A STUDY ON TREASURY MANAGEMENT OF NABIL BANK AND MACHHAPUCHCHHRE BANK LIMITED

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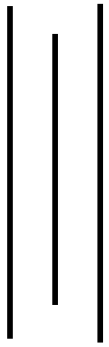

In partial fulfillment of the requirement for the Degree of Master of Business Studies (MBS)

Kathmandu, Nepal
July, 2010

RECOMMENDATION

This is to certify that the Thesis

Submitted by:

Punam Shrestha

Entitled:

A STUDY ON TREASURY MANAGEMENT OF NABIL BANK AND MACHHAPUCHCHHRE BANK LIMITED

has been prepared as approved by this Department in the prescribed format of the Faculty of Management. This thesis is forwarded for examination.

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VIVA-VOCE SHEET

We have conducted the viva –voce of the thesis presented

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A STUDY ON TREASURY MANAGEMENT OF NABIL BANK AND MACHHAPUCHCHHRE BANK LIMITED

And found the thesis to be the original work of the student and written according to the prescribed format. We recommend the thesis to be accepted as partial fulfillment of the requirement for

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Viva-Voce Committee

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DECLARATION

I hereby declare that the work reported in this thesis entitled "**A Study on Treasury Management of Nabil Bank & Machhapuchchhre Bank Limited**" submitted to Office of the Dean, Faculty of Management, Tribhuvan University, is my original work done in the form of partial fulfillment of the requirement for the Master Degree in Business Studies (MBS) under the supervision of **Mrs. Ruchila Pandey & Mr. Kiran Thapa** of Shanker Dev Campus.

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ABBREVIATIONS

A/c	Account
ALCO	Assets Liability committee
B/S	Balance Sheet
CDs	Certificate of Deposits
Cm^2	Square of Centimeter
CP	Commercial Paper
CRR	Cash Reserve Ratio
c.v	Co-efficient of variation
e.g	Example
et.al	And all others
Etc	Etcetera
Fcy	Foreign Currency
Forex / FX	Foreign exchange
FY	Fiscal Year
GDP	Gross Domestic Product
i.e.	That is
INR	Indian Rupees
Kg	Square of Kilogram
Lacs	Lakhs
NII	Net Interest Income
NIM	Net Interest Margin
NPA	Non Performing Assets
NPR	Nepalese Currency
NRB	Nepal Rastra Bank
P/L	Profit and Loss
RBI	Reserve Bank of India
Rs	Rupees
s.d	Standard Deviation
SLR	Statutory Liquidity Ratio
T-bills	Treasury Bills
US / USA	United States of America
USD	US Dollar
VAR	Value at Risk
$	Dollar
%	Percentage
Σ	Summation
$\overline{X}$	Average Mean

CHAPTER - I
INTRODUCTION

1.1 Background of the Study

Major changes of corporate treasury management policies have been made in the past few decades. Treasury management has gradually taken up more and more responsibilities. In the 1960s treasury-related tasks entailed purely routine work in what was no more than ancillary function as a centralizing cash management unit linked to administrative tasks. In the 1970s the first significant changes began to take place as the economic environment was hit by recession, which favored the emergence of new short-term monetary policy instruments and the first hints of deregulation of financial markets, but treasury management was still restricted to the obtaining of funding, the management of payments and collections and the maintenance of bank balance positions. It was not until the 1980s that it became integrated into general corporate management and finally outgrew its purely administrative function linked to the accounting department.

Treasury is the backbone of every bank. The major dealings of banks are centered on money and credit related matters. For the success of every bank, the proper management of fund assumes the highest importance. Every bank has to manage fund in Foreign Accounts (Nostro Accounts) in order to meet its foreign obligations. Treasury maintains fund in top class international banks. Similarly, treasury maintains fund in local banks as well, for various purposes like fund transfer or draft issuance, drawn on places where it doesn't have its own branches.

In today's highly competitive environment, treasury plays a vital role in the viability and success of a bank and calls for effective internal and external interface. It performs a myriad of functions such as balance sheet management liquidity management, reserves management, fund management, investment, managing capital adequacy, transfer pricing, technology and operations, risk management, trading activities and offering hedge products. It has to work on arriving at an optimal size of the balance sheet, interface with various liability and assets group internally give correct pricing signals keeping in mind the liquidity profile of the bank. On the external front it has to provide active trading support to the market, make two way

prices, add to the liquidity and continuously strive to provide the customers with value added solutions to their specific financial needs.

Traditionally, the role of the treasury in Nepalese banks was limited ensuring the maintenance of the Nepal Rastra Bank(NRB)- stipulated norms for Cash Reserve Ratio(CRR) which mandates that a minimum proportion of defined liabilities be kept as deposit with the Central bank and Statutory Liquidity Ratio (SLR) which obliges banks to invest a specified percentage of their liabilities in notified securities issued by the government of Nepal and State Governments or Guaranteed by them. Activity in foreign exchange was confined to meeting merchants' and customers requirement for imports, exports, remittances and deposits. In Nepal, every bank has set up treasury department was set up to meet their liquidity requirements by dealing in short term money market instruments like treasury bills, bills rediscounting etc. further steps such as increasing the number of instruments by introducing commercial paper and certificate of deposits greatly contributed to the development of money market.

With past liberalization, deregulation and financial sector reforms, banks have been compelled to look for avenues for alternatives to credit, the historical source of profit. It has been realized that credit function alone is not sufficient and banks should look to investments for earning market related returns on funds. Investments have thus gained importance as an equally important part of the bank's balance sheets. Therefore, over and above the cash reserve and statutory holding of government securities, as CRR and SLR, a substantial portion of bank's resources should be deployed in government (corporate bonds and other products) as an alternative to credit. The treasury operations also include providing of cover to the customers of the bank in respect of this trade transactions like exports, imports, remittances, etc and extending products and services to its customers for hedging the interest rate risks. While doing so treasury also takes care of the associated functions like liquidity management and assets liability management of the domestic as well as foreign exchange resources and deployment.

Thus, treasury management involves the management of sources and uses of funds for any type of organization in the broadest sense. The scope of treasury management is very wide and it covers every type of organization be it charitable, government or corporate. However in the context of banks, the term treasury management is constructed in terms of following four dimensions:

1. Market Risk Management,

2. Liquidity Management,
3. Investment Portfolio Management, and
4. Foreign Exchange Management.

The definition of treasury is the treasure or valuables of the government, centre and states and extended to semi-government bodies, corporate and non corporate bodies, financial institutions including banks who operate this treasury. Treasury management therefore refers to all activities involving the management of revenues, inflow and outflow of government, banks and corporate, etc. Treasury has both macro and micro aspects. Government as the sovereign power is the source of all treasure of the land. Its creation of money as a vehicle of facilitating trade, industry and business is the starting point for the function for treasury operations for micro units. The macro treasury manager is the Nepal Rastra Bank- Central Bank of Nepal. The Central Bank of Nepal as a banker to the Government creates the currency on behalf of the government and manages the government debt. It is also a banker to banks in that it controls the credit creation of banks. The same issued by the government, currency created by NRB and credit instruments of banks are all the subjects of management of the treasurer.

The treasury management has following three approaches. They are as follows:

1. Cost Centre Approach,
2. Service Centre Approach, and
3. Profit Centre Approach.

Treasury- As a Cost Centre has following responsibilities**:**

- Treasury as a facilitator of transaction flows of business units.
- Treasury with a process orientation towards risk.
- Treasury with a reactive strategy towards business development.

Defined functionally, the two approaches would include the following responsibilities:

Treasury- As a Service Centre includes:

- New trading orientation.
- Development of innovative risk management techniques.
- The application of such techniques to business units.
- Minimization of overall financial risks.

Now, Treasury- As a Profit Centre includes:

- It has its own Profit and Loss account.

- It undertakes exposures with no specific match with the natural exposure of the firm.
- Gains and losses are used to offset underlying exposures at a consolidated level.

As comparison to these three approaches, the service centre model of modern treasury management is the more prudent of the two approaches. It addresses the needs of the corporation from the standpoint of the challenging and dynamic world in which the modern, global corporation operates. The profit centre model does that as well but by taking on new exposures which may or may not directly offset losses, or enhance gains of operational profit centre. The profit model transforms the cost or service centre approach into a dynamic unit which may contribute to the quality and quantity of earnings. The risks of the profit centre model, however are significant. Thus, in deciding which approach to the Management of Treasury is favored, the firm should evaluate its strength, and if the result is not satisfactory the service model should be favored.

1.2 Focus of the Study

This is a study of how treasury management helps banks to possess idle funds or excess funds on accounts which generates revenues. It specially investigates how banks has managed its liquidity, foreign exchanges and market risk so as to earn profits. The investigation covers following inter-related aspects: 1.managing the liquidity requirement of the bank by maintaining statutory reserves- CRR and SLR as mandated by the NRB and by investment in government securities, 2.existing status, tools & techniques of foreign exchange management and buy and sale of foreign currencies in Nepal, 3. managing market risk through interest and exchange rate risk. It is also concentrated on role of information technology in treasury management.

1.3 Statement of the Problem

An important question in the banker's mind is how to manage a idle fund, to met depositors requirement as and when he demands, maintain cash reserve ratio as per NRB rules, investment in government securities. It is also essential for bank to know about the existing situation of foreign exchange, tools and techniques to be employed in foreign exchange management and to determine the market interest rate risk and

exchange rate risks. Availability of information and capacity of interpretation play vital role on rational decision regarding transaction of the cash.

This research is concentrated on the following issues:

- Does banks has managed their liquidity by maintaining CRR, SLR and monitoring current and call accounts?
- What the existing status of foreign exchange management in Nepal, tools & techniques and buying & sale of foreign currencies?
- How market risk can be managed by interest and exchange rate risk mechanism?
- What is the role of information technology in treasury management?

1.4 Objectives of the Study

The objective of this study is to know about the treasury management system of Nabil Bank and Machhapuchchhre Bank. The specific objectives are:

- To examine the liquidity management of Sample Banks
- To analyze the foreign exchange management- tools & techniques, buy & sale of foreign currencies of sample banks.
- To examine the market risk management- interest and exchange rate risk of sample banks.
- To analyze the role of information technology in treasury management.

1.5 Significance of the study

There are very limited studies that have been conducted regarding this area. The study has attempted to test some popularly held beliefs about the importance of treasury management in Nepalese banking sector where their responsibility covers trade execution on behalf of bank's clients or depositors in the cash or derivative markets. There may generate good margins depending on the complexity and skills required to design and put through customized structures in the market. This study will be equally important to the bankers, depositors, lenders, shareholders, management, outsiders and policy makers. This study will provide some valuable inputs for the further research scholars for this area.

1.6 Limitations of the study

Every research has its own limitations. This is a field work report which is based upon the data providing by the bank, Nepal Rastra Bank, articles journals and websites. As all things have pros and cons, there are some limitations regarding this study.

- This study period is based on 5 year fiscal period, So it doesn't depict the overall year's operation of Nabil Bank and Machhapuchchhre Bank..
- This study only considers treasury department due to which it doesn't represent overall operation of bank.
- It only represents Nabil and Machhapuchchhre bank, so it doesn't show the glimpse of all commercial banks of Nepal.
- The whole study is based on secondary data from Central Bank, published materials of Nabil & Machhapuchchhre bank, articles and journals.
- The findings of the report cannot be generalized.
- Due to the constraint of time, detail study cannot be done on determining the visitor's satisfaction.
- As a student I completed the project work within the constraint of the limited budget.

1.7 Organization of the study

The overall study has been organized into five chapters as follows:

Chapter One: Introduction

It includes background of the study, focus of the study, statement of the problem, objectives of the study, significance of the study, limitations of the study and organization of the study itself.

Chapter Two: Review of Literature

This chapter concerns about the concept of treasury management and review of related thesis or articles to highlight the related terms and to present the available information about previous related studies. Especially it includes conceptual review and review of major studies.

Chapter Three: Research Methodology

This chapter includes research design, population and sample, nature and sources of data, data analysis tools, data processing procedure and limitations of the study.

Chapter Four: Data Presentation and Analysis

Various data are gathered from the application of different methods and presented and tabulated as required by the research objectives. Data are interpreted and analyzed with the help of various analytical tools and technique. It also includes major finding of the study.

Chapter Five: Summary, Conclusion and Recommendation

This chapter includes summary and conclusion of the study. It also includes recommendation on the basis of the study.

CHAPTER - II
REVIEW OF LITERATURE

This chapter is basically concerned with the review of literature relevance to the practices of treasury management. It covers the theories and previous study on the topic done by academicians and researchers within and outside the nations.

2.1 Conceptual Framework

2.1.1 Concept and Definition of Treasury Management

An integral part of treasury management of firms is to manage funds. Treasury management is the management of an organizations total wealth (resources) from the viewpoint of liquidity, safety and returns in tune with its mission/business objectives and in consonance with a regulatory framework to achieve the interest of stakeholders i.e. maximization of yields, minimum cost and control risks (S.K Bagchi,2007-257).

According to **Graham Peirsen**,

"Treasury management is a broader concept than liquidity management and include liquidity management as one of its functions (other functions being management of various kinds of business risks such as interest rate risk, foreign exchange risks, etc.)"

Liquidity means the capability of the bank to meet the demand on the customer's deposits. The liquidity management function of a bank is regular one. The importance of liquidity management can't be under emphasized du to its significant role in the smooth operation of bank. Many banks estimate their liquidity needs based on experience and economic movement.(Shakespeare Vaidya, 2001:139,141).

Banks maintain liquidity in various forms like easy cash at its disposal, certain percentage at Central Bank(NRB) as a statutory requirement, makes placements in other banks and some percentage is utilized in investment on government securities.(Madhu Sundar Shrestha,2009:218).

The Nepalese exchange rate policy is aimed at supporting the peg with Indian rupee. The peg has enabled the domestic economy to benefit from its close economic ties with India. These ties include extensive trade links, free labor mobility through porous borders, and formal business links and informal family relations. Importantly, the peg abolishes exchange rate risk in the large volume of current and capital account transactions with India.(NRB,2006:17).

Treasury activity in an organization depends essentially on- i) its size, ii) complexity of operations, iii) area of operations, iv) risk profile, it actually revolves around market risk management covering monetary assets and liabilities (ALM).

2.1.2 Objectives of Treasury Management

Treasury of a commercial bank undertakes various operations in fulfillment of the following objectives:

- To take advantage of the attractive trading and arbitrage opportunities in the bond and Forex markets.
- To deploy and invest the deposit liabilities, internal generation and cash flows from maturing assets for maximum return on a current and forward basis consistent with the bank's risk policies.
- To fund the balance sheet on current and forward basis as cheaply as possible taking into account the marginal impact of these actions.
- To effectively manage the Forex assets and liabilities of the bank.
- To manage and contain the treasury risks of the bank within the approved and prudential norms of the bank and regulatory authorities.
- To assess, advise and manage the financial risks associated with the non-treasury assets and liabilities of the bank.
- To adopt the best practices in dealing, clearing, settlement and risk management in treasury operations.
- To maintain statutory reserves- CRR and SLR as mandated by the RBI on current and forward planning basis.
- To deploy profitability and without compromising liquidity the clearing surpluses of the bank.
- To identify and borrow on the best terms from the market to meet the clearing deficits of the bank.
- To offer comprehensive value added treasury and related services to the bank's customers.
- To act as a profit center for the bank.

Thus, these are the important objectives of treasury management of commercial banks that helps them to undertake various operations to run the organization effectively and efficiently, and to satisfy the customer.

2.1.3 Functions of Treasury Management

Treasury management plays a vital role in the operations of commercial banks. Based on the functions, treasury department can be segregated in three parts: Front office, Middle office and Back office. Each segment carries its own special tasks. They are discussed below:

1. **Front Office:**

   The front office of treasury has a responsibility to manage investment and market risks in accordance with instructions received from the bank's Assets-Liabilities Management Committee (ALCO). Front office is also known as dealing room. The dealing room is the center for market and risk management activities in the bank. Some of the main functions of front office treasury are:

   - Purchase and sale foreign currencies.
   - Make placement and investment locally and abroad.
   - Manage the liquidity requirement of the bank by purchasing treasury bills, government bonds and maintaining CRR.
   - Fix and publish Foreign exchange rates daily.
   - Make all the arrangements for corresponding banking.

2. **Middle Office:**

   Middle office is responsible for onsite risk measurement, monitoring and management reporting. The other functions of mid-office are:

   - Correspondent banking.
   - Monitoring open currency positions.
   - Interest Rate Sensitivity Analysis.
   - Calculating and reporting Value at Risks (VAR).
   - Setting and Reviewing Limits Compliance.

3. **Back Office:**

   Back office is the support of treasury from where the necessary entries are passed. The key functions of back office treasury are:

   - Prepare Transaction confirmations.
   - Prepare Debit or Credit Advice/ Authority.
   - Handle the dispatch of Deal Confirmations.

- Handle Processing of Placement & Deposits taken. (For every placement and deposits taken separate deal slips are prepared).
- File all treasury related documents.

However, treasury operations of commercial bank consist mainly of two vital functions :

a) Ensuring strict compliance with the statutory requirements of maintaining the stipulated Cash Reserve Ratio(CRR) and Statutory Liquidity Ratio (SLR), and
b) Liquidity management by (i) ensuring the optimum utilization of the residual resources through investments, (ii) raising additional resources required for meeting credit demands at optimal cost and (iii) managing market and liquidity risks in the transactions.

2.1.4 Responsibilities of Treasury Management

In today's highly competitive environment, the treasury plays a vital role in the viability and success of bank and calls for effective internal and external interface. Bank's treasury department carries the following responsibilities:

- Cash Reserve Ratio (CRR) Maintenance:

  CRR is the minimum amount to be maintained in the current account of a bank held with NRB. It is compulsory for every bank to maintain a certain percentage of their total local deposits in NRB. Bank do not prefer to hold excess cash as it adds unnecessary cost. Hence, treasury department coordinates with all branches and departments in cash holding.

- Liquidity Management:

  Another responsibility of treasury department is to manage liquidity. Importance of bank's adequate liquidity is needless to be emphasized here. As and when the depositor makes demand for his deposit, his requirement must be met instantly. Excess liquidity means less profitability. It rests on treasury department to strike a balance by considering corresponding liability and asset position.

- Investments:

  Treasury department makes investment in treasury bills and development bonds. Investments in inter-bank money market usually for very short period (not exceeding 7 days) as per prior approved bank risk limit is done. For the bank's requirement of short term fund, it borrows from other banks.

- Nostro Management:

  For smooth operation of banking transactions a bank needs to have a large network within the country and around the globe. Practically, a single bank can't have sufficient branch network around the country and the globe. Thus a bank opens account with different banks within the country and overseas. Such account with other banks is called Nostro Account. Excess deposits in such accounts is a cost to the bank and if balance is insufficient to honour any commitments, the account may be overdrawn which attracts interests. It becomes the duty of treasury department to maintain balance sheet as per situational requirements.

- Exchange Rates:

  Treasury department publishes the exchange rate daily for transactions purpose. It becomes the responsibility of treasury department to quote exchange rates on large transactions. By providing competitive rates the department attempts to ensure maximum return and minimum exchange risk.

- Position Management :

  Treasury management is responsible for foreign currency management. It maintains Fcy position centrally in (Head Office) and branches are authorized to hold small position to adjust day to day activities only. Branches square of all Fcy positions of all foreign currencies on daily basis. To square-off the Fcy position means to nullify the Fcy difference, to make the inflows of a given currency equal to the outflows of that currency for all maturity date.

- Investments in Foreign Currency (Fcy):

  To provide interest on Fcy deposits of customers, banks invest the Fcy funds with high rated banks like American Express and City Bank for maximum returns. The department exercises extreme care to ensure fund is placed with top class banks.

- Correspondent Banking:

  Keeping in view of the requirements, the treasury department establishes correspondent relation with other banks. The department recommends for all activities like Test Key exchange, SWIFT key exchange Nostro and Vostro

account opening and closing. It becomes the task of the treasury to negotiate, monitor and review terms and conditions for correspondent relation.

2.1.5 Treasury Products of Commercial Bank's

The treasury products of commercial bank's are of two types: treasury assets and treasury liabilities. They are listed below:

A. Domestic Treasury

1. Assets Products/Instruments

- Call/Notice Money Lending
- Term money lending/Inter-bank Deposits
- Investment in CDs
- Commercial Paper
- Inter-bank Participation Certificates
- Derivative Usance Promissory Notes/Bankers' or Corporate Acceptances
- Reverse repos
- SLR Bonds (notified as such by RBI)
  a) Issued by the Government of India as securities and T-bills
  b) Issued by State Governments
  c) Guaranteed by Government of India
  d) Guaranteed by State Governments
- Non-SLR Bonds(issued by)
  a) Financial Institutions
  b) Banks/Corporate
  c) State-level Enterprises
  d) Infrastructure Projects
- Asset-backed Securities
- Private Placements
- Floating Rate Bonds
- Tax-free Bonds
- Preference Shares
- Listed/Unlisted Equity

- Mutual Funds

2. **Liability Products/Instruments**
   - Call/Notice Money Borrowing
   - Term Money Borrowing
   - CD Issues
   - Inter-bank Participation Certificates
   - Tier II Bonds (issued by bank)

2.1.6 Market risks, its essence and classifications

Market Risk:

In a commercial or business sense, the word 'market' enjoys a wider connotation and extends beyond the national barriers of a country. Thus, business transactions are not restricted to a particular place. Consequently, movements in the overall market scenario may or may not be predictable, demanding attention from a risk management angle. Liquidity is the driving force in market risk management.

Market risk relates to the volatility of the price of assets. It involves exposure to movements in the level of financial variables, such as stock prices, interest rates, exchange rates or commodity prices. It includes the exposure of options to movements in the underlying asset price. Market risk also involves exposure to other unanticipated movements in financial variables or to movements in the actual or implied volatility of asset prices and options.

Michel Croughy et al write:

"Market risk is the risk that changes in financial market prices and risks will reduce the value of a security or a portfolio." In other words, any adverse movement in market variables gives rise to a situation of 'loss', which is the fundamental in any risk analysis.

The Reserve Bank of India has defined market risk as "the possibility of loss to a bank caused by changes in market variables".

Internationally, however, market risk is not directly connected with the possibility of 'loss'. Thus, market risks relates to the volatility of the difference between the market value of assets and liabilities within a certain time frame due to changes in the assets prices, yields or returns. In this respect changes in liability cash flows, due to effects on (expected) future profit sharing, should also be taken into account, while free assets may be ignored.

Essence of Market Risk:

The influence of market risk will always remain in financial instruments and dealings. It is only through an integrated risk management system that an adverse effect, can be either fully or partially cushioned. This is mainly because market risk (often stated as "systematic risk") occurs due to various macro economic factors like wholesale/consumer inflation, GDP growth in the country/countries where a business unit operates, foreign exchange reserves of such countries and rates of interest. Since these variables change from time to time, sometimes in a most predictable way, the market risk component can never vanish from an operating business environment. Hence, from a risk management perspective, what is most important is to keep a business insulated with adequate safety cover, which is possible only if the mechanism is adequate enough to identify, measure, monitor and control such risk on an ongoing manner.

Classification of Market Risk:

The market risks can be classified as follows:

1. **Absolute Risk:**

   Absolute risk arises when the market value of securities falls short of (i) the initial price paid for such investment of securities or (ii) alternative availability of cash investment opportunities. This is appropriate for commercial banks having a reasonable investment under trading book.

2. **Relative Risk:**
3. **Directional Risk:**
4. **Non-directional Risk:**

   Hedged securities or highly volatile securities are often examined from the following angles:

   - Basis rate with respect to prices or interest rates.
   - Residual risk with respect to prices under investment in equity shares.
   - Convexity to Gamma with respect to second order effects for interest rates of options.
   - Volatility in respect of overall intensity of the value of securities.

   Directional risks are considered to be more pronounced than non-directional risks in market dynamics.

5. Asset/Product Liquidity Risk:

If the required trading size (lot) is not avoidable for sale, there is obviously the possibility of loss in value when compared to the original investment price and this situation is classified under the above market risk category.

6. Funding Liquidity/Cash Flow Risk:

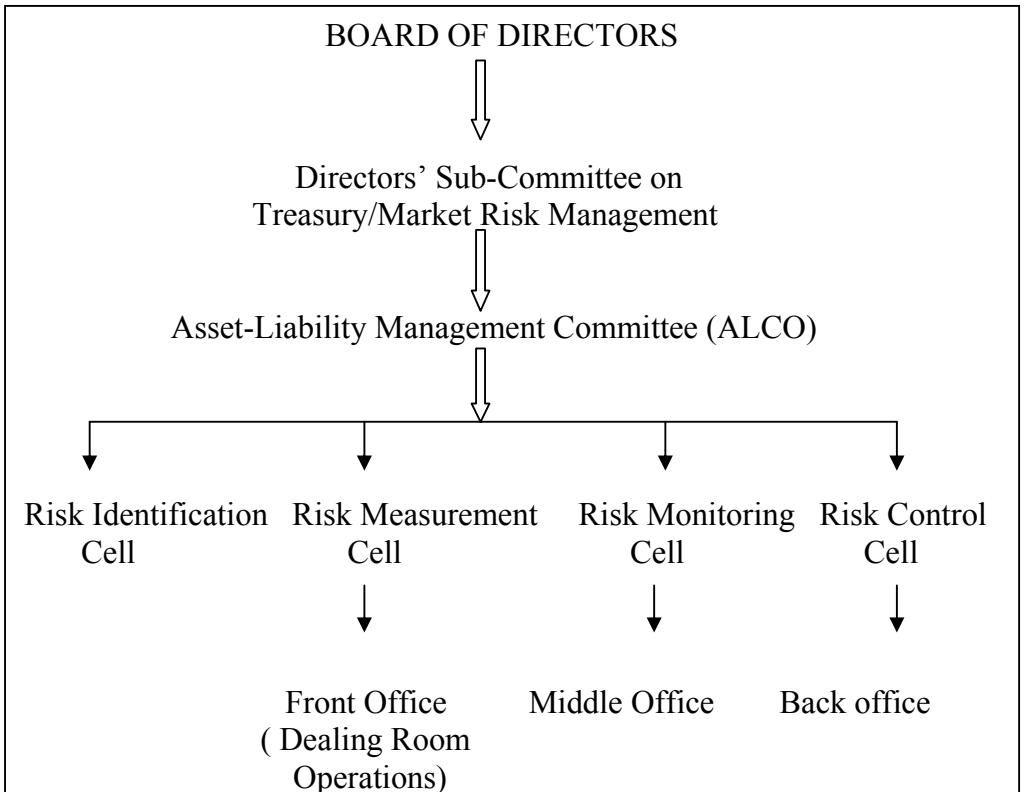
This is more of a credit risk element, touching investment portfolio under trading book arising out of a default of meeting payment obligations for securities when due.

The above classification range is only indicative. Depending upon a host of factors, such as nature of securities, volume of market scenario, complexion of market players, regulatory framework etc., market risk classification may be broadened or shortened.

2.1.7 Organizational Structure of Treasury Management

Organizational structure of a commercial bank treasury should facilitate the handling of all market operations, from dealing to settlement, custody and accounting, in both the domestic and foreign exchange markets. The organization of a treasury depends on the volume of activities handled. The organizational structure of treasury management are shown in the chart below:

Organizational Structure of Treasury Management



It will appear from the above organizational set-up that Asset-Liability Management (ALM) aspect is supported by identification, measurement, monitoring and control cells, which comprise middle office, dealing room and back office. Together, these function as the wing of a bank or organization.

2.1.8 Treasury Management in commercial banks

Treasury management is crucial activity in banks and financial institutions, as they deal with funds, borrowings and lending and investments. By nature of their activity, they earn their profits through operations in money and near money claims. They borrow from the public in the form of deposits which along with other borrowings constitute their liabilities. Their assets are mostly in the form of loans, advances and investments. As their liabilities are mainly of short term and medium term nature, funds management becomes critical for ensuring a proper match of assets with existing structure of liabilities in terms of maturity and of returns, and costs so as to optimize, the profits or income consistent with maintaining with their liquidity and solvency. Commercial banks being the creators of credit have an additional responsibility of maintaining their image of credit worthiness, responsibility, safety and integrity to the public. This makes their fund management activity more important than for other institutions and corporations.

1. Non-Performing Assets (NPA) and Capital Adequacy Ratio (CAR):

In the 1990s, the South Asian Countries were stricken severely by the increase in NPA at an alarming rate. The internationally accepted range of 4% to 5% had exceeded by a huge percentage. High level of NPA can paralyze the countries economy and place the publics' deposits at a high risk. High level of NPA in one bank can have a spiral effect to other banks as well operating in that country. Rapid rise in NPA level brings an adverse economic environment to that country. Many banks vanished from the market simply due to the failure to contain their ever growing NPA within the acceptable range. Between 1985 and 1990, in the USA alone, 1016 banks failed due to high level of NPA..

NPA is defined as a credit facility in response of which interest has remained due past for two quarters from end March 1995 onwards. Banks were required to classify their advances into four groups: Standard, Sub-standard, doubtful assets and loss assets.

Provisioning for sub-standard and doubtful assets was stipulated at 30% and loss assets at 100%. The provisioning for NPAs of less than Rs. 25000 in amounts has been kept at 10% from the 1995 onwards.

Commercial banks are expected to observe capital adequacy norms and income recognition for any extension in their loan portfolio which in most cases attract 100% risk. Thus, there are limits to which banks can expand their credit portfolio and next to credits, investments portfolio assumes importance, as it is major earner of incomes for banks. Thus, there is need for professional expertise in the management of bank's investment portfolio which is also constrained by SLR requirement.

2. Cash Reserve Ratio (CRR):

Next to credits and investments, banks are obliged to keep a certain proportion(now) of their net demand and time liabilities in the form of cash with itself and balances with RBI. The minimum to be kept in this form is 35% as per the statute and the RBI is empowered to vary this ratio, for purpose of monetary control, but will pay interest on the additional reserves beyond 5.5% at a rate determined by itself.

3. Statutory Liquidity Ratio(SLR)

Under section 24 of the Banking Regulation Act of 1949, banks are required to keep liquid asset**s**(called SLR) in the form of cash and balances with RBI in excess of CRR requirement, gold and unencumbered approved securities. These encumbered approved securities include Central and State Government Securities. Treasury bills of 91 to 364 days and bond of public financial institution, Municipal and local bodies, State Electricity Bonds and any others as notified by the Government.

At present, the SLR requirement is 25%. Within these constraints, the investment portfolio of banks has to be managed with a view to maintain income and profits and yet maintain sufficient liquidity and solvency and observe the RBI norms for SLR, CRR, capital adequacy and income recognition, etc.

4. Investment Function

Each bank is expected to prepare a detail investment policy statement in the beginning of each year and submit it to the RBI after getting it approved by its board. This

investment policy should lay down the overall investment objective, guidelines for conducting the transactions in securities, investment policy with regard to each category he securities and classification of securities. The functions of investments are as follows:

- To ensure adequate liquidity,
- Earn maximum income possible and increase the overall return on the total portfolio,
- Book capital gain or losses, so as to minimize the tax liability and maximize the after tax profits,
- Adjust the maturity of securities to be in tune with the maturity pattern of deposits and borrowings,
- Ensure a proper match of assets with liabilities and avoid any mismatch of assets and liabilities in terms of maturity and returns or yields.

Bank dealings in approved securities in investment portfolio are conducted either in primary and secondary market. In primary market, the bank may underwrite, a part of the or make an application for firm allotment in the case of the private placement and send bids in RBI auction or treasury bills. In all such cases, the finance department of the Bank will put up a note with details of the available excess funds, costs and benefits of the proposed investment and secure the approved of the competent authority including the Board before it is passed on to the funds management cell in center's where funds are executed.

The funds department of finance department coordinates with the accounts department for effecting operations in funds in the investment portfolio. The investment decisions on allocation of funds in various assets categories or instruments are the prerogative of the Board of Directors and sometimes these powers of taking decisions are delegated to various levels of functionaries at the Central office to improve operational efficiency but subject to some limits.

5. Operations in the Secondary Market:

As per the RBI norms, banks are expected to classify the portfolio of approved securities in current and permanent category. The component classified as current category is used for trading operations in the secondary market. The component titled permanent category is expected to be held b the bank until maturity and hence not tradable. For classifying the securities into current category all approved securities are

judged and assessed in terms of maturity, current status regarding valuation, prospects of trading in securities and the active market for them.

Judged by the above criteria, T-bills, short and medium term gilts which have an active market are put in the current category besides all non approved securities like shares and bonds which are also the part of the current category.

In addition to the above norms of RBI, each bank has its own internal norms for the management of current component of approved securities in the investment portfolio. Since capital adequacy norms are to be adhered to, current component is no adjusted that depreciation is the lowest and all long term securities are included in the permanent category as capital depreciation will be more for every unit rise in yields in their case. Thus, the banks may choose to limit their involvement in gilts of short and medium term nature and put a ceiling on the investment portfolio at 25% or so of the capital or net worth as depreciation or capital losses are less in their cost. The bankers in general give due weights to important criteria like the maturity of securities, yields and composition of instruments. They, therefore undertake swaps and switches for shifting from low yielding securities to high yielding securities even within the SLR portfolio.

2.1.9 Liquidity Management: Meaning, Its Importance & Sources

Meaning of Liquidity

Liquidity can be defined as the comprehensive ability of a bank to meet liabilities exactly when they fall due or when depositors want their money back. This is at the heart of banking operations and distinguishes a bank from other entities. One of the most important tasks in the management of any bank lies in ensuring adequate liquidity. Banks maintain liquidity in various forms like ready cash at its disposal, certain percentage at Central Bank(NRB) as a statutory requirement, makes placements in other banks and some percentage is utilized in investment on government securities. A bank is considered to be liquid if it has ready access to immediately spend able funds at reasonable cost at precisely the time those are needed. In other words, the bank either has the right amount of immediately spend able funds on hand i.e. cash or can raise the necessary funds by borrowing or by selling assets. The lack of inadequate liquidity indicates that a bank is in serious financial problems. The implications of the financial problem results losing of deposits, which erodes its supply of cash and forces the institution to dispose of its

safer and more liquid assets. So, banks should not invest all the money it has on exposure based assets only, as it will not be repaid when required. Therefore, banks keep a certain percentage of their fund on assets that can be utilized as need arises, which is known as liquid assets.

As per Manning Decay, "An asset is completely liquid, if its owner can count with absolute certainty on turning into cash at a very short notice and without loss." This means, the asset should be easily converted into cash at a short notice without any loss.

In a liquidity-short situation- a bank would naturally source the cheapest funds, after considering the call money market, repos, security (SLR and non-SLR) prices and the cost of refinance from the NRB and FIs. In extraordinary situations, the bank may seek NRB liquidity support, on merits against the collateral of securities. In a situation of surplus liquidity, the bank would look at the money market lending, reverse repo, buying T-bills, commercial paper or securities, depending upon the tenures of surplus liquidity, etc. These all form part of the liquidity management system of a bank.

In order to have effective liquidity management banks need to undertake periodic funds flow projections, taking into account movements in non-treasury assets and liabilities (fresh deposits, maturing deposits and new term loans) and maturing treasury assets and liabilities. This enables forward planning for CRR and SLR maintenance.

Note: Central Bank ensures liquidity of a commercial banks by enforcing the latter to maintain a certain percentage of their deposit liability in the form of reserve funds with the Central Bank and in its vaults.

Importance of Liquidity Management:

The importance of liquidity management cannot be under emphasized due to its significant role in the smooth operation of bank. However, the liquidity management is important for following reasons:

- For withdrawal of deposits
- For lending loans and advances
- For meeting personal expenses
- For earning through foreign exchange holding
- For exploiting unforeseen opportunities
- For meeting potential investments

- For meeting contingent liabilities such as invocation of guarantee, payment of Letter of credit (LC), and other payments like fines and taxes etc.

Sources of Bank Liquidity:

The sources of bank liquidity are as discussed below:

1. **Primary Deposit:** Banks accept deposit from customers in cash, cheques and remittance from various banks. This increases the bank's cash in hand or deposit with other banks, which is an increase in the bank's liquidity.
2. **Capital:** Another source of bank liquidity is capital. By issuance of shares, liquidity is supplied to the bank.
3. **Loans:** Borrowings made by banks from the money market, correspondent banks and from central bank under refinance facility increases the bank's liquidity.
4. **Repayment of Loan:** When loan or its interest is repaid by the customer, bank's liquidity increases.
5. **Miscellaneous sources:** Cheques sent on collection, fund transferred from other banks, commission received on guarantee and LC issued etc. adds the liquidity of bank. Sales of assets also bring inflow of cash.

2.1.10 Foreign Exchange: Meaning, Types of FX Risks and Buying and Selling of FX

Meaning of Foreign Exchange:

Foreign exchange(FX) is a risk factor that is often overlooked by small and medium sized enterprises that wish to enter, grow and succeed in the global market place. There is no central market place for currency exchange, rather trade is conducted Over-the-Counter. The Forex market is open 24 hours a day, five days a week with currencies being traded worldwide among the major financial centers of London, New York, Tokyo, Zurich, Frankfurt, Hong Kong, Singapore, Paris and Sydney spanning most time zones. The Forex is the largest market in the world in terms of the total cash value traded and any person, firm or country may participate in this market.

Currency-literally foreign money used in settlement of international trade between countries. Trading in FX is the means by which values are established for commodities and manufactured goods imported or exported between countries. Creditors and borrowers settle the resulting international trade obligations such as

bank drafts, bills of exchange, bankers acceptances and letters of credit by exchanging different currencies at agreed upon rates.

In the words of Britannica Concise Encyclopedia,

FX means purchase or sale of one national currency in exchange for another nations currency, usually conducted in a market setting. FX makes possible international transactions such as imports and exports and the movement of capital between countries. The value of one foreign currency in relation to another is defined by exchange rate.

Types of Foreign Exchange Risks

Managing FX(or Forex) is essential to successful investment in the forex market. FX exposure or risk can be classified into three types: transaction, economic and translation exposure.

a) **Transaction Exposure/Risk:**

   Transaction exposure refers to the extent to which the future cash transactions of the firm may be affected by any changes in the currency exchange rate. It occurs when a company trades , borrows or lends in a foreign currency, or sells fixed assets of its subsidiaries in a foreign country. All these operations, involve time decay between the commitment of the transaction(sale of an asset for example) and the receipt or delivery of the payment. During this time interval exchange rates will most probably change and the company is exposed to a risk that could be positive or negative.

b) **Economic Exposure/Risk:**

   Economic exposure measure the impact of changes in exchange rate on the firm's cash flows and earnings. In other words, it measures the change in the present value of the firm resulting from any change in the future cash flows of the firm caused by an unexpected change in the exchange rates. Future cash flows can be divided into cash flows resulting from contractual commitments and cash flows from anticipated future transactions. Thus, economic exposure can be defined as the future effect of foreign exchange changes on liquidity, operations, financial structure and profit.

c) **Translation Exposure/Risk:**

   Translation exposure refers to accounting exposure. It measures the impact of changes in exchange rate on the financial statements of the groups of

company. Translation exposure arises from converting financial statements expressed in foreign currencies into home currency. When a company consolidates the results of all its foreign subsidiaries, it has to present a final report to shareholders and the number in this document should be expressed in one currency. All foreign currency denominated assets and liabilities as well as revenues and costs have to be translated in one basic currency. Translation risks recognizes only items already on an accounting balance sheet. In practice, translation exposure tends not to be hedged by products that involve the physical exchange of currency and sometimes not all hedged.

Thus, these are the three types of exposure that a treasury manager needs to identify to manage a foreign exchange.

Buying and Selling of FX:

These days everyone is talking about a new profitable activity called Forex trading and the great opportunity this activity represents for people willing to take break free from the corporate world and start working from home or anywhere else without losing their current lifestyle and even improving it. Most experienced traders consider that the best an most profitable of the capital market is the Forex market. For many years Forex trading was the sole domain of major banks, large financial institutions and countries central banks, for example the U.S Federal Reserve Bank. But these days, thanks to the internet the market has been open to everyone willing to learn the best techniques in Forex trading and with the intention of making substantial profit as the institutions mentioned above that annually and consistently make pretty high profits from trading in the FX market.

You have many advantages when trading the Forex markets, for example, you don't have to worry about fees you may have to pay to your broker; there are also none of the usual fees to which futures and equity traders are accustomed to pay always; no exchange or clearing fees.

The Forex market has five major currencies: US Dollar, Japanese Yen, British Pound, Euro and the Swiss Franc. It is due to their great popularity in world's commerce transactions and its high activity that these five currencies account for over 70% of North American trading. Of course there are other tradable currencies, they include the Canadian, Australian and New Zealand Dollars. These minor currencies account for 4%-7% of the total market volume. Together, all this five majors and minors

currencies constitute the backbone of the Forex market The concept of 'Buying' in Forex refers to the acquisition of a particular currency pair to open a trade and 'Selling Short' refers to the selling of a particular currency to open a trade, i.e. just the opposite, when you buy you are expecting the price of the currency pair to increase with time, i.e. you buy cheap to sell high; which is easy to understand. In the case of 'Selling Short', it look a bit more complicated. Here the way to make money is to initially sell a currency pair that you think will lose value in a given period of time and then, once it happened you will buy it back at the new price but now you can sell it at the previous greater price the currency had when you opened the trade, so you earn the difference in prices.

2.1.11 Exchange Rate Risk: Meaning and Factors Influencing Exchange Rates

Meaning of Exchange Rate Risk:

Exchange rate risk can be defined as the variability in the value of a project or of an interest in the project, that results from unpredictable variation in the exchange rate. It refers to the price of one currency against another currency. This risk comes into picture while trading between two or more currencies. As banks accept foreign currency deposits, the movements in international exchange rate may expose such banks to excessive exchange rate risk.

In the Nepali banking scenario, there are some banks that are flush with foreign currency. Some of them are holding too much foreign currency than what they actually require. Such banks should immediate think about mitigating exchange rate risk by applying proper hedging techniques. In this year's monetary policy NRB has allowed banks to deal in derivative products. This will help banks to hedge their exchange risks. The allocation of exchange rate risk is often done through tariff adjustment formulas that implicitly share risk through the way they adjust the tariff overtime. If indexation is allowed, tariffs can reflect the exchange rate in following ways:

1. Allowed prices or revenue can be fully or partially indexed to the exchange rate.
2. Input costs that depend on the exchange rate can be treated as a pass through, so that customers pay the actual costs of the inputs.
3. The contract can provide for a renegotiation of allowed prices or revenue if the exchange rate moves outside a specific bond.

Factors Influencing Exchange Rates:

the movements of exchange rates are indeed fascinating. The reasons for the movements are varied. The factors influencing exchange rates are as follows:

- **Money Market:**

  A tight monetary policy is favorable for the exchange rate because high interest rates will cost the economy and drive down inflation attracting funds into the currency. Prospective falls in the bond yields also support the currency.

- **Fiscal Policy:**

  The budgetary position of the government indicates the soundness of fiscal management. A tax fiscal policy weakens the currency.

- **Inflation:**

  High inflation is negative for a currency while low inflation points to a strengthening currency. If the inflation of a UK is lower than elsewhere, then UK exports will become more competitive and there will be an increase in demand for pounds.

- **Trade/Current Account Balance:**

  Trade or current account surplus is bullish for a currency.

- **Attractiveness of Country for Investment:**

  Sound economic fundamentals, stable government and policies and an international orientation attract foreign investments, strengthening the currency.

- **Forex Reserves:**

  Reserves are the ammunition that can be deploys to word off speculative attacks on a currency. A healthy reserves position enables the Central bank to manage the exchange rate in the line its goal and domestic economic considerations.

- **Forex Debt:**

  Debt is an absolute terms, in relation to GDP and short term debt as a percentage of reserves(liquidity ratio). High Forex debt ratio is considered adverse for the currency.

- **Agricultural Production/Food Stocks:**

Threat of high inflation is less if the country is comfortably positioned as far as availability of items of mass consumption is concerned. Low inflation risk is considered favorable for the currency.

- **Commodity Prices:**

  Important for commodity intensive, exporting countries, e.g. Australia and South Africa. High commodity prices(for oil, gold, base metal, coffee, etc) favors the exchange rates of major producers of these products.

- **Rate of GDP Growth:**

  The rate of GDP growth also influences the exchange rates. Higher growth favors currency.

- **Political:**

  Stability of Government is the confluence and interplay of all the above factors-past and prospective which determines currency movements. Different factors predominate at different times creating uncertainty and volatility which characterize currency markets.

Thus these are the main factors that influences the exchange rates which determines the supply and demand of a currency.

2.1.12 Interest Rate Risk: Meaning, Component, its Effects and Techniques of Measurement & Monitoring

Meaning:

World commercial banking supports full scale deregulation of the interest rate in the financial service industry. In India, the interest rate of deposits has been deregulated, except for savings bank deposits. Similarly, except for priority sector credit like agricultural credit, export credit and all other segments of bank credit are deregulated. Thus, "market forces" are now the key players. As a result, interest rate risk management which covers both the 'liability' side and 'asset' side of a bank's balance sheet, has become an important factor.

Interest rate risk may be defined as the probability of loss on account of movement in interest rates, having an effect on the value of assets, liabilities, Net Interest Income(NII) and Net Interest Margin(NIM) over a period of time**.**

InvestorWords.com defines as:

The possibility of a reduction in the value of a security, especially a bond, resulting from a rise in interest rates. The risk can be reduced by diversifying the durations of the fixed-income investments that are held at a given time.

Thus, interest rate risk affects the value of bonds more directly than stocks, and it is a major risk to all bondholders. As interest rates rise, bond prices fall and vice versa. The rationale is that as interest rate increases, the opportunity cost of holding a bond decreases since investors are able to realize greater yields by switching to other investments that reflect the higher interest rate. For example, a 5% bond is worth more if interest rate decreases since the bondholder receives the fixed rate of return relative to the market, which is offering a lower rate of return as a result of the decrease in rates.

Impact of Interest Rate:

Interest rate variations have two fold impact i.e. short term and long term which are discussed below:

a. **Short term:**

   In short term impact, interest rate effect on NII and NIM. It effects on reduction or enhancement in revenue for the bank, which may be stated as an earning perspective.

b. **Long term:**

   In long term, it effects on market value of equity or net worth due to the variation in value of assets and liabilities, including off balance sheet items. This may be put as an economic perspectives.

Hence, earnings and economic perspectives are dictated by the variations in interest rates in the market.

Component of Interest Rate Risk:

There are six component of interest rate risk. They are:

1) **Mismatch Risk/Gap Risk:**

   Bank assume liabilities (predominantly customer deposits) and assets (predominantly loans and investment assets). Arising out of the spread created between the receipt of interest on assets and payment of interest on liabilities, the bank survives by way of net interest income.

   'Mismatch' occurs in the relationship of assets and liabilities due to:

   - ✓ Liquidity mismatch:

Maturity dates of payment of liabilities and return flow of assets, e.g. the disbursement of a term loan of 5 years for Rs 100 lakhs out of short term deposits of 1-2 years for that amount will result into a liquidity mismatch.

- ✓ Re-pricing mismatch:

  A term loan will continue with a specific rate of interest (hence income remains unchanged) while on maturity, the short term deposits may attract higher rates of interest creating an adverse mismatch.

2) Basis Risk:

Interest rate changes in various classes of assets and liabilities may not be uniform as the rates are driven by market forces. The probability that the magnitude of changes in interest rate for various items may be different creates basis risk, e.g. a call loan may increase by 0.50%, while loans and advances(which are linked to prime lending rate) may increase by 0.75%. in the commercial banking scenario, composite assets are normally created out of composite liabilities thereby severely exposed to basis risks.

3) Embedded Option Risk:

Banks allow customers:

- To seek premature payment of time deposits ,
- To exercise call or put options on bonds and debentures.

The aforesaid facilities(i.e. embedded options) extended to customers create both a liquidity risk(i.e. premature withdrawal of deposits) and a re-pricing risk(i.e. redeposit of premature funds at current higher interest rates).

4) Yield Curve risk:

This risk occurs in a situation when a bank prices its assets and liabilities on MIBOR rate. This may give rise to non-parallel movements of such benchmarks rates, e.g. floating rate time deposit re-priced at 0.25% above the 91 day T-bill utilized for financing a loan re-priced at 1% over the said rate (e.g. in a situation where are funds are tight).

5) Price Risk:

Usually this risk is paramount in the case of investment in securities “held for trading”. In case there is an increase in the market rates of shorter tenure

securities held, there will be a depreciation in the value of the existing investment. Thus, for any type of asset or liability having a series of expected cash flows(outflow as well as inflow), price risk exists.

6) **Reinvestment Risk:**

This type of risk is associated with cases of cash flow available for reinvestment at an interest rate other than those available, e.g. coupon rates on investment, if reinvested at a lower rate than that available for existing investment in securities.

Thus, these are the main components of interest rate risks that financial institutions have to manage.

Effects of Interest Rate Risk:

The BASEL committee has identified the following effects:

- Net income has a direct impact on change in interest rate.
- Arising out of a change in the interest rate the economic value of bank's equity is prone to appropriate changes

Techniques of Measurement and Monitoring of Interest Rate Risk:

Internationally, four main techniques of measurement and monitoring of interest rate risk are prevalent. They are discussed below:

1. **Traditional Gap Analysis:**

   This technique has been in use for many decades in many countries, where a compact management information system with the back up of the necessary computerization is yet to come into use in the modern banking system. The traditional gap analysis is used to monitor interest rate sensitivity of 'earnings' I.e. to measure earnings perspective by identifying rate sensitive and non-sensitive assets and liabilities. The sole objective of this technique is to arise at interest rate sensitivity from the view point of bank's earnings.

2. **Duration Gap Analysis:**

   Interest rate variations having an 'economic perspective' of an organization may be measured and monitored through this analysis in order to calculate the actual effect on its capital/market value of equity. Duration of Gap(i.e. the difference between various classes of assets and liabilities(including off-balance sheet items) is computed and depending on the need of the situation, derivative products are employed to smoothen out the position.

3. **Simulation Analysis(SA):**

   SA is also one of the techniques measurement and monitoring of interest rate risk. It is used to measure and monitor both from earning and economic perspective. SA is done through a computer based statistical model to assess the implications of earning perspective and economic perspective.

   A financial model covering future market environment with interrelationship of assets, liabilities, pricing, cost, volume, etc is built in. in the process, the organization may if necessary, indicate changes so as to ensure that Net Interest Income, Net Interest Margin, capital and market value of equity are not seriously affected.

4. **Value at Risk(VAR) Analysis:**

   VAR analysis is used to estimate potential loss over a holding period at a given level of certainty. Under this method, likely loss in respect of holding of any security or asset for a given period of time at a certain level of confidence(certainty), which is usually 99% is estimated. Interest rate policy is framed based on the outcome of such VAR analysis.

2.1.13 Currency Risk: Definition, Its Classification and Types of Currency risk

Definition of Currency Risk:

As far as currency risk is concerned, risk management will invariably mean foreign currency as distinguished from domestic currency which doesn't come with in the ambit of risk management analysis. There can't be any element of 'fluctuation' in domestic currency unlike foreign currency.

Currency risk can be defined as risk of losses associated with adverse exchange rate movements in relation to domestic currency during a period. This may be on account of maintaining an 'open position' in an individual currency for

- Spot transactions,
- Forward transactions,
- Combination of spot and forward transactions.

If an organization has its entire income and expenditure, as well as its entire portfolio of assets and liabilities in domestic currency(i.e. Nepalese Rupees), there is no question of adverse market movement in exchange terms- hence, no currency risk. However, in the following situations the organization will be involved in currency risk:

a) It has income and expenditure and/as assets and liabilities in both domestic currency and foreign currency and the statement of accounts(i.e. P/L and B/S) is prepared in domestic currency.

b) When proprietary trading positions are taken as a part of an organization's risk philosophy and risk appetite.

c) If there is a currency mismatch between assets and liabilities in foreign currency.

d) Transaction pricing is quoted in foreign currency.

e) Volatility of a foreign currency during a period is severe, e.g. the Rupee appreciated against the US & in the year 2003.

f) Increased capital flows as a result of regulatory relaxations create market distortions too frequently with too high dimensions.

Types of Currency Risk:

As a part of its business, a commercial bank(which is authorized to deal in foreign exchange), faces a wide range of risks relating to foreign currency management. Each such risks has its ultimate effect on profit and capital of the bank. The following types of currency risk are generally faced by commercial banks who are authorized dealers.

1) Position Risk:

Banks have a transactional relationship with:

- Exporters, as far as the collection of exports proceeds and or export financing are concerned.
- Importers, for meeting their obligations of foreign currency payment out of domestic currency conversions.
- Buying/Selling of foreign currency for others for authorized and approved purposes.

In the course of above functional role, banks may, at any point of time build up 'open positions', viz buying and selling any currency without 'off setting' the transactions.

Overbought and oversold positions may emerge as under:

- Overbought position: Assets (inclusive of outstanding purchase contracts) exceed liabilities (inclusive of outstanding sale contracts).
- Oversold position: Liabilities exceeds assets.

Thus, any adverse exchange rate movement will have a direct effect on build of position of the bank.

2) Gap Risk:

Banks authorized to deal in foreign currencies undertake the purchase and sale of foreign currencies for a particular forward value date i.e. delivery beyond 'Spot' dates. In such a situation, a currency wise gap(mismatch) may emerge between foreign currency assets and liabilities. For e.g., a swap transaction of purchase of US $ one million of one month forward and a sale of US $ one million of two months forward. Though it is a swap transaction, there is exchange fluctuation risk in both the months.

Gap risk involve the probability of losses caused by unfavorable movements in exchange rates and interest rates/swap charges, in the respective currencies. Transactions that are vulnerable to such risks are generally:

- Foreign currency deposits.
- Forward contracts of currencies.
- Swap transactions.
- Forward rate agreements.
- Interest rate derivatives.

3) Exchange Risk/Price Risk:

'Volatility' in a foreign currency(i.e. upward/downward movement) is the fundamental risk element in a foreign exchange transactions, giving rise to exchange risk or price risk. Each bank authorized to deal in foreign exchange is required to set up:

- Day Light Limit(Intra day limit):
  It is the limit up to which the open position may be allowed to remain until the close of business hours for foreign exchange, for the day.
- Overnight Position:
  It means the limits of the 'open' position that may be allowed to remain after close of business hours for foreign exchange for the day.
- Aggregate Position:
  It means 'long' and 'short' positions to remain within the overall exposure limit set by the management(buying asset is long; selling is short). Net position of all currencies is called the aggregate position.

2.1.14 Country Risk: Meaning, Its Composition and Important Factors in Country Risk Management

This is the most dominating risk class in foreign currency exposure management and demands exhaustive discussion and understanding in the context of recent guidelines of RBI. Risks surface not only within a country but across other countries where business transactions are undertaken by an organization from a particular country. An Indian organization may have outfits in a foreign country and transactions in such a foreign country fall within the ambit of 'Country Risk' from the viewpoint of the organization. Obviously, as far as transactions are concerned within the "home country", there is no question of any country risk.

Michael Croughy et al have defined country risks as,

"Country risk is the risk that a counter party or obligor, will not be able to pay its obligations because of cross border restrictions on the convertibility or availability of a given currency.(Risk Management-page 297)

The Reserve Bank of India has defined this as follows:

"Country risk is the possibility that a country will be unable to service or repay its debts to foreign lenders in a timely manner. In banking, this risk arises on account of cross border lending and investment."

In short, country risk arises when any exposure is undertaken outside the national boundary of a country in terms of the risk of recovery of the exposure.

Direct/Indirect Country Risk:

Direct country risk arises when an organization has operating centre/s abroad i.e. outside its country of origin and various financial commitments are undertaken there. The probability of loss on account of non-recouping the commitments when due creates a potential risk factor. On the other hand, if an exposure is made within a country to a borrower having "less economic dependence" in another country, the risk stemming from such an exposure may be treated as Indian country risk.

Composition of Country Risk:

The 'seed' of country risk is the risk of defaulting to meet financial commitments in the appropriate foreign currency, in hard currency like the US

dollar, etc. The following factors either singly or collectively may trigger country risk:

1. Transfer risk:

This occurs when the possibility of loss is caused by restrictions on external remittances by way of foreign currency. Though the obligor may be in a position to settle the debt in 'local currency', he will not be allowed to convert into acceptable foreign currency on account of a foreign exchange crisis in the country.

2. Sovereign risk:

Although it is expected that a sovereign nation will at any point of time be in a position to meet its liability, there may be situations when some countries fail to meet their commitments(loans availed from other countries), while at the same time may not be subjected to the legal process(filing of suit), being a sovereign entity.

3. Non-sovereign/Political risk:

If the authorities in a country take over the assets of a foreign entity and prevent discharge of liabilities armed, then there occurs the situation of political risk.

4. Cross border risk:

This has two dimensions:

- ✓ Resident of a country having assets in another country.
- ✓ Exposure to local residents in the form of foreign currency.

5. Currency Risk:

Foreign currency, viewed from a country's domestic currency, fluctuates mainly due to economic and political reasons. When a commitment is undertaken in a foreign currency, the risk of adverse movement may affect servicing the debt both from the assessment of the principal and interest.

6. Macroeconomic risk:

Due to a severe macroeconomic crisis(e.g. high interest rate on borrowing, low economic growth and attendant scarcity of foreign exchange, weak legal system, etc) the risk of default may arise leading to country risk factor when commitments are made outside the national boundary.

Important Macro Factors in Country Risk Management

The macro factors that are important in country risk management are as follows:

1) **Basics:**
   - GNP per capita
   - Credit growth
   - Real interest rates
   - Inflation rate
   - Total exports
   - Total imports
   - Balance of payment
   - Current account balance
   - Foreign exchange reserves
   - Total external debt
   - Debt service ratio
   - Unemployment rate

2) **Shockability:**

Whether pressured by excessive public sector spending and whether the budget is financed by IMF funding and current account deficits.

3) **Politics:**

Whether political stability exists. Form of Government- democratic or non-democratic.

4) **Internal Economies:**

Whether appropriate fiscal austerity and measures to control high interest if any are pursued.

5) **External Economies:**

Whether currency devaluation was undertaken recently(say 2-3 years before) and whether, arising out of any such devaluation the current account position has shown the improvements.

6) Whether any reforms were pursued in the recent past at the instance of the IMF or World Bank or on the sole initiative of the country. What's the present position.

7) Whether the overall economy and political system are healthy.

2.1.15. Treasury management by Nepalese Commercial banks

Most of the Nepalese Commercial Banks operate with a full- fledged Treasury Department within the consideration of the foreign exchange rules and regulations under the guidance of Nepal Rastra Bank (NRB). They are also involved in Foreign Exchange Dealers Association of Nepal (FEDAN), and work closely with coordination in the country. The Treasury Department of Nepalese commercial banks offer basic services such as foreign currencies exchange (Buy/ Sell) and money market operations as well as specific services such as foreign currency forward contracts etc.

Most of the commercial banks treasury department are located in Head Office, with state of the art technology for day- to- day dealings. Those treasury management department use various internationally acknowledged softwares like Reuters and Newswire18 for real time information on the foreign currencies and news in the international market. We aspire to be the most active player in the financial market of the country. The major functions performed by the Treasury Department of those commercial banks are as follows:

Fund Management:

Fund Management is one of the core functions of the Treasury department. The department carries out inter- bank transactions in the local market for fund management. As per the requirement of the bank, the department lends/ borrows to other commercial banks and few other financial institutions. It helps to manage the liquidity position of the bank and also fulfill the Cash Reserve Requirement (CRR) requirements of the Central bank.

Check Foreign Currency Position:

Those department maintains the foreign currency position as per the needs of the bank. Mostly, the currencies are squared off at day end to minimize the risks related to exchange rate fluctuations. Mostly spot transactions are carried out for sales/ purchase of the foreign currencies.

Updating the Exchange rate:

They update the exchange rates daily and as per the decisions of FEDAN. The exchange rates are based on the movements of INR against USD.

Treasury Bills/ Government Bonds:

They also invests in treasury bills and the government bonds issued by the central bank as per their liquidity position.

Inter- bank placements:

These department also perform inter – bank placements with the domestic commercial banks, domestic development banks/finance companies and international banks. They use international bank too but, Before placing any deposit with the international banks, the department carries out a thorough analysis of the concerned bank's financial performance.

Forward Contracts:

As per the client need, the department also executes Letter of Credit (LC) based as well as Non LC forward contracts, which helps our client hedge against foreign exchange risk..

NRB reporting:

They also prepares the reports as per the directions of the central bank. Weekly FOREX report, Daily Liquidity report, INR Reporting, Daily Inter Bank Report etc.

Treasury Research:

With the collaboration of Research and Development (R&D) department, Treasury department conduct research work to conduct Currency, Inflation, FOREX and other economic research.

2.2 Review of Related Studies

2.2.1 Review of Books

1. Treasury management involves various activities related to fund management. Its scope is very extensive and covers a wide area like banking, government organizations, charitable and corporate organizations etc. Every bank has a separate treasury department for the effective management of all treasury activities. Treasury department contributes a significant portion in the bank's overall profit, which is mainly through their efficient fund management achieved by coordination with various departments and divisions of the bank. The functions of treasury management can be segregated in to three parts:

Front office, Middle Office and Back Office. Each segment carries its own special task.(Shrestha, Madhu Sundar, 2009:173)

2. Cash management refers to that part of the working capital that makes up the optimal level needed by a company treasury. However, if the profit opportunities available in the process of cash flows creation are to be maximized, this scope must be broadened to take in more operational decisions, since optimum cash levels are influenced by other factors outside the restrictive concept of 'treasury'. (Pindado:2001)
3. Treasury management as a set of technique that act on the short term liquidity of a company and at the same time affect those factors and processes that translate immediately into cash, with the ultimate aim of increasing the profitability of the company and improving working capital management. In this sense, cash management as an overall, integrated service of which the customer takes that part that best suits him or that he needs at any given time, served basically by a computer or another online solution. This specific notion of treasury management in a broad and in technological point of view has been for decades in theory. (Torre:1997)

2.2.1 Review of Articles

1. Anita, C & Raydu Tama (2003) in their article "Integrated Treasuries" finds that- with the growth in technology, the area of treasury management has witnessed a number of changes. Today, financial professionals have better tools at their disposal to manage corporate liquidity. These tools assist in making their jobs easier and help them concentrate on their core activities. With very less manual intervention, treasurers can now perform jobs at a faster rate and with less mistakes. But companies need to be careful while selecting the right kind of system that would provide competitive advantage through cost reduction and operational efficiencies".
2. Jhuremalani, Arti (2003) in her article "The Treasurer's New Role" concludes that- It is not the mere change in the structure that gives a new look to the surroundings but it is a mere window dressing that plays a part in reforming the outlook. A treasurer's primary role of managing the working capital funds of an organization hasn't been transformed but the dimensions of his profile have changed. The article captures the essence of a corporate treasurer's

functions and his transformed role over the years owing to the changing environment. As a treasurer drives forward into the world of automation, there are confrontations with issues of global operations and comprehensive internal environment.

3. Gray, P and Irwin, T, 2003 in their article 'Exchange Rate Risk' looks more closely at the nature and sources of the risk. Exchange rate risk as, as defined here, is variability in the value of a project, or of an interest in the project, that results from an unpredictable variation in the exchange rate. There are two types of exchange rate risk: project and financing related. Project exchange rate risk arises when the value of a project's inputs or outputs depends on the exchange rate. Typical infrastructure projects sell their outputs domestically, so, valued in local currency, revenues usually are not subject to exchange rate risk. But any input that is tradable, even if it is not imported, will have a world price, so its cost, measured in local currency, will vary inversely with the exchange rate. The cost of fuel, for example, creates exchange rate risk for a thermal electricity generator. Financing choices affect the amount of exchange rate risk borne by different participants in the project(shareholders, creditors, customers, taxpayers). In particular, loans requiring repayment in foreign currency expose shareholders to exchange rate risk. As a result, shareholders may seek to shape the contractual arrangements to pass on some or all of the risk to the government or customers(through exchange rate guarantees or indexation of the tariff to the exchange rate).
   (Source:rru.worldbank.org/viewpoint/index.asp)
4. Tiegen, Lee E (2007) in his article "Treasury Management: An Overview" expanded the definition "treasury as a place where stores of treasures are kept, the place of deposits, care and disbursement of collected funds" and describe the scope of responsibilities in a typical treasury function. Treasury and its responsibilities fall under the scope of the Chief Financial Officer. The CFO's responsibilities usually include capital management, risk management, strategic planning, investor relations and financial reporting. In larger organizations, these responsibilities are usually separated between accounting and treasury, with the controller and the treasurer each leading a functional area. Accounting will create the entries for treasury to process payments, treasury will advise accounting of receipts of cash, so accounting can make the

proper entries and reconciliation of bank accounts under the control of treasury will be completed by accounting. The working relationships between the managers of these two financial functions must be very close and ethical.

High-level treasury responsibilities will normally include capital management, risk management and relationship management. Treasury is a staff service function that supports many different areas of the organization. As an internal consultant to the teams in the different functional areas, treasury provides advice in the areas of cost of capital, risk analysis and mitigation, and the effects of the teams' actions on vendors, customers or investors.

5. In the article "Treasury in Transformation" a research program done by Treasury Strategies Inc. (2008), finds that treasury is managing a broader set of risks, expanding beyond foreign exchange(FX) and interest rate risk, to assume the responsibility for commodity risk and in some cases, non-financial risks such as non-insurable business risk as a part of a comprehensive enterprise risk management responsibility. Treasurers are rethinking their approaches to identifying, measuring and measuring and managing risk, offering financial services providers unprecedented opportunities to differentiate their ideas and solutions. In response to changing financial accounting standards governing measurement and reporting of risk as well as heightened sensitivity to counter party risk. Treasurers are seeking assistance in the form of technology solutions and advisory services from financial partners. (www.treasurystrategies.com-December 2008/January 2009)

2.2.3 Review of Thesis

1. Joshi (1993) in his thesis, "A Study on Commercial Banks of Nepal (with special reference to Financial Analysis of Rastriya Banijya Bank)" has concluded that the management of manpower seems unconfirmed with needs of the organization. Deposits and investments trends are fluctuating although positive. The performance of the bank showed ups and down in every next year which is the clear indication of unsound performance. The liquidity position of the bank is low. There has been a gradual increase in the amount of both funded debt and capitalization. Though RBB has met its social obligation, it has failed to meet commercial spirit.
2. Manandhar (2006) in her thesis "Deposit Mobilization of Rastriya Banijya Bank," concluded that bank is in moderate condition during the period of

study. The bank should try to work hard for mobilization of saving into different sectors are professionally managed and competent to ensure adequate rate of return on investment and are strategically well planned to be competitive with other agencies and are trustworthy.

3. Moktan (2006) in his thesis "Liquidity Management of "Himalayan Bank Limited" concluded that the main objective of the study is to visualize and analyze the liquidity position of Himalayan Bank. Analyzing liquidity ratio of HBL, he found that the bank is able to meet its short term obligations. The bank has also maintained the cash, cash equivalent and bank balance, balance in NRB, money at call, investment in government securities to meet daily cash requirements. Lastly, he suggests that HBL has to rethink and reorganize major strategies on resources collection and mobilization.
4. Shrestha (2007) in her thesis, "Liquidity Management of Nabil Bank" has concluded that, the main objective of this thesis report is to analyze financial ratio and liquidity trend to highlight the profit of the bank, to provide suggestions for the future betterment. She found that the bank has sufficient liquidity. Further more the bank has higher profitability and it has deployed the highest proposition of its deposit in income generating activities and has good investment efficiency on loans and advances.
5. Jose (2008) in their thesis "Treasury Management versus Cash Management" developed two concepts of explanatory model together the main functions of the treasurer: (i) "basic cash management", which groups the management of collections and payments, liquidity monitoring in banking operations, short-term treasury forecasts, the management of banking balances on value date and negotiation with financial organizations; and (ii) "advanced cash management", which includes the management of the financing of treasury deficits, the management of the positioning of treasury peaks and the management of financial risks.
6. Kharel (2008), in his thesis "Liquidity Position of Financial Companies in Nepal has concluded that the main objective of his thesis is to evaluate the financial performance of finance companies in the light of cash flow management. His objectives are also to evaluate the trend of utilization of cash flow under various prospects and the trend of deposit mobilization. He found that in Nepalese context, the financial companies have been playing one

of the leading roles in the economic development. He suggested that appropriate rules and regulations should be used in the investment policy of the finance companies to increase the level of profit. Lastly, he has recommended to the concerned authority to improve the cash fluency because in comparison to the deposit mobilization capacity of finance companies lending capability is still to be improved. The demand and supply of liquidity should be properly designed to manage the excessive and shortage of liquidity to increase the level of profit.

2.3 Research Gap

Today's world is marked up by rapid changes and new developments. As such researcher's conduct of few year back may not be adequate to explain current phenomena. Thus continuous study need to be taken for the better interpretations which can be the best base for new researchers.

Though many affiliated research have been conducted in this area by the foreign researcher. But there are very few exclusive research on this subject only from abroad. This researcher could not found the remarkable research that matches with this topic from our own country under the T.U guidance.

To bring the gap between the past research and the present situation, I set out to conduct the research in this emerging topic. The various international research has been analyzed to fulfill this research.

CHAPTER- III

RESEARCH METHODOLOGY

3.1 Meaning of Research Methodology

A systematic methodology is required to pick out an actual result for any special study. Research means the search for knowledge and methodology refers to the various sequential steps that are adopted in the study. Research methodology is the description, explanation and justification of various methods of conducting research. The study of the methodology facilitates understanding or social scientific inquiry. The method requires that ordering of concepts and propositions, procedures of selecting and analyzing evidence.

3.2 Research Design

Research design is the plan, structure and strategy of investigation conceived so as to obtain answer to research questions and to control variance (Kerlinger, 1986). The design of this research is basically based on presentation, analysis and interpretation of the result.

First, the data are presented in table or diagram, second presented data are analyzed by using various financial and statistical tools and at last analyzed data are compared and interpreted for the conclusion.

3.3 Population and Sample

All the commercial banks of Nepal who had treasury department are the population of the study. Out of them, 2 commercial banks Nabil and Machhapuchhure banks are taken as sample for the study.

Table 3.3.1: List of Commercial Banks of Nepal

Class A: Commercial Banks			
S.No.	**Names**	**Operation Date (A.D.)**	**Head Office**
1	Nepal Bank Limited	1937/11/15	Kathmandu
2	Rastriya Banijya Bank	1966/01/23	Kathmandu
3	Agriculture Development Bank Ltd.	1968/01/02	Kathmandu
4	Nabil Bank Limited	1984/07/16	Kathmandu
5	Nepal Investment Bank Limited	1986/02/27	Kathmandu
6	Standard Chartered Bank Nepal Limited.	1987/01/30	Kathmandu
7	Himalayan Bank Limited	1993/01/18	Kathmandu
8	Nepal SBI Bank Limited	1993/07/07	Kathmandu
9	Nepal Bangladesh Bank Limited	5/6/1994	Kathmandu
10	Everest Bank Limited	1994/10/18	Kathmandu
11	Bank of Kathmandu Limited	1995/03/12	Kathmandu
12	Nepal Credit and Commerce Bank Limited	1996/10/14	Siddharthanagar,Rupendehi
13	Lumbini Bank Limited	1998/07/17	Narayangadh,Chitawan
14	Nepal Industrial & Commercial Bank Limited	1998/07/21	Biaratnagar,Morang
15	Machhapuchhre Bank Limited	2000/10/03	Pokhara, Kaski
16	Kumari Bank Limited	2001/04/03	Kathmandu
17	Laxmi Bank Limited	2002/04/03	Birgunj, Parsa
18	Siddhartha Bank Limited	2002/12/24	Kathmandu
19	Global Bank Ltd.	2007/01/02	Birgunj, Parsa
20	Citizens Bank International Ltd.	2007/6/21	Kathmandu
21	Prime Commercial Bank Ltd	2007/9/24	Kathmandu
22	Sunrise Bank Ltd.	2007/10/12	Kathmandu
23	Bank of Asia Nepal Ltd.	2007/10/12	Kathmandu
24	Development Credit Bank Ltd.	,2008/5/25	Kamaladi, Kathmandu
25	NMB Bank Ltd.	,2008/6/5	Babarmahal, Kathmandu
26	Kist Bank Ltd.	2003/02/21	Anamnagar, Kathmandu
27	Janata Bank Nepal Ltd.	2010.04/05	New Baneshwor, Kathmandu

Source: nrb.org.com

3.4 Sources of Data

The information and data needed for all. The information collected by a researcher either from internal sources or from external sources, in order to verify a hypothesis is called data. Data are collected by different agencies such as government and private. The nature and sources of data are of two types. They are primary data and secondary data. However, this study will be based basically on secondary data from both published and unpublished The study is mainly based on secondary data. Primary data will also be used when and where necessary.

3.5 Data Collection Technique

Secondary data are mainly obtained from booklets, journals, thesis of previous researchers, trading and annual report published by Nepal Rastra Bank and articles of different bankers. Different websites have been used (http://www.nrb.org.np, www.google.com).

3.6 Data Analysis Tools

Both financial and statistical tools are used to interpret the data.. Statistical tools such as percentage, average standard deviation, chi-square and multiple regression analysis are used. Trend analysis is also a powerful tool of this study.

3.6.1 Average Mean:

Average mean is also called 'the mean', or 'average' 'arithmetic average' is the most popular and widely used measure of central tendency. Arithmetic mean may be either simple or weighted arithmetic mean.

Here, we have used short cut or assumed mean method for the calculation of average exchange income of Nabil bank and Machhapuchchhre bank.

- Short-cut method or assumed mean method:

  In this method the mean value is computed by:

  We have,

  $$X_1 = a + \frac{\Sigma fd_1}{N}$$

Where,

N = Total Frequency

f = Frequency

A = Assumed mean

$d_1 = X_1$-A deviation of the items from the assumed mean.

3.6.2 Standard Deviation:

Standard deviation is the most popular and most useful measure of dispersion and gives uniform, correct and stable results. The chief characteristics of standard deviation are that it is based on mean, which gives uniform and dependable results. Further more, a standard deviation is always a positive number and is superior to the mean deviation, quartile deviation and the range because it is used for further mathematical treatment. Thus, standard deviation for short-cut or assumed mean method is:

We have,

$$s.d.^2 = \frac{\Sigma fd^2}{N} - \left(\frac{\Sigma fd}{N}\right)^2$$

Where,

s.d = standard deviation

N = total frequency

d = X-A and A = assumed mean.

3.6.3 Co-efficient of variation (C.V.)

The percentage measure of co-efficient of standard deviation is called co-efficient of variation (C.V.)

We have,

$$\text{Co-efficient of variation} = \frac{\sigma_1}{x_1} \times 100$$

The coefficient of variation is used for comparing the homogeneity, uniformity and variability of two or more distributions.

3.6.4 Multiple Correlation Co-efficient:

The study on degree of relationship between a single dependent variable and a number of dependent variables in combination is called multiple correlation analysis. Such a relationship is measured by multiple correlation coefficient, which is denoted by $R_{1.23\ldots}n$. The subscript left to the dot is dependent variable and to right is the independent variable.

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

3.7 Data Processing Techniques:

The study period covers the five years annual balance sheet, profit and loss account of HBL and so on. All the available data are collected in crude form. These are properly synthesized, averaged and presented in tabular form.

3.7.1 Classification and Tabulation of Data:

The data collected are classified, tabulated and arranged in a manner to make it easily understandable with the use of tables in a chronological order.

3.7.2 Diagrammatic Representation of Data:

To represent the data in a diagrammatical form, only bar diagram have been used.

CHAPTER-IV

PRESENTATION AND ANALYSIS OF DATA

After introduction, review of literature and research methodology it is necessary to present and analyze the data. Data analysis and major findings is the chapter where the researcher analyzes the financial data and gives conclusion for the findings. The main purpose of analyzing the data is to change it from unprocessed form to an understandable presentation even for layman. The analysis of data consists of organizing, tabulating and performing its statistical analysis. Under this chapter, the collected secondary data have been analyzed and presented by using figures and tables. The major procedural steps involved in the analysis of data will be discussed in some detail.

4.1 Analysis of C.R.R, S.L.R and Monitoring Current and Call Account

4.1.1 Cash Reserve Ratio (C.R.R) and Statutory Liquidity Ratio (S.L.R)

CRR is the percentage change of deposit collection from customer deposited in their 'NOSTRO' account maintained with NRB to serve the depositors. According to NRB directives all commercial banks should maintain at least 5.5% of their deposits as CRR. CRR can be calculated as:

$$\text{CRR} = \frac{\text{NRB Lcy Balance}}{\text{Total Lcy Deposit} - \text{Margin Deposit}}$$

Table 4.1.1.1
Comparative Cash Reserve Ratio of Nabil & Machhapuchchhre Bank

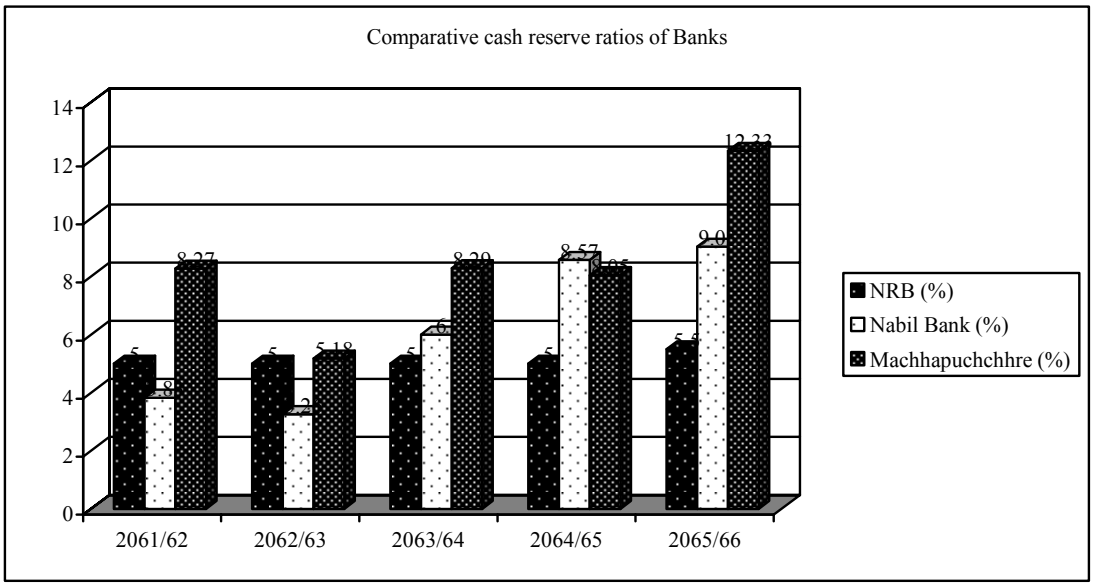
Year	NRB (%)	Nabil Bank (%)	Machhapuchchhre Bank (%)
2061/2062	5	3.83	8.27
2062/2063	5	3.26	5.18
2063/2064	5	6	8.29
2064/2065	5	8.57	8.05
2065/2066	5.5	9.03	12.33

Source: Report of NRB and Concern Banks

The above table 4.1.1.1 shows the Cash Reserve Ratio regulated by NRB and maintained by Nabil and Machhapuchchhre bank. The CRR regulated by NRB is 5% of their total deposit till the year 2064/65. However, it has increased its CRR by 0.5% in the FY 2065/66 i.e 5.5%. In the year 2061/62 Nabil bank has maintained only 3.83% of their total deposit as directed by NRB whereas Machhapuchchhre bank has maintained 8.27% of their total deposit. The CRR of Nabil bank has increased to 6% and 8.57% in the FY 2063/64 and 2064/65 respectively whereas Machhapuchchhre bank has 8.29% and 8.05% in the FY 2063/64 and 2064/65. This means that both banks are maintaining their CRR adequately. Similarly, in the year 2065/66 Nabil bank has deposited 9.03% of their total deposits as CRR in the NRB and 12.33% by Machhapuchchhre bank which is above 5.5% as directed by NRB.

Figure: 4.1.1 .1

Comparative Cash Reserve Ratio of Banks



In the above figure-4.1.1.1, vertical axis represents the year and the horizontal axis represents the cash reserve ratios of NRB, Nabil and Machhapuchchhre bank. According to NRB all commercial banks have to maintain 5% of their total deposit till the year 2064/65 and it has increased by 0.5% from 2065/66. The CRR maintained by Nabil bank in the year 2061/62 and 2062/63 is less than 5% as directed by the NRB whereas Machhapuchchhre bank has maintained CRR above 5% of their total deposit. In the above table, it shows that in recent years banks are maintaining CRR adequately. But Machhapuchchhre has slightly greater than regulation; it means treasury department is quite weak. The money above than regulation line could have

been invested in short term instruments. That keeps liquidity strong and even money is not idle.

Statutory liquidity Ratio (SLR)

SLR is also called investment in government securities, which are risk free and can be easily converted into cash at any time. Since October 1974, NRB instructed banks to maintain SLR of 32% of total deposit liability in the form of government securities. Since July 1997, this provision of SLR was fully removed as this hindered the bank's capacity to lend and created obstruction on its credit expansion process. The banks should invest the money instead of keeping their funds idle in various government securities, which are liquid in nature. They can be traded at any time. And this investment in government securities ratio shows how much fund is invested in government securities. Only maintaining cash reserve ratio and cash and bank balance ratio can not be considered sufficient immediate liquidity obligation. So investment in government securities is required. This also protects the depositors. Thus, SLR can be calculated as:

$$\text{Investment in government securities} = \frac{\text{Total investment in government securities}}{\text{Total deposit}}$$

Table 4.1.1.2

Total Investment in Govt. Securities and Total Deposit

	Nabil Bank			Machhapuchchhre Bank		
Year	Detail	Investment in Govt. Securities (Rs)	Total Deposit (Rs)	Detail	Investment in Govt. Securities (Rs)	Total Deposit (Rs)
61/62	TB, DB,NSB	2,413,939,370	14,586,608,707	T. Bill	126,336,220	5,586,802,644
62/63	TB & other	2,301,463,338	19,347,399,440	T. Bill	904,471,864	7,893,297,672
63/64	TB & other	4,808,348,503	23,342,285,327	T. Bill	951,272,430	9,475,451,509
64/65	TB & other	4,646,883,136	31,915,047,467	T. Bill	827,351,580	11,102,242,263
65/66	TB & other	3,706,102,662	37,348,255,840	T. Bill	477,814,030	15,596,790,845

Source: Annual Reports of Nabil & Machhapuchchhre Bank

The above table 4.1.1.2 represents the clear picture of total investment in government securities and total deposit of Nabil and Machhapuchchhre bank. It shows that the total investment securities and total deposit of Nabil bank and Machhapuchchhre

bank. The total investments in government securities of Nabil bank include TB, DB, NSB and other whereas Machhapuchchhre has invested only in T-bill. The total investment in government securities of Nabil bank is Rs. 2,413,939,370 out of total deposit Rs. 14,586,608,707. Similarly, Machhapuchchhre bank has invested Rs. 126,336,220 out of total deposit 5,586,802,644 in the FY 61/62. However, Nabil bank has increased to Rs.4,808,348,503 and Machhapuchchhre bank has increased to Rs. 951,272,430 in he FY 63/64.It seems that both banks are keepimg their fund idle which means that they don't want to take risks. Similarly, both banks have invested certain portion of total deposit in the year 65/66 i.e Rs. 3,706,102,662 of Nabil Bank and Rs. 477,814,030 of Machhapuchchhre bank.

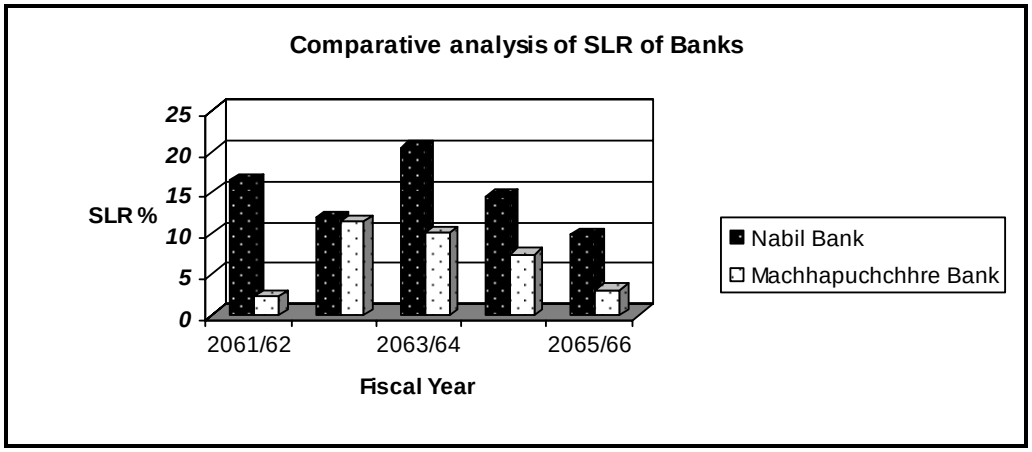
Table 4.1.1.3
Comparative SLR(%) of Banks

Year	Nabil Bank SLR (%)	Machhapuchchhre bank SLR (%)
61/62	16.55	2.26
62/63	11.89	11.46
63/64	20.59	10.04
64/65	14.56	7.45
65/66	9.92	3.06

The above table 4.1.1.3 shows the SLR of Nabil bank and Machhapuchchhre bank. The SLR of Nabil bank is 16.55% whereas Machhapuchchhre bank has only 2.26% in the FY 2061/62. In the year SLR of Nabil bank has decreased to 11.89% and Machhapuchchhre bank has increased to 11.46% which means that both banks are not investing their deposits in government securities. The SLR of Nabil bank has increased to 20.59% in the year 2063/64. However, it is decreased to 9.92% in the FY 2065/66. Similarly, the SLR of Machhapuchchhre bank is 10.04% in the year 2063/64 and decreased to 3.06% in the year 2065/66.

Figure 4.1.1.3

Comparative Analysis of Statutory Liquidity Ratio of Banks



In the above figure 4.1.1.3, the vertical axis represents the FY and the horizontal axis represents the SLR (%) of Nabil and Machhapuchchhre bank. Higher the liquidity ratio, better the liquidity position. The SLR of Nabil bank is 16.55% in the year 61/62 whereas Machhapuchchhre has only 2.26%. Nabil bank has highest investment in government securities and Machhapuchchhre bank has the lowest through the year. So, it shows that Nabil bank management is defensive management, it doesn't want to take risks and even prefers low yield. Banks should invest significant portion of their deposits in government securities because merely maintaining CRR and Cash & Bank balance can not be sufficient for liquidity maintenance. There are many factors for investment in government securities like banks policy, strategy and preference, etc. but most important factor is deposit amount in call deposit account and fixed deposit account. If banks have high amount in these account, banks should maintain high percentage of investment in government securities to meet the immediate obligations.

Statistical Analysis

Multiple Correlation Coefficient of Cash Reserve Ratios of NRB, Nabil Bank and Machhapuchchhre bank

Let, the variable X1, X_2 and X_3 denotes NRB, Nabil and Machhapuchchhre Bank respectively. As NRB is dependent variable and Nabil and Machhapuchchhre bank is independent variable, we calculate the multiple correlation coefficient of X_1 on X_2 and X_3 i.e denoted by $R_{1.23}$

$X1 = \frac{\sum X1}{N}$ $= \frac{25.5}{5}$ $= 5.1$	$X2 = \frac{\sum X2}{N}$ $= \frac{30.69}{5}$ $= 6.138$	$X3 = \frac{\sum X3}{N}$ $= \frac{42.12}{5}$ $= 8.424$

Now, calculation of r_{12}, r_{23}, and r_{13} we get

$$r_{12} = \frac{\sum x_1 x_2}{\sqrt{\sum x_1^2 \sqrt{\sum x_2^2}}} = \frac{1.446}{\sqrt{0.2}\sqrt{27.9071}} = 0.612$$

$$r_{23} = \frac{\sum x_2 x_3}{\sqrt{\sum x_2^2 \sqrt{\sum x_3^2}}} = \frac{21.9154}{\sqrt{27.9071}\sqrt{25.9618}} = 0.814$$

$$r_{13} = \frac{\sum x_1 x_3}{\sqrt{\sum x_1^2 \sqrt{\sum x_3^2}}} = \frac{1.8782}{\sqrt{0.2}\sqrt{25.9618}} = 0.824$$

Now, the multiple correlation coefficient of X_1 on X_2 and X_3 i.e $R_{1.23}$ can be calculated as

$$R_{1.23} = \sqrt{\frac{r12^2 + r13^2 - 2r_{12} r_{23} r_{13}}{1 - r_{12}^2}}$$

$$= \sqrt{\frac{0.612^2 + 0.824^2 - 2\times 0.612 \times 0.814 \times 0.824}{1 - (0.814)^2}}$$

$$= \sqrt{\frac{0.3745 + 0.6789 - 0.8209}{1 - 0.6626}}$$

$$= \sqrt{\frac{0.2325}{0.3374}}$$

$$= \sqrt{0.6891}$$

$$= 0.83 \text{ (which means it is highly correlated)}$$

Therefore, the multiple correlation coefficient of X_1on X_2 and X_3 is 0.83 which indicates that it is highly positively correlated. It means that the association between the dependent variable NRB and independent variables; Nabil bank and Machhapuchchhre bank is perfect.

Again, we have

Coefficient of Multiple Determination ($R_{1.23}^2$) = $0.83^2 = 0.6889$

Interpretation:

Therefore, $R_{1.23}^2 = 0.6889$ means that 68.89% of the total variation of the variable X_1 is due to the independent variable X_2 and X_3 and the remaining is due to the other factor.

4.1.2 Current and Call Account:

Current account is a non-interest bearing account which is known by checking account also. The deposit in such account is known by demand deposit as bankers have to pay on demand and no withdrawal restrictions can be imposed on such accounts. Banks encourage this type of account, as it is a cost free account. The only weakness of this account is that large amounts can be withdrawn at any time without giving prior notice. So theoretically this account is not considered very suitable for long term lending as banks resorts to the theory of long term deposits-long term lending and short term deposits-short term lending. As the account is maintained at a very low cost, it is considered as the "Cash Cows Product" of the bank.

Call account is a hybrid account, having mix features of savings a/c and current a/c. Deposits in this account earn interest as in savings account and at the same time, the deposits can be withdrawn similar to that of current account. The interest rates offered in this type of account depends on mutual agreement reached between the banker and the customer. In order to meet the needs of cash rich customers' banks are compelled to maintain this type of account. However banks offer very low interest rates in this type of account as funds can be withdrawn without any restriction. The weakness of this account is also considered as the "Cash Cows Product" of the bank because at a low interest rate the deposits remain fairly stable.

Total Short term deposit = Current A/c + Call A/c

Table 4.1.2.1

Current and Call Accounts of Nabil & Machhapuchchhre Bank

Year	Nabil Bank			Machhapuchre Bank		
	Current A/C (Rs)	Call A/C (RS)	Total short term Deposit	Current A/C (Rs)	Call A/C (Rs)	Total short term Deposit
61/62	2,799,184,977	2,341,328,577	5,140,513,554	142,677,861	2,209,317,923	2,351,995,784
62/63	2,910,589,772	3,851,159,944	6,761,749,716	248,833,577	2,585,974,978	2,834,808,555
63/64	3,395,683,384	3,961,633,457	7,357,316,841	346,692,565	2,226,932,942	2,615,825,507
64/65	5,284,368,064	5,563,440,674	10,847,808,738	497,468,848	2,588,374,826	3,085,843,674
65/66	5,480,533,468	8,438,271,408	13,918,804,876	549,547,371	4,309,291,353	4,858,838,724

Source: Annual Reports of Nabil & Machhapuchchhre Bank

The above table 4.1.2.1 shows the current and call account of Nabil bank and Machhapuchchhre bank. The deposit amount in the current a/c of Nabil bank is Rs. 2,799,184,977 whereas Machhapuchchhre bank has Rs. 142, 677, 81 in the year 61/62. Similarly, the amount of deposit in call a/c is Rs. 142,677,861 and Rs. 2,209,317,923 of Nabil and Machhapuchchhre bank in the year 2061/62. The amount deposited in current and call a/c of Nabil bank has increased to 2,910,589,772 and 3,851,159,944 in the FY 2062/63. Whereas Machhapuchchhre bank has only Rs. 248,833,577 in current a/c and Rs. 2,585,974,978 in call a/c in the FY 2062/63. However, both banks are increasing its current and call a/c through the year. In the fiscal year 2065/66 Nabil bank has increased its current a/c to Rs. 5,480,533,468 and call a/c to Rs. 8,438,271,408 whereas Machhapuchchhre bank has increased to Rs. 549,547,371 to its current a/c and Rs. 4,309,291,353 in call a/c. Though it is a non interest bearing a/c and low interest bearing a/c banks are depositing amount in current and call a/c. It shows that banks are ready to pay the depositors at hand to pay according to the needs of the customers

Table 4.1.2.2

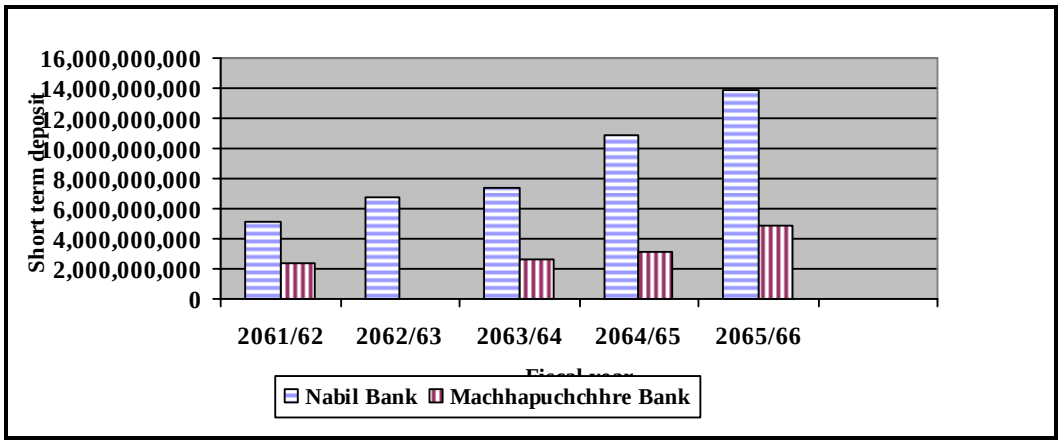
Comparative Total Short Term Deposit of Nabil & Machhapuchchhre Bank

Year	Nabil Bank	Machhapuchchhre Bank
	Total Short Term Deposit (Rs)	Total Short Term Deposit (Rs.)
2061/62	5,140,513,554	2,351,995,784
2062/63	6,761,749,716	2,834,808,555
2063/64	7,357,316,841	2,615,825,507
2064/65	10,847,808,738	3,085,843,674
2065/66	13,918,804,876	4,858,838,724

Source: Table 4.1.2.1

Figure 4.1.2.2

Comparative analysis of Short Term Deposit of Nabil & Machhapuchchhre Bank



4.2 Foreign Exchange Management: Analysis of Exchange Income Earned from Buying and Selling of FX, Tools and Techniques for the Management of FX Risks.

NRB manages the foreign exchange. Different policies and regulations have been made regarding the management of foreign exchange. The NRB has the power to manage FX by- issuing license to the persons willing to deal in foreign exchange transactions; issuing necessary order, directives or circulars in order to regulate dealings in the foreign exchange transaction by foreign exchange dealer; to inspect, supervise and monitor the foreign exchange dealer; to set the bases, limitations and terms and conditions for the transaction of the foreign exchange dealers and to prescribe the system of determining the foreign exchange rates of the Nepalese Currency .

4.2.1 Analysis of Current Status of Foreign Exchange Income

The foreign exchange rates are determined by the demand and supply of that in the National and International Market. All commercial banks of Nepal are authorized to determine their own exchange rates for convertible foreign currencies and other instruments.

The buying and selling of foreign exchange is affected through the spot, advance exchange rate, swap, option or the similar types of other instruments, cash or negotiable instruments. The bank deals in foreign exchange after fixing its buying and selling rates. The foreign exchange rates are determined by the demand and supply of that in the National and International Market. All commercial banks of Nepal are

authorized to determine their own exchange rates for convertible foreign currencies and other instruments.

The commercial banks of the country have established FEDAN in order to share the knowledge of exchange rates with a view to avoid unhealthy competition in foreign exchange transactions. The primary function of FEDAN is to work as a bridge between the member banks and NRB in matters related to foreign exchange. Every working day, each commercial bank sends its exchange rate of US dollar to FEDAN. After collecting the rates of all the banks FEDAN forwards it to NRB. NRB computes the average exchange rate of us dollar from the collective rates received from FEDAN. The exchange income can be calculated as

Exchange Income= Selling of FX – Buying of FX + Revaluation gain

% change in Exchange Income on Total Income = $\frac{Exchange Income}{Total Income}$

Table 4.2.1.1

Exchange income of Nabil and Machhapuchchhre Bank

Year	Nabil Bank			Machhapuchchhre Bank		
	Exchange Income (Rs.)	Total Income (Rs)	% of Ex. Income on Total Income	Exchange Income(Rs)	Total Income (Rs)	% of Exchange Income onTotal Income
2061/62	184,878,868	518,635,749	35.65	11,359,386	428,174,052	2.65
2062/63	185,483,662	635,262,349	29.19	35,152,376	133,996,709	26.23
2063/64	209,926,167	673,959,698	31.15	27,143,106	74,085,647	36.64
2064/65	196,487,415	746,468,394	26.32	45,699,321	85,016,002	53.75
2065/66	251,919,712	1,031,053,098	24.43	59,817,534	123,251,098	48.53

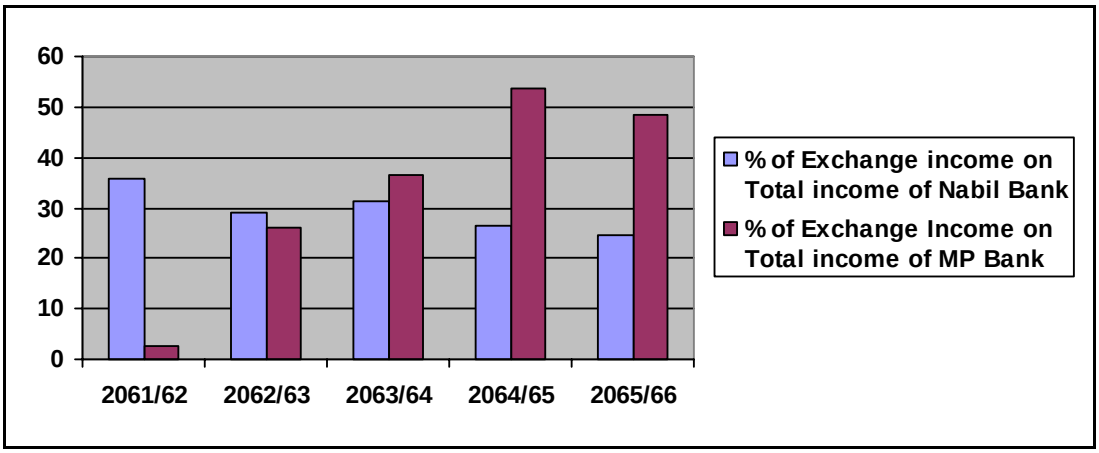
Source: Annual Reports of Nabil and Machhapuchchhre Bank

Here, in the table the exchange income of Nabil bank is Rs. 184,878,868 out of total income of Rs. 518,635,749 in the year 2061/62. Similarly, Machhapuchchhre bank has only Rs. 11,359,386 out of total income of Rs. 428,174,052. In the year 2062/63 the exchange income of Nabil bank was increased by Rs. 604794 and total income increased to Rs. 635,262,349. Similarly, the exchange income of Machhapuchchhre bank was increased to Rs. 35,152,376 and total income to Rs. 133,996,709 in the year 2062/63. But in the FY 2064/65 the exchange income of Nabil bank was decreased to Rs. 196,487,415 whereas exchange income of Machhapuchchhre bank was increased to Rs. 45,699,321 from Rs. 27,143,321. The exchange income of Nabil bank was increased to Rs. 251,919,712 and total income was also increased to Rs. 1,031,053,098. Similarly, Machhapuchchhre bank has also increased its exchange

income to Rs 59,817,534 and total income to Rs. 123,251,098 in the FY 2065/66. The above table shows that Nabil bank has generated more exchange income in comparison to Machhapuchchhre bank.

Figure 4.2.1.1

Comparison of Percentage of Exchange Income on Total income



Here, the above figure shows the percentage change in exchange income out of total income. The percentage change in exchange income of Nabil bank is 35.65% of total income in the year 2061/62 whereas the percentage changes in exchange income of Machhapuchchhre bank is only 2.65% of total income. In the year 2062/63 the exchange income of Nabil bank was decreased to 29.19% because the percentage increased in total income was more than the percentage increase in exchange income. But, the exchange income of Machhapuchchhre bank was increased to 26.13% in the year 2062/63. In the FY 2063/64 the percentage change in exchange income of Machhapuchchhre bank is 36.64% which is more than that of Nabil bank i.e 31.15%. The exchange incomes of both banks are increasing through the year which means that outflow and inflow of foreign currencies are increasing. The percentage change in exchange income of Nabil bank was decreased to 24.43% in the year 2065/66 whereas Machhapuchchhre bank exchange income was increased to 48.53%. The percentage change in exchange income on total income of Machhapuchchhre bank is higher than Nabil bank because the total income of Machhapuchchhre bank is much more less than of Nabil bank.

Statistical Analysis

Let, the frequency (f) denotes the FY and variable X_1 and X_2 denotes the exchange income of Nabil bank and Machhapuchchhre bank respectively.

For Nabil Bank	**For Machhapuchchhre Bank**
Where, N= Total Frequency=15 f = frequency A = Assumed mean= 209,926,167 $d_1 = X_1$-A deviation of the items -from the assumed mean. We have, $X1 = a + \frac{\Sigma fa1}{N}$ $= 209,926,167 + \frac{82,280,408}{15}$ $= 209,926,167 + 5,485,361$ $= Rs. 215,411,528$:. Average exchange income of Nabil bank is Rs. 215,411,528.	Where, N= Total Frequency=15 f = frequency A = Assumed mean= 27,143,106 $D_2 = X_2$-A deviation of the items from the assumed mean. We have, $X2 = a + \frac{\Sigma fa2}{N}$ $= 27,143,106 + \frac{139,808,536}{15}$ $= 27,143,106 + 9,320,569$ $= Rs. 36,463,675$:. The average exchange income of Machhapuchchhre bank is Rs. 36,463,675.

Interpretation:

Here, the above calculation shows that the average exchange income of Nabil bank i.e Rs. 215,411528 is much greater than the average exchange income of Machhapuchchhre bank i.e Rs. 36,463,675. It means the Nabil bank is generating more profit from foreign exchange than Machhapuchchhre bank.

Note: Here, the exchange income includes revaluation gain plus trading gain. According to NRB rule 25% of such income is transferred to exchange fluctuation fund through P/L appropriation account.

4.2.2 Tools and Techniques used by NRB for Management of Foreign Exchange Risks

The tools and techniques used for management of FX risks are discussed below:

a. Foreign Exchange Forwards

FX is, of course, the exchange of one currency for another. Trading or 'dealing' in each pair of currencies consists of two parts, **the spot market**,

where payment (delivery) is made right away and **the forward market**. The rate in the forward market is a price for foreign currency set at the time the transaction is agreed to but with the actual exchange, or delivery, taking place at a specified time in the future. While the amount of the transaction, the value date, the payments procedure and the exchange rate are all determined in advance, no exchange of money takes place until the actual settlement date. This commitment to exchange currencies at a previously agreed exchange rate is usually referred to as a **forward contract**. Forward contracts are the most common means of hedging transactions in foreign currencies.

b. Currency futures

Outside of the inter bank forward market, the best-developed market for hedging exchange rate risks is the **currency futures** market. In principle, currency futures are similar to foreign exchange forwards in that they are contracts for delivery of a certain amount of a foreign currency at some future date and at a known price. In practice, they differ from forward contracts in important ways. One difference between forwards and futures is standardization. Forwards are for any amount, as long as it's big enough to be worth the dealer's time, while futures are for standard amounts, each contract being far smaller that the average forward transaction. Futures are also standardized in terms of delivery date. The normal currency futures delivery dates are March, June, September and December, while forwards are private agreements that can specify any delivery date that the parties choose. Both of these features allow the futures contract to be tradable.

c. Debt instead of forwards or futures

Debt- borrowing in the currency to which the firm is exposed or investing in interest-bearing assets to offset a foreign currency payment- is a widely used hedging tool that serves much the same purpose forward contracts.

d. Currency Options

Many companies, banks and governments have extensive experience in the use of forward exchange contracts. With a forward contract one can lock in an exchange rate for the future. There are a number of circumstances, however, where it may be desirable to have more flexibility than a forward provides. A foreign exchange option is a contract for future delivery of a currency in exchange for another, where the holder of the option has the right to buy or sell currency at a agreed price, the strike or exercise price, but is not required to do so. The right to buy is a call; the right to sell, a put. For such right he pays a price called the option premium.

Thus, these are the tools and techniques for the management of FX risks. However, the tools and techniques used by Nepal Rastra Bank for the management of FX risks are swaps, advance exchange rate, cash and other negotiable instruments, spots and options. Some of these tools as are discussed below:

a. Spot

Spot market is one in which securities or financial services are traded for immediate delivery (usually within one or two business days). For example, if you pick up the telephone and instruct your broker to purchase Everest Bank Ltd. shares at today's price, you expect to acquire ownership of Everest shares in a matter of minutes.

b. Futures or Forward

Futures or forward market is designed to trade contracts calling for the future delivery of financial instruments. For example, you may call your broker and ask to purchase a contract from another investor calling for delivery to you of Rs. 1 million in government bonds six months from today. The purpose of such a contract would be to reduce risk by agreeing on a price today rather than waiting six months, when government bond price might have risen. They offer opportunities to reduce risks.

c. Options

Options markets also offer investors in the money and capital markets an opportunity to reduce risk. These markets make possible the trading of options on selected stocks and bonds, which are agreements (contracts) that give an investor (holder of option) the right, but not the obligation, to either buy designated securities from (call option) or sell designated securities to (put option) the writer of the option at a guaranteed price at any time during the life of the contract (American option)

d. Swap

Swap markets also offer investors in the money and capital markets and opportunity to reduce risk. A swap is a financial contract that obligates one party to exchange (swap) a set of payments it owns for a set of payments owned by another party. There are two basic kinds of swaps: (1) currency swaps involve the exchange of a set of payments in one currency for a set of payments in another currency; (2) interest-rate swaps involve the exchange of a set of interest payments for another set of interest payments, all denominated in the same currency.

Methods used for controlling foreign exchange rate by NRB

NRB had used Basket System and Forward Exchange Rate System to safeguard the business community by controlling the exchange rate fluctuation of foreign currency. A brief introduction of this system is given below:

Basket System:

Earlier, the Nepalese had a fixed exchange rate with USD and Indian Rupee, but the exchange rate between USD and INR was in float. Hence, the rate between INR and USD fluctuated everyday. Major international trade depends with India so the Indