm for an international arrangement. First, the movement toward risk-based capital/asset ratios was widespread even before the United States America (USA) and the United Kingdom (UK) began their campaign for an international arrangement based on this method. Indeed, although the Federal Reserve Board had tentatively moved in that direction in the 1950s, the United States was a laggard rather than a leader on risk-based approaches in the1970s and early 1980s. In at least one respect, then, the time was ripe for an international arrangement. Second, however, there was substantial variation in the required capital levels, the definition of capital, and other features of the capital/risk-based asset ratios. The variance may have arisen in part in the search for competitive advantage by national banking authorities for their own banks. Yet it may also have been explained by variations in the nature of the banking industries, the regulatory and accounting context in which banking regulation existed, and other factors peculiar to each country. If any such differences remain important today, they may call into question the appropriateness of a highly detailed harmonized approach to capital adequacy. Conversely, if the highly detailed approach nonetheless allows for substantial national variation in implementation, then one may question exactly what purpose is served by such a high degree of harmonization (Peterson 2009).

Chortareas et al. (2012) investigated the dynamics between regulatory and supervisory policies and bank performance for a sample of European banks over the period 2000-2008. and found that strengthening capital restrictions and official supervisory powers can improve the efficient operations of banks. The results also indicated that interventionist supervisory and regulatory policies such as private sector monitoring and restricting bank activities can result in higher levels of inefficiency. Thus, the beneficial effects of capital restrictions and official supervisory powers on banks' efficiency are more pronounced in countries with higher quality institutions.

Lee and Hsieh (2013) focused on Asian banks over the period 1994-2008 and pointed to a positive relationship between capital and profitability in Asian banks, and concluded that the effects of the influencing factors should be taken into consideration.

Barrios and Blanco (2003) concluded that although the regulatory constraint is one of factors related to capital augmentations in Spanish commercial banks is not the most important. On the contrary, the pressure of market forces is the main determinant of banks capital requirements.

Given the wide heterogeneity across public sector banks in terms of theirproduct sophistication and customer orientation as well as their adjustmentresponse, the regulatory framework should be designed so as to encourageindividual banks to maintain higher CRAR than the stipulated minimum soas to reflect their differential risk profiles (Nachane & Sahoo, 2000)

2.4.2 Review of Previous Thesis

Khadka (2010) conducted research on capital adequacy and enlightened public information is lacking in many countries on the off-balance-sheet activities of the authorities that can affect foreign currency resources. There was a lack of information on the authorities' financial derivatives activities. Also observed was the inadequate information of actual and potential foreign liabilities of the monetary authorities and central government. Financial sector reform envisages for measures for mitigating this information and data gap problem as well.

Khatiwada (2008) conducted thesis on capital adequacy of various commercial bank and concluded increasing capital base and revising capital adequacy. Khatiwada stressed that experience has shown that undercapitalized financial institutions are the ones that are first attacked by the speculators and hedgers at the time of crisis and create contagious effect on the other institutions as well. Besides, undercapitalized financial institutions cannot gain credibility and corporate growth even in normal times. This requires that financial institutions are adequately capitalized and possess resilience against attacks by dealers and customers. In this context, the capital adequacy norms are being revised upward as per the Basel Capital Accord. But increasing the capital base for loss making government

owned financial institutions is not easy without involving private sector in the equity capital

Pandey (2008) concluded one of the main objectives of a commercial bank is to safeguard the money of depositors. With the low capital adequacy rate, the banks were previously lending from the money of the depositors because the capital comprised a very small portion of the total risk-weighted assets. However, the returns the shareholders or promoters were reaping were quite high. The risk of the depositors was too high. Pandey further put forward that a good banking system is, therefore, a sine qua non for maintaining financial equilibrium in the country. And, NRB's efforts in this direction are really praiseworthy.

Lamsal (2009) concluded that that the central bank rocked the commercial banks with seven directives issued in two installments asking banks to start complying with the new structures by mid-July 2001 or face grave consequences. NRB claims that these are based on the internationally accepted banking norms of Basel committee. Lamsal has opined that banks are expected to be desperate to meet the targets of capital adequacy norms since the consequences the banks have to face in case of noncompliance are very strict. And for this purpose they will have to issue additional shares, which is not possible for them in the short-run. Or they do not prefer to go for additional share issue simply because they will also have to pay the same dividend as the past to the holders of shares so issued. This becomes the more difficult as the business is not going to expand commensurately. The difficulty is understandable now when every banker is complaining of the lack of new investment projects.

Thapa (2016) concluded that being the central bank of the nation, Nepal Rastra Bank has to be active by playing important role for monetary and financial stability. Central bank should always be eager to achieve the public faith towards bank and financial institutions enabling them being disciplined, well-organized, healthy and competent by providing effective regulation and supervision to appropriate utilization and mobilization of financial resources by increasing financial saving rate by raising financial stability. Also, central bank should always be willing to safeguard the interest of depositors and investors to accomplish the financial stability. Capital adequacy has helped in developing suitable prudential norms to save the banks and financial institutions from financial crisis and

signals of failure. The dissertation further concluded that the operating environment of the bank has changed radically, and their risk management system has also improved.

Sapkota (2002) concluded that being the central bank of the nation, Nepal Rastra Bank has to be actively playing important role for monetary and financial stability. Central bank should always be eager to achieve the public faith toward bank and financial institutions enabling them being disciplined, well organized, healthy, and competent by providing effective regulation and supervision to appropriate utilization and mobilization of resources for the financial stability. Also central Bank should always be willing to safeguard the interest of depositors and investors by monitoring the capital adequacy norms of the bank throughout the country.

Capital adequacy has become one of the most significant factors for assessing the soundness of banking sector. The ratio addresses all kind of risk that the bank may expose into viz. operation risk, credit risk and market risk. Maintenance of adequate capital helps commercial banks to absorb the shocks in financial constraints or adverse economic situations and thus provides greater security and safety for all stakeholders. To establish the sound financial system in the nation, NRB has also persuaded the policy of implementing risk-based supervision through its directive. As per the policy, NRB tries to protect its depositors and creditors, to commensurate with the risk associated activities and profile of the commercial bank and promote public confidence in the banking system.

Shrestha (2015) concludes the capital that banks are required to keep in order to support liquidity commitments towards special purpose vehicles is treated as senior exposure, with lower capital requirements for short maturities. Clearly, the crucial question is how confident banks and supervisors can be that the minimum capital requirement that follows from the application of Basel II is adequate in all securitization programs. As a matter of fact, there is a patchwork of possible underlying exposures and the 'loss waterfalls' can be set in many different ways. However, the adoption of originate-to-distribute business models implied that, in case of generalized crises, the markets of structured securities issued by special purpose vehicles tend to become illiquid and banks are called to provide margins and, in extreme circumstances, they may be forced to buyback the assets sold, which in such context had to be devalued. In the Basel II framework, these types of risks are generally tackled under the 'Pillar II umbrella', where capital add-ons can be charged

while the valuation of the treatment efficacy of all special features of securitization transactions belongs to the Supervisory Review Process (SRP).

Ranjit (2016) concluded that the banks have been trying to buffer against the risks associated with its objective by maintaining the sufficient capital adequacy ratio as prescribed by NRB. However, maintenance of capital adequacy constrained them from their business. Hence, some of the bankers are not satisfied with this provision. In line with meeting the norms, they are increasing their capital base through increment in share capital. At the same time, to decrease credit risk, they have been trying to decrease their NPA. It has been experienced that banks are trying to meet the norms as far as possible. Similarly, NRB has introduced framework in simplified manner so that the banks become able to adopt the norms in the first phase.

Sharma (2005) concluded following points:

- Paid up Capital of Nepalese Commercial Banks is increasing indicating banks maintains the capital Standards set by NRB.
- Total Equity Capital is growing as compared to total debt.
- The capital adequacy ratios of the banks are adequate against set norms of NRB indicating sound financial health and sufficient to meet on bank operation.
- The total capital fund and capital adequacy ratios are fluctuating which indicates fluctuating risk adjusted assets of the banks.

Shakya (2018) concluded that increase in capital ratios of the commercial banks will tends to increase the assets quality and it will protect depositors for the uncertain changes that will mirror the banking sectors. She also noted, on the other case she noted that an increase in the non-performing loans has a tendency to worsen capital ratio. Regulators should accentuate to reduce the level of Non-performing loans and non-performing assets. Hence banks can withstand the competition level and enhance efficiency for future performance. Meanwhile the governing body should strengthen the banking system with tight regulation to empower their surviving situation.

2.5 Research Gap

Nepal's financial sector is characterized by diversified number of commercial banks of different size and with different background. The conclusion can't be drawn on the

sample selected randomly without any predetermined factors. It's been experienced that till date either the sample has been limited to a single bank or 2 or more banks in arbitrary manner as a sample in order to draw conclusion over the financial sector of Nepal. Here, the effort has been made to draw the nearest conclusion over impact of capital adequacy norms specifically on commercial banks of Nepal. For which the study is undertaken with the help of 5 commercial banks with different sizes and different background viz. SCBNL, HBL, NIC ASIA, CZBIL and RBB. SCBNL and HBL represent joint venture banks. NIC ASIA represents a commercial bank funded by Nepalese shareholders. Similarly, CZBIL represents the bank which has been improving every fiscal year. Finally, RBB has been taken as government owned bank.

Although, Nepal Rastra Bank has implemented Capital Adequacy Framework 2015 from mid July 2016/17, till now no research and literature on new tools devised such as leverage ratio, countercyclical buffer, capital conservation buffer, by the frameworks is not available.

Further there is absence of any research and literature on the Commercial Bank's internal mechanism and practices in regards to the prudent Capital Adequacy Management.

CHAPTER III
RESEARCH METHODOLOGY

Research is a systematic inquiry carried out to perform a specific action. Research methodology is the process of arriving at the solution of the problem through planned and systematic dealing with the collection analysis and interpretation of facts and figures. In other words, research methodology refers to various methods of practices applied by the researcher in the entire aspect of the study. It is the plan, structure and strategy of investigations conceived to answer the research question or test the research hypothesis.

3.1 Research Design

Research design is the plan, structure and strategy of investigation conceived so as to obtain answer to research question and to control variances. A research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure. The research is descriptive and analytical as it has used the past data and the data have also been described for their various changes observed under the various aspects. The data have been analyzed with the use of various tables and research tools. This study research attempts to analyze the capital adequacy norms of Nepalese commercial banks taking data and information of five commercial banks of Nepal of last five fiscal years.

3.2 Population and Sample

The population of the commercial banking sector in Nepal would represent all the 28 commercial banks and the period of research has been till mid-July 2018. However, due to time constraint and unavailability of sufficient data, the following five commercial banks of Nepal have been taken as the samples for the study: the two joint venture commercial banks Standard Chartered Bank Nepal Ltd. (SCBNL) and Himalayan Bank Ltd.(HBL), two private sector commercial banks NIC ASIA Bank

Ltd. and Citizens Bank International Ltd.(CZBIL) and one Government owned commercial bank Rastriya Banijya Bank Ltd.(RBB).

3.3 Nature and Sources of Data

Data are collected from secondary source only. Secondary information and data have mostly been gathered from www.nrb.org.np, other relevant websites, commercial banks etc. The additional information and data have also been gathered from NRB. The directives related to the financial sector particularly commercial banking sector has been adopted from Unified Directives 2077. Likewise, information and data have also been collected and assimilated from relevant past reports, research works and different relevant articles published in the newspapers and journals.

3.4 Nature of Analysis

This study undertakes the analysis of both the qualitative as well as quantitative aspects relating to activities of Nepal's commercial banking sector in the context of Capital Adequacy Framework. The qualitative part of this study focuses on the unified directives and Capital adequacy Framework issued by NRB. Statistical analysis and tests are performedas part of quantitative analysis.

3.5 Tools Used

A statistical tool i.e., tables, correlation analysis, t-test analysis and accounting tool namely, ratio analysis have been used during the course of study. However, relative assessment through literature review has been the focal method by which this study has been carried out.

3.5.1 Financial Tools

While adopting financial tools, a ratio is used as barrack for evaluating the financial position and performance to any firm. Financial analysis is the process of identifying he financial strength and weakness of balance sheet and profit and loss account

3.5.1.1 Ratio analysis

Ratio analysis is the tool for scanning financial statement of the firm. Ratio is simply a number expressed in terms of another and as such it expresses the numerical or quantitative relationship between the variables. Ratio analysis is the best tool for financial analysis. Ratios can be taken as expression of relationships between two items or group of items and therefore may be calculated in any number and ways so far meaningful co-relationship is obtained. Following ratios have been computed and analyzed in this study.

a. Capital Adequacy Ratio

Capital Adequacy Ratio is a ratio of total capital fund to risk weighted assets. Higher the ratio, higher is the bank's soundness. It is because with the help of a high capital adequacy ratio, a bank could absorb losses without becoming insolvent.

$$CAR = \frac{Total\ Capital}{Total\ Risk\ Weighted\ Assets} \times 100$$

b. Tier 1 Capital Ratio

Tier 1 capital Ratio is ratio of core capital (Tier 1 Capital) to total risk weighted assets. This ratio is calculated as:

$$Tier\ 1\ Capital\ Ratio = \frac{Tier\ 1\ Capital}{Total\ Risk\ Weighted\ Assets} \times 100$$

c. Capital to Deposit Ratio

The capital to deposit ratio is an important tool in measuring capital adequacy ratios of banks. But, this ratio cannot reflect the capital adequacy of a bank. It denotes how bank can effectively protect depositors against loss.

$$Capital\ to\ Deposit\ Ratio = \frac{Total\ Capital\ Fund}{Total\ Deposit} \times 100$$

d. Return on Equity

Return on equity (ROE) is the amount of net income returned as a percentage of shareholders' equity. Return on equity measures a corporation's profitability by revealing how much profit a company generates with the money shareholders have invested. ROE is expressed as a percentage and calculated as:

$$ROE = \frac{Net\ Income}{Total\ Shareholder's Equity}$$

e. Earning per Share

Earning per share (EPS) is the portion of a company's profit allocated to each outstanding share of common stock. Earning per share serves as an indicator of a company's profitability. EPS is calculated as:

$$EPS = \frac{Net\ Income - Dividend\ on\ Preffered\ Stock}{Average\ Outstanding\ Share}$$

3.5.1.2 Statistical Tools

To find out the impact of Capital Adequacy Norms and Standards in Nepalese banking industry various statistical tool such has been applied. The following statistical tools are used to analyze data.

a. Mean

Mean is the sum of the observations divided by the number of observations. It describes the central location of the data. It is sometimes stated as average.

Thus, the mean is expressed as:

$$\overline{X} = \frac{\sum X}{N}$$

Where,

$\overline{X}$ = Mean
X = Individual Observation
N = Number of observation

b. Standard Deviation

Standard deviation is a simple measure of the variability or dispersion of a data set. In addition to expressing the variability of a population, standard deviation is commonly used to measure confidence in statistical conclusions. A low standard deviation indicates that all of the data points are very close to the same value (the mean), while high standard deviation indicates that the data are "spread out" over a large range of values. Standard deviation is calculated as:

$$S.D. = \sqrt{\frac{\sum\{X - \overline{X}\}^2}{N}}$$

Where,

SD = Standard deviation
X = Mean
X = Individual Observation
N = Number of observation

c. Coefficient of Variation

Coefficient of variation is the relative measure of dispersion based on the standard deviation. It is most commonly used to measure the variation of data and more useful for the comparative study of variability. The standard deviation can sometimes be misleading in comparing the risk of uncertainty, surrounding alternatives as they differ in size or scale. To adjust the problem,

the standard deviation can be divided by mean to compute coefficient of variation. The coefficient of variation is more useful when we consider investments, which have different level of risks. It is calculated as

$$C.V. = \frac{S.D.}{\bar{X}}$$

Where,

C.V. = Coefficient of Variation

S.D. = Standard deviation

$\bar{X}$ = Mean

d. Karl Pearson Correlation Analysis

The relation between two variables is correlated by Karl Pearson's correlation coefficient. The following is the formula proposed by Karl Pearson for calculation of correlation coefficient. ***r*** represents how the variables are correlated. To analyze the impact of capital adequacy norms correlation coefficient between capital, credit and deposit and net profits are analyzed.

$$r = \frac{n\sum xy - \sum x \sum y}{\sqrt{[n\sum x^2 - \sum(x)^2]}\sqrt{[n\sum y^2 - \sum(y)^2]}}$$

where,

n= number of pairs in observation

x=first variable

y =second variable

e. Multiple correlation

In real life many independent variables do affect the dependent variable and the study on degree of relationship between a single dependent variable and a number of independent variables in combination is called multiple correlation analysis. Here, the effort has been used to identify the correlation between dependent variable Capital Fund and joint effect of the independent variables Deposit and Credit on Capital Fund.

A formula for the calculation of multiple correlation coefficients can be expressed in terms of

$$R_{1.23} = \sqrt{\frac{r_{12}^2 + r_{13}^2 - 2r_{12}\, r_{13}\, r_{23}}{1 - r_{23}^2}}$$

Where,

$r_{12} = correlation\ coefficient\ between\ variable\ x_1\ and\ x_2$

$r_{13} = correlation\ coefficient\ between\ variable\ x_1\ and\ x_3$

$r_{23} = correlation\ coefficient\ between\ variable\ x_2\ and\ x_3$

f. Probable Error of Correlation Coefficient

The Probable Error (P.E) of Correlation Coefficient helps in determining the accuracy and reliability of the value of the coefficient that in so far depends on the random sampling. It is the value which is added or subtracted from the coefficient of correlation (r) to get the upper limit and the lower limit respectively, within which the value of the correlation expectedly lies.

The probable error of correlation coefficient can be obtained by applying the following formula:

$$P.E.r = 0.6745\frac{1 - r^2}{\sqrt{N}}$$

where,

N = number of pairs in observation

r =correlation coefficient

P.E.r =probable error of correlation coefficient.

For the purpose of the study probable error of correlation coefficient is used to determining the accuracy and reliability of the value of the coefficient between Net profit and Capital Adequacy.

g. In the thesis, we test if the sample coefficient of multiple correlation, R is significant of correlation between EPS and joint effect of Capital Adequacy and Total Risk Weighted Assets on it in the population or it is just due to the fluctuation of sampling using t-test for significance of observed sample multiple correlation coefficient. For t-test for significance of observed sample multiple correlations the test static used is calculated as

$$t = \frac{R}{\sqrt{1 - R^2}} \sqrt{n - 2}$$

h. Hypothesis Statement

The statements for the hypothesis made during the study are:

i. Null Hypothesis. H_0: $\rho = 0$, i.e., Capital Adequacy and Total Risk Weighted Assets of commercial banks is not correlated to their EPS

ii. Alternative Hypothesis. H_1: $\rho \neq 0$, i.e., Capital Adequacy and Total Risk Weighted Assets of commercial banks is correlated to their EPS.

Decision is made by comparing the calculated value of t with tabulated value. If calculated value $\leq$ the tabulated value of t, it is not significant and H_0 is accepted otherwise it is rejected.

CHAPTER IV
PRESENTATION AND ANALYSIS OF DATA

In this chapter, the data are analyzed and interpreted in meaningful manner. This chapter is major for fulfilling the objectives the study. This chapter is broadly divided into four sections. The first section focuses on presentation of data into various tables. The second section describes ratios that are to be analyzed in respect of capital adequacy norms and standards of the sample banks. The third section tries to make a statistical analysis of the quantitative data for better understanding of the impact of ratios on different factors and variables of capital adequacy standards. The forth section in this chapter presents the major findings of the study in terms of capital adequacy norms and standards on different aspects of commercial banks.

4.1 Presentation of Data

4.1.1 Core Capital

The key element of capital on which the main emphasis should be placed is the Tier 1 (core) capital, which comprises of equity capital and disclosed reserves. This key element of capital is the basis on which most market judgments of capital adequacy are made and it has a crucial bearing on profit margins and a bank's ability to compete.

Table 4.1
Core Capital

In million (Rs.)

Year	SCBNL	HBL	NIC ASIA	CZBIL	RBB
Mid-July 2015	5,447	6,841	5,109	3,625	7,604
Mid-July 2016	6,685	8,537	7,041	5,121	7,988
Mid-July 2017	11,119	11,350	9,766	9,108	11,014
Mid-July 2018	13,034	13,131	11,034	10,355	15,227
Mid-July 2019	13,926	14,650	13,483	11,226	18,227
Average	10,042.20	10,901.80	9,286.60	7,887	12,012

Source: Annual Reports of the Banks (FY 2014/15 to 2018/19)

Table 4.1 shows that over the period of five years, the core capital of all sample commercial banks has increased. During the review period, RBB has significantly increased its Capital Fund from Rs. 7,604 million to 18,227 million by the Mid-June 2019. Further other banks viz. SCBNL, HBL, NIC ASIA and CZBIL too have increased their capital fund to Rs. 13,926 million, Rs. 14,650 million, Rs. 13,483 million and Rs. 11,226 million respectively at the end of the review period. RBB has the highest capital fund among the sample banks.

The main rationale behind the increment of the capital fund has been to comply with the NRB requirement of attaining paid up capital of 8 million for commercial banks by mid-July 2017.

4.1.2 Capital Fund

Capital fund of a bank consists of two types of components: Tier-1 capital and Tier-2 capital. Tier-1 capital is known as core capital and Tier-2 capital is known as supplementary capital. Hence, the total capital fund of a bank derived by adding these two components of capital. In more details, it has been discussed under Chapter II: Review of Literature 2.2.1 Eligible Capital Funds.

Capital Fund of the sample banks from FY 2014/15 to 2018/19 are presented in table below:

Table 4.2
Capital Fund

In million (Rs.)

Year	SCBNL	HBL	NIC ASIA	CZBIL	RBB
Mid-July 2015	6,112	8,042	6,059	4,479	7,604
Mid-July 2016	7,779	9,815	8,193	6,006	8,969
Mid-July 2017	11,975	12,613	10,912	10,046	12,429
Mid-July 2018	13,986	14,349	15,350	11,345	16,880
Mid-July 2019	14,970	15,871	21,804	11,980	20,026
Average	10,964.40	12,138.00	12,463.60	8,771	13,182

Source: Annual Reports of the Banks (FY 2014/15 to 2018/19)

Table 4.2 shows that over the period of five years, the capital fund of all sample commercial banks has increased. During the review period, RBB has significantly increased its Capital Fund from Rs. 7,604 million to 20,026 million by the Mid-June 2019. Further other banks viz. SCBNL, HBL, NIC ASIA and CZBIL too have increased their capital fund to Rs. 14,970 million, Rs. 15,871 million, Rs. 21,804 million and Rs. 911,980 million respectively at the end of the review period. NIC Asia has the highest capital fund among the sample banks. During the period of Mid July 2015 - Mid July 2019 all the banks have more than doubled their capital fund.

4.1.3 Total Risk Weighted Assets

Risk-weighted assets (TRWA) are those held by a bank or other financial properties that are weighted according to their risk level. The sum of such risk-weighted assets is known as TRWA. A bank must maintain capital that measures out to a predetermined percentage of its risk-weighted assets. Each asset is assigned a risk weight that is based on the amount of risk involved. The TRWA of sample banks are as follows.

Table 4.3

Total Risk Weighted Assets

In million (Rs.)

Year	SCBNL	HBL	NICASIA	CZBIL	RBB
Mid-July 2015	46,673	72,184	48,503	42,856	74,841
Mid-July 2016	47,485	90,507	65,848	54,489	85,779
Mid-July 2017	56,802	103,803	78,911	73,538	105,066
Mid-July 2018	60,838	115,140	126,370	73,250	120,412
Mid-July 2019	76,051	125,984	163,678	83,381	151,748
Average	57,569.80	101,523.60	96,662	65,503	107,569

Source: Annual Reports of the Banks (FY 2014/15 to 2018/19)

Table 4.3 shows that Total Risk Weighted Assets of the commercial banks has been noticeably increased. RBB records the highest TRWA figure for almost all the years of the period of Mid-July 2015 to Mid-July 2019 with TRWA. RBB stands at second highest the bank in terms of TRWA. SCBNL proves to be the bank with lowest TRWA figure at end of the review period.

Increasing risky behavior in respect with increasing capital of the commercial banks in the recent year can be observed from above.

4.1.4 Net Profit

Net profit has been universally recognized and accepted as a measure of business efficiency. Thus, the larger the profits, the more efficiency and profitable the business organization is deemed to be. Net profits for the study are taken as residual profit obtained after deducting all the provisions and taxes from operating profit. Net Profit of the sample banks are presented in table below.

Table 4.4
Net Profit

In million (Rs.)

Year	SCBNL	HBL	NIC ASIA	CZBIL	RBB
Mid-July 2015	1310	1,112	680	720	4,644
Mid-July 2016	1,292	1,936	1,067	1,080	2,355
Mid-July 2017	1,549	2,178	1,473	1,634	2,466
Mid-July 2018	2,189	1,875	1,335	1,234	3,659
Mid-July 2019	2,434	2,763	3,023	1,463	5,328
Average	1,754.80	1,972.80	1515.6	1,226	3,690
SD	469.94	532.62	800	316.24	1,172
CV	26.78	26.99	52.84	25.79	31.77

Source: Annual Reports of the Banks (FY 2014/15 to 2018/19)

Table 4.6 presents the trend of net profit of the five banks. It depicts RBB has the highest net profit throughout the five years in FY 2018/19. NIC ASIA earned 3.02 Billion. Similarly, HBL earned 2.76 billion, SCBNL earned 1.75 billion, CZBIL earned 1.22 billion and RBB earned 3.69 billion in FY 2018/19.

Although RBB has earned the most, highest standard deviation of net profit shows is having inconsistency with C.V. of 31.77 percent. The table shows that SCBLN has been consistent in earning net profit with C.V of 26.78 percent.

4.2 Ratio Analysis

4.2.1 Capital Adequacy Ratio

Capital adequacy ratio is the ratio which determines the capacity of a bank in terms of meeting the time liabilities and other risk such as credit risk, market risk, operational risk, and others. It is a measure of how much capital is used to support the banks' risk assets. The Capital Adequacy Ratio (CAR) is calculated by dividing eligible regulatory capital by total risk weighted exposure.

Table 4.5
Capital Adequacy Ratio

In %

Year	SCBNL	HBL	NIC ASIA	CZBIL	RBB
Mid-July 2015	13.10%	11.14%	12.49%	13.27%	10.16%
Mid-July 2016	16.38%	10.84%	12.44%	12.40%	10.46%
Mid-July 2017	21.08%	12.15%	13.83%	16.88%	11.83%
Mid-July 2018	22.99%	12.46%	12.24%	13.84%	14.02%
Mid-July 2019	19.69%	12.60%	13.28%	14.37%	13.02%
Average	18.65%	11.84%	12.86%	14.15%	11.88%

Source: Annual Reports of the Banks (FY 2014/15 to 2018/19)

Table 4.8 shows that all the commercial banks in Nepal are obliged to meet the CAR ratio prescribed by NRB for commercial banks in Nepal. As listed above all the commercial banks have been meeting the CAR ratio as prescribed by NRB other than RBB in first two years. As seen above SCBNL has the highest CAR during most of the period during the review period which indicates soundness of bank in meeting time liabilities and other risks. CZBIL stands second on an average during the period.

Further depending on the various economic situations, the NRB changes CAR implications on banks which the banks are obliged to follow.

4.2.2 Tier 1 Capital Ratio

Tier 1 common capital ratio is a measurement of a bank's core equity capital compared with its total risk-weighted assets that signifies a bank's financial strength. The Tier 1 common capital ratio is utilized by regulators and investors because it

shows how well a bank can withstand financial stress and remain solvent. Tier 1 common capital excludes any preferred shares or non-controlling interests when determining the amount of Tier 1 common capital when calculating the ratio.

Table 4.6
Tier 1 Capital Ratio

In %

Year	SCBNL	HBL	NIC ASIA	CZBIL	RBB
Mid-July 2015	11.67	9.48	10.53	10.74	10.16
Mid-July 2016	14.08	9.43	10.69	10.57	9.31
Mid-July 2017	19.58	10.93	12.38	15.37	10.48
Mid-July 2018	21.43	11.40	8.66	12.76	12.65
Mid-July 2019	18.31	11.63	8.23	13.46	12.01
Average	17.01	10.57	10.10	12.58	10.92

Source: Annual Reports of the Banks (FY 2014/15 to 2018/19)

Table 4.8 presents the Tier 1 Capital Ratio of the sample banks. The table showed all the bank has fulfilled the norms of NRB's capital framework all the private banks met the norms. SCBNL has highest average Tier 1 Capital Ratio at 17.01 percent. The ratio has been noticed to gradually increasing in all the banks. Supervision and regulation of NRB attributes to the increase in the ratio.

Table 4.2.2 Earning per Share

Earning per share (EPS) is the portion of a company's profit allocated to each outstanding share of common stock. Earning per share serves as an indicator of a company's profitability. EPS is calculated as:

EPS = (Net Income - Dividends on Preferred Stock) / Average Outstanding Share.

It is also a tool of examining the profitability of the bank.

Table 4.7
Earning per Share

In NPR

Year	SCBNL	HBL	NIC ASIA	CZBIL	RBB
Mid-July 2015	57.38	33.37	25.59	30.94	54.07
Mid-July 2016	45.96	43.03	28.31	35.25	26.42
Mid-July 2017	35.49	33.55	23.06	20.27	35.89
Mid-July 2018	27.33	23.11	16.62	15.37	42.19
Mid-July 2019	30.39	32.44	34.22	17.49	59.17
Average	39.31	33.1	25.56	23.86	43.55
SD	11.03	6.31	5.81	7.82	11.90
CV (%)	28.06	19.06	22.73	32.75	27.33

Source: Annual Reports of the Banks (FY 2014/15 to 2018/19)

Table 4.12 shows the trend of EPS of the banks from FY 2014/15 to FY 2018/19. From the table it can be said that RBB has the most inconsistent EPS through the period as the Coefficient of Variation (CV) of CZBIL is highest at 32.75 percent and HBL has the most consistency in maintaining the EPS. RBB has highest EPS on an average with 43.55 per share where as CZBIL has the least at 23.86 per Share.

It shows that RBB is most attractive for equity investor in term of earning but NIC ASIA's share seems the least risky option for equity investment.

4.3 Statistical Analysis

4.3.1 Correlation Analysis

a) Simple correlation between CAR and Net Profit

It tries to establish relation between Capital Adequacy and Net Profit of the sample bank.

Table 4.8
Simple Correlation between CAR and Net Profit

Banks	R	R^2	PE	6× PE	Test Significant
SCBNL	0.6792	0.4613	0.1625	0.9750	Insignificant
HBL	0.6537	0.4273	0.1727	1.0365	Insignificant
NIC ASIA	0.4980	0.2480	0.2268	1.3610	Insignificant
CZBIL	0.7796	0.6078	0.1183	0.7099	Significant
RBB	0.2450	0.0600	0.2835	1.7012	Insignificant

Source: Calculation is shown is Annexure-IV.

In the above table 4.8., it can be experienced that all the correlation coefficient, ***R*** and coefficient of determinants, R^2 for each individual commercial bank is positive. This signifies that there exists the positive relationship between Capital Fund and Deposit and Credit. Further the **PE** that measures the variability around the fitted line of regression is also at lower side. Lower the value of **PE** indicates, lower the variability of observed value from mean value. As the PE for all the commercial banks are within the range of 30%, the error of estimate could be considered minimum. Despite positive ***R***, R^2 and lower the value of **PE**, however as R<6× PE, there is no significant relationship between Capital Adequacy Ratio and Net Profit. Hence, could not be concluded about significant relation exists or not.

4.3.2 Test of Hypothesis

Review of various empirical studies has shown that their positive correlation between Capital Adequacy and the profitability of the Bank which have been discussed in Chapter-II. Those studies concluded that Capital Adequacy Norms are significant factors for determining the profitability of the banks. Here the effort has been made to test the significance of the correlation coefficient using *t-test.* For test purpose, average correlation coefficient of sample banks has been used. The test is conducted to draw a conclusion whether Capital Adequacy and Total Risk Weighted Assets of commercial banks is not correlated to their EPS or not. The result is as in table below.

Table 4.9
Multiple Correlation between EPS, CAR and TRWA

Year	Average		
	EPS (Rs)	CAR (%)	TRWA (Rs)
SCBNL	54.0	18.65	57,569.80
HBL	35.4	11.84	101,523.6
NIC ASIA	32.1	12.86	96,662
CZBIL	23.3	14.15	65,503
RBB	31.9	11.88	107,569
Total	176.7	69.38	428,827.4
Correlation between EPS and CAR (r_{12})			0.75
Correlation between EPS and TRWA (r_{13})			(0.38)
Correlation between CAR and TRWA (r_{23})			(0.89)
Correlation between EPS, CAR and TRWA, where EPS is dependent ($R_{1.23}$)			0.9583

Source: Calculation is shown in Appendix- V.

Simple correlation between EPS and CAR is 0.75, which shows positively correlated, but correlation between EPS and TRWA is -0.38 and between CAR and TRWA is -0.89. T-test for significance of observed sample multiple correlations has been presented as:

Table 4.10
Test of Hypothesis

Null Hypothesis (H_0)	Capital Adequacy and Total Risk Weighted Assets of commercial banks is not correlated to their EPS
Alternative Hypothesis (H_1)	Capital Adequacy and Total Risk Weighted Assets of commercial banks is correlated to their EPS.
Correlation coefficients (r)	0.7181
Calculated Value (t_{cal})	1.787
Tabulated Value (t_{tab})	3.182
Degree of Freedom (d.f.)	3
Level of significance (α)	5%
Decision	H_0 is accepted, hence, H_1 is rejected i.e., Capital Adequacy and Total Risk Weighted Assets of commercial banks is not correlated to their EPS

Source: Calculation is shown in Appendix- VI.

The test signifies the existence of relationship among CAR, TRWA and EPS. As H_0 is accepted he test denotes that the correlation Between CAR and TRWA with EPS of the Nepalese commercial banks are not significant.

4.4 Major Findings

Based on the analysis and thorough study the major findings of the study are as follows:

- During five years' period, all sample commercial banks have increased their capital fund, loans and advances and deposits and TRWA significantly.
- As Nepalese financial market is still in its growing phase, credit disbursement and deposits collection activities of all commercial banks under study are in

increasing trend. Similarly, TRWA of all sample banks are also in increasing order. It signifies that the banks are being involved in more and more risky activities to earn as far as possible.

- Net profit is also in increasing trend.
- Among the sample banks, RBB has lowest capital adequacy ratio however with the CAR improving thereafter. Except RBB all other banks have been fulfilling the NRB requirement. During last three FYs RBB has also fulfilled the Capital Adequacy Norm and Standards of NRB hence it can be concluded that NRB's regulation and supervision regarding the capital adequacy norms has been proved to be effective.
- The banks have also met the minimum Tier 1 capital ratio. Although RBB lagged in first two years' growth in the reserve and surplus and net profit can be attributed for the improvement in the bank Tier 1 Capital Ratio.
- In order to meet the capital adequacy norms, the sample banks have raised their capital by means of issuance of Rights Share and Bonus Share. It implies that the commercial banks' increment in the paid capital is the impact of capital adequacy norms and standard. And so do banking industry.
- Likewise, while calculating Capital to Deposit ratio it was observed that, RBB has very low mean Capital to Deposit Ratio. It means the deposit of RBB's utilization of deposit into credit is least among the sample banks and also is much vulnerable as CV (coefficient of variation) of RBB is highest and not being able to give return to the capital. Similarly, HBL's and NIC ASIA's less variable SD and CV refers that it has less risk compare to other banks. As such all sample banks have been trying their best to increase Capital to deposit ratio. However, government owned commercial bank seems to be lacking very much behind in securing and utilizing deposits. Almost all the banks have increased the Capital to Deposit ratio this indicates that banks are able to create strength in their capital base with growth of their business size.
- It is observed that most of the banks are at higher CDR. It reflects that banks are making more loans and advances out of their deposits, hence making lower

liquidity at their disposal. As per NRB's Capital Adequacy Framework 2015, more than 20% Liquidity ratio would attract no additional risk.

- It has been observed that there are some instances of prompt corrective action taken by NRB for breach of minimum capital adequacy by some banks. All the actions were withdrawn after the fulfilling the capital adequacy norms. But in recent year no such actions have been taken.

CHAPTER V
SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

The Nepalese banking system comprises of 27 commercial banks, 20 development banks, 22 finance companies and 85 micro finance institutions till Ashad end 2077. Among these financial institutions, commercial banks hold the majority of the banking assets in the country. Nepal has initiated its liberalization policy for the last two decades. The central bank has initiated transparent and prudent regulatory framework for banks and financial institutions and the effectiveness of the central bank's regulatory framework is also reflected in the stock market. Some of the regulations imposed by the central bank are capital adequacy related regulation, loan classification, loan loss provisioning, single obligor limit, accounting and transparency, risk management, corporate governance, cash reserve ratio, deprived sector lending etc. These regulations have contributed to the soundness of Nepal's financial system.

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. It is threats to depositors, creditors and other those who have stake in them. Such risk may deteriorate overall financial stability of the nation. Similarly, the Nepalese financial sector has been signified by huge number of financial institutions. This also affects the performance and soundness of the financial sector in Nepal. In order to develop sound and safe financial system, one measure could be maintaining sufficient amount of qualitative capital and adopting risk management practices. In line with regulating capital funds, NRB has issued Directive number 1 for supervising and maintaining capital adequacy norms for commercial and development banks and has developed separate framework to cope with this.

This study focuses on norms and standards established by the central bank of Nepal, NRB to regulate capital standard for commercial banks through its directive no. 1. The thesis seeks to provide impact of the directives on the commercial banking activities in line with maintaining capital. In order to get the clear view, the study on five major commercial banks, i.e., SCBNL, HBL, NICASIA, CZBIL and RBB with different background was carried out. For the purpose of the study, capital funds, deposits, credits and share capital of the sample banks were referred. The study focuses on the changes in deposit, lending, changes in capital funds relating to capital adequacy norms prescribed by NRB.

Various literatures relating to financial sector reforms have been referred to during the course of study. Ample literature has been drawn from various agencies, particularly the NRB. Directives, guidelines, etc. issued by NRB concerning commercial banks have been amply referred to for the purpose of the study. Likewise, Basel II documents availed from the BIS website; with regards to the banking supervision has also been amply reviewed. In addition, past researches relating to commercial bank's capital adequacy norms for commercial banks have also been reviewed, so has different relevant articles that have appeared in different newspapers, journals, magazines and books, among others. A huge amount of literature available in the internet has been used. In addition, past researches relating to financial sector reforms and capital adequacy have also been reviewed, so has different relevant articles that have appeared in different newspapers, journals, magazines and books, among others. A huge amount of literature available in the Internet has been used. References to the most relevant documents, including theoretical review and information on the overall accession package to financial sector liberalization, are made.

Attempts have been made to describe in detail ratios that have impact on Capital Adequacy and also presents the year-by-year changes in the ratios. Statistical analysis of the quantitative data for better understanding of the impact of ratios on different factors of Capital Adequacy ratios has been made. To find out the impact of the capital adequacy norms correlation with various aspect of the banking such as deposit, lending net profit and earning per share has been analyzed.

5.2 Conclusion

Prudential regulation of the banks is supposed to prevent or at least reduce the frequency of the disastrous consequences in financial sector. Commercial banks are legally requiring to maintain adequate capital funds. In order to prevent bank failures and protest interest of depositors, it is necessary that banks follow the standard Capital adequacy norms. Capital adequacy has become one of the most significant factors for assessing the soundness of banking sector. The ratio addresses all kind of risk that the bank may expose into viz. operation risk, credit risk and market risk. Maintenance of adequate capital helps commercial banks to absorb the shocks in financial constraints or adverse economic situations and thus provides greater security and safety for all stakeholders. To establish the sound financial system in the nation, NRB has also persuaded the policy of implementing risk-based supervision through its directive. As per the policy, NRB tries to protect its depositors and creditors, to commensurate with the risk associated activities and profile of the commercial bank and promote public confidence in the banking system.

Capital adequacy norms prescribed by NRB has tendency of creating buffer against the risks associated with its objective by maintaining the sufficient capital adequacy ratio. However, maintenance of capital adequacy constrained them from their business. Hence, some of the bankers are not satisfied with this provision. In line with meeting the norms, they are increasing their capital base through increment in share capital. It has been experienced that banks are trying to meet the norms as far as possible.

The Capital to Deposit ratio seems to in increasing which is the signal of minimizing the liquidity risk. However, the banks are increasing their Credit to Deposit Ratio focusing towards risky lending approaches. Any default would lead to doubt over the financial instability of the sector.

There is the positive correlation between deposit and credit and Capital Fund. The positive correlation helps to boost the growth of financial activities in the nation. Such relation helps safeguarding of the depositors.

This study shows although there is positive relation between CAR and profit of the bank their correlation could not be curtained as significant. Probable errors of their correlation were insignificant for all the banks.

Further unlike conclusions of various empirical studies, this thesis shows no significant correlation exists between EPS and CAR and TRWA. This can be justified by the t-test of the correlation. The reason behind the phenomenon is that the banks are extending their lending activity in order to earn more but at the same time due to requirement of Capital Adequacy Norms the bank are required to increase their capital fund. That creates the situation of increase in number of share and as the result the earning has to be divided into newly injected shares. Further the meeting capital regulation increase the cost to increase the capital. On the other hand, the norm prevents the banks to lend in risky investment.

During recent years there has been no prompt corrective actions taken by NRB. Hence, Nepalese banks are following the capital adequacy norms laid by the central bank. Both Tier 1 capital ratio and capital adequacy has been maintained by the commercial banks, which has created a comfortable buffer in the stress scenarios. Mandatory requirement of attaining 8 billion of paid up capital has been an effective regulative tool for enhancing the capital adequacy and strengthening capital support system.

It can be concluded that Nepalese bank have increasing their capital base which is reflected by increasing trend in CAR. One of the important reasons is the prudent course of NRB's regulation and supervision. Further it can also be pointed that banks have been self-motivated toward maintaining capital adequacy norms in order to support the growing size of their business.

To sum up, NRB has rightly introduced Capital Adequacy Norms for Nepalese financial sector which is in its developing stage through its directive which has a positive impact over financial sector of the country. In order to meet the core objective of the directive, commercial banks have been increasing their capital fund and have refrained from involving into risky activities. NRB's Capital Adequacy

Framework 2015 has been designed in line with BASEL III Accord hence it is expected to develop international best practices in Nepal. NRB has been focusing on reforms in macro prudential measures and addressing system wide risk as well as the procyclical amplification of the risk over time.

5.3 Recommendations

Based on the analysis and findings of the study, some of the recommendations are made which are as follows:

- The capital funds of commercial banks are highly dependent upon share capital. It would be better if the banks follow optimal capital structure which maximizes their market value. The banks should use some sort of debt financing also depending upon its feasibility. It is notable that some of the commercial banks have already started the debt financing. But still debt financing is an unaccustomed source of financing for commercial banks in Nepal.
- NRB should supervise and revise the standard for capital-to-deposit ratio form time to time. NRB should ensure that the ratio is maintained by commercial banks. A 10 percent to 12 percent ratio is appropriate for the ratio of capital-to-deposit.
- CD ratios of most of the commercial banks are high. The situation is vulnerable to the interest of depositors. The commercial banks should try to maintain appropriate capital-to-deposit ratios and CD ratios as stated above. They can no way escape pointing on to the lack of the policy.
- Government banks seem to be lagging behind in meeting the requirement of the norms. Hence, those banks are the monitored and corrective action are the taken appropriately since due their volume and size if any problem may create imbalance the whole banking system of the nation.
- NRB should consult various bank officials before setting or resetting standards on capital adequacy norms. The complaints and criticisms of bank officials should be considered accordingly. Consequently, an optimal standard will ensue which will satisfy almost everyone.

- The depositors deposit their money to any banks only considering rate of interest regardless of adequate capital fund which may endanger safety of their money. Therefore, NRB should initiate awareness programs to make the depositors aware of such fact and think before depositing money in any commercial banks.
- Although NRB has devised the tools of BASEL III such as leverage ratio, Counter Cyclical Buffer, Liquidity Coverage Ratio and Net Funding Ratio, there has been no effective implementation of those. Hence they should be implemented as soon as possible.
- NRB now requires initiating to move towards Risk Based Supervision from its Compliance based supervision approach. As the banking of Nepal has already become sophisticated and complex, it has become imperative to utilize the supervisory resources in a most efficient manner possible concentrating on the major risks that may produce systemic impact.
- Credit and macro-control policy will be more effective if most of banks in our country are able to adjust their capital elastically or own a high capital adequacy ratio.
- Commercial banks must improve good governance, transparency and impose accountability. Assets Liabilities Management Committee (ALCO) should prudently manage the fund through deposit mobilization and investment.

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ANNEXURE-I

Nepal Rastra Bank Regulated Nepalese Financial Institutions as of mid-July 2019

S.No.	Name of A Class Financial Institution
1	Nepal Bank Limited
2	Rastriya Banijya Bank
3	Nabil Bank Limited
4	Nepal Investment Bank Limited
5	Standard Chartered Bank Nepal Limited
6	Himalayan Bank Limited
7	Nepal SBI Bank Limited
8	Nepal Bangaladesh Bank Limited
9	Everest Bank Limited
10	Bank of Kathmandu Limited
11	Nepal Credit and Commerce Bank Limited
12	NIC ASIA Bank Limited
13	Machhapuchhre Bank Limited
14	Kumari Bank Limited
15	Laxmi Bank Limited
16	Siddhartha Bank Limited
17	Agriculture Development Bank
18	Global IME Bank Limited
19	Citizens Bank International
20	Prime Commercial Bank Limited
21	Sunrise Bank Limited
22	NMB Bank Limited
23	Prabhu Bank Limited
24	Mega Bank Nepal Limited
25	Civil Bank Limited
26	Century Commercial Bank
27	Sanima Bank

ANNEXURE- II

The phase-in Transitional Arrangements of Basel III for banks

Ratios	(Mid July)				
	2015	2016	2017	2018	2019
Minimum Common Equity Capital Ratio	4.00	4.50	4.50	4.50	4.50
Capital Conservation Buffer	1.00	1.25	1.50	2.00	2.50
Minimum common equity plus capital conservation buffer	5.00	5.75	6.00	6.50	7.00
Minimum Tier 1 Capital (Excluding conservation buffer)	6.00	6.00	6.00	6.00	6.00
Minimum Total Capital (Excluding conservation buffer)	10.00	9.75	9.50	9.00	8.00
Minimum Total Capital (including conservation buffer)	11.00	11.00	11.00	11.00	11.00
Counter Cyclical Buffers	Introduce minimum standard	0-2.5	0-2.5	0-2.5	0-2.5
Leverage Ratio	Introduce minimum standard	Offsite Monitoring 4%			Migration to Pillar 1
Liquidity coverage ratio	Review Existing Framework		LCR 100%	LCR 100%	LCR 100%
Net stable funding ratio	Observation and Parallel Run		Introduce minimum standard	Implemented	
SIFI Measures	NRB shall issue the regulation.				

Source: NRB Directive (2077)

ANNEXURE-III

Exhibit of Tier Capital, Capital Fund, Net Profit, TRWA, Deposit and Credit

In million Rs.

Year	Tier 1 Capital	Capital Fund	Net Profit	TRWA	Deposit	Credit
	SCBNL					
Mid-July 2015	5,447	6,112	1310	46,673	57,286	28,024
Mid-July 2016	6,685	7,779	1,292	47,485	55,727	31,697
Mid-July 2017	11,119	11,975	1,549	56,802	63,873	39,730
Mid-July 2018	13,034	13,986	2,189	60,838	67,387	44,561
Mid-July 2019	13,926	14,970	2,434	76,051	76,237	53,092
	HBL					
Mid-July 2015	6,841	8,042	1,112	72,184	73,538	55,428
Mid-July 2016	8,537	9,815	1,936	90,507	87,336	69,101
Mid-July 2017	11,350	12,613	2,178	103,803	92,881	79,044
Mid-July 2018	13,131	14,349	1,875	115,140	99,743	88,086
Mid-July 2019	14,650	15,871	2,763	125,984	113,089	99,530
	NIC ASIA					
Mid-July 2015	5,109	6,059	680	48,503	53,477	43,330
Mid-July 2016	7,041	8,193	1,067	65,848	69,488	59,499
Mid-July 2017	9,766	10,912	1,473	78,911	87,678	72,562
Mid-July 2018	11,034	15,350	1,335	126,370	139,589	121,745
Mid-July 2019	13,483	21,804	3,023	163,678	176,820	149,505
	CZBIL					
Mid-July 2015	3,625	4,479	720	42,856	39,992	29,200
Mid-July 2016	5,121	6,006	1,080	54,489	48,154	40,565
Mid-July 2017	9,108	10,046	1,634	73,538	59,320	48,845
Mid-July 2018	10,355	11,345	1,234	73,250	60,696	58,468
Mid-July 2019	11,226	11,980	1,463	83,381	70,509	64,493
Mid-July 2015	7,604	7,604	4,644	74,841	124,222	75,836
Mid-July 2016	7,988	8,969	2,355	85,779	146,208	85,470
Mid-July 2017	11,014	12,429	2,466	105,066	153,576	106,431
Mid-July 2018	15,227	16,880	3,659	120,412	169,330	120,872
Mid-July 2019	18,227	20,026	5,328	151,748	190,031	141,883

ANNEXURE-IV

Calculation of Simple Correlation between CAR and Net Profit

For SCBNL

Year	Capital Fund (X_1)	Deposit (X_2)	$X_1 X_2$	X_1^2	X_2^2
Mid-July 2013	6,112	57,286	350,132,032	37,356,544	3,281,685,796
Mid-July 2014	7,779	55,727	433,500,333	60,512,841	3,105,498,529
Mid-July 2015	11,975	63,873	764,879,175	143,400,625	4,079,760,129
Mid-July 2016	13,986	67,387	942,474,582	195,608,196	4,541,007,769
Mid-July 2017	14,970	76,237	1,141,267,890	224,100,900	5,812,080,169
Total	54,822	320,510	3,632,254,012	660,979,106	20,820,032,392

$\sum X_1$ = 54,822 $\sum X_2$ = 320,510

$\sum X_1X_2$ = 3,632,254,012

$\sum X_1^2$ = 660,979,106 $\sum X_2^2$ = 20,820,032,392

Now,

$$r_{12} = \frac{n\sum X_1X_2 - \sum X_1 \sum X_2}{\sqrt{[n\sum X_1{}^2 - \sum (X_1)^2]}\sqrt{[n\sum X_2{}^2 - \sum (X_2)^2]}}$$

= 0.9204

Hence,

Correlation of Capital Adequacy Ratio (CAR) and Net profit of SCBNL is 0.9204

Calculation of Probable Error (PE)

Probable Error (PE) of multiple correlations is given by

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

= 0.0461

Hence, P.E. of correlation between CAR and net profit of SCBNL is 0.0461

6 x P.E.(r) = 6 x 0..0461 = 0.2766

Applying the formula of Correlation and P.E. for all the sample banks, we get

Banks	**R**	**R^2**	**PE**	**6× PE**
SCBNL	0.9204	0.8471	0.0461	0.2766
HBL	0.9708	0.9424	0.0174	0.1043
NIC ASIA	0.9923	0.9846	0.0046	0.0279
CZBIL	0.9688	0.9386	0.0185	0.1111
RBB	0.9692	0.9394	0.0183	0.1096

ANNEXURE-V

Test of Hypothesis

For the purpose of testing hypothesis, 5 years' average data of EPS, CAR and TRWA of sample banks are taken. The observed data are as follows.

	Average		
Year	EPS (%)	CAR (%)	TRWA (Rs. Million)
SCBNL	54.0	18.65	57,569.80
HBL	35.4	11.84	101,523.6
NIC ASIA	32.1	12.86	96,662
CZBIL	23.3	14.15	65,503
RBB	31.9	11.88	107,569
Total	176.7	69.38	428,827.4

Multiple correlation of EPS, CAR and TRWA

SCBNL									
Year	**EPS(X1)**	**CAR(X2)**	**TRWA(X3)**	**X1X2**	**X1X3**	**X2X3**	**$X1^2$**	**$X2^2$**	**$X3^2$**
2015	54	18.65	57,569.80	1,007.10	3,108,769.20	1,073,676.77	2,916.00	347.82	3,314,281,872.04
2016	35.4	11.84	101,523.60	419.14	3,593,935.44	1,202,039.42	1,253.16	140.19	10,307,041,356.96
2017	32.1	12.86	96,662	412.81	3,102,850.20	1,243,073.32	1,030.41	165.38	9,343,542,244.00
2018	23.3	14.15	65,503	329.70	1,526,219.90	926,867.45	542.89	200.22	4,290,643,009.00
2019	31.9	11.88	107,569	378.97	3,431,451.10	1,277,919.72	1,017.61	141.13	11,571,089,761.00
Total	176.7	69.38	428,827.40	**2,547.71**	**14,763,225.84**	**5,723,576.68**	**6,760.07**	**994.74**	**38,826,598,243.00**

$\sum X_1$	176.70	$\sum X_2$	69.38	$\sum X3$	428,827.40
$\sum X1X2$	12259.446	$\sum X1X3$	75773801.58	$\sum X2X3$	29,752,045.01
$\sum X_1^2$	31222.89	$\sum X_2^2$	000000004814	$\sum X_3^2$	183,892,938,990.76

Now,

$$r_{12} = \frac{n\sum X_1X_2 - \sum X_1 \sum X_2}{\sqrt{[n\sum {X_1}^2 - \sum (X_1)^2]}\sqrt{[n\sum {X_2}^2 - \sum (X_2)^2]}}$$

= 0.75

Again,

$$r_{13} = \frac{n\sum X_1X_3 - \sum X_1 \sum X_3}{\sqrt{[n\sum {X_1}^2 - \sum (X_1)^2]}\sqrt{[n\sum {X_3}^2 - \sum (X_3)^2]}}$$

= (0.38) Again,

$$r_{23} = \frac{n\sum X_2X_3 - \sum X_2 \sum X_3}{\sqrt{[n\sum {X_2}^2 - \sum (X_2)^2]}\sqrt{[n\sum {X_3}^2 - \sum (X_3)^2]}}$$

= (0.89)

Now,

$$R_{1.23} = \sqrt{\frac{r_{12}{}^2 + r_{13}{}^2 - 2r_{12}\, r_{13}\, r_{23}}{1 - r_{23}{}^2}}$$

= 0.9583

Hence,

Coefficient of Multiple Correlation of EPS, CAR and TRWA treating EPS as dependent variable and other two independent is R = 0.9583

No. of observation i.e., n = 5.

Now,

Null Hypothesis. H_0: $\rho = 0$, i.e., Capital Adequacy and Total Risk Weighted Assets of commercial banks is not correlated to their EPS

Alternative Hypothesis. H_1: $\rho \neq 0$, i.e., Capital Adequacy and Total Risk Weighted Assets of commercial banks is correlated to their EPS.

Test Statistics: Under H_0 the test static is

$$t = \frac{R}{\sqrt{1-R^2}} \times \sqrt{n-2}$$

$$= \frac{0.71813}{\sqrt{1-(0.71813)^2}} \text{ x } \sqrt{5-2} = 1.787$$

Degree of freedom= n – 2 = 5 – 2 = 3

The tabulated value of t at 5% level of significance for two tailed test and 3 degree of freedom is 3.182.

Decision: Since the calculated value of t is smaller than tabulated value of t, the null hypothesis H_0 is accepted and hence alternative hypothesis H_1 is rejected. Therefore, Capital Adequacy and Total Risk Weighted Assets of commercial banks is not correlated to their EPS.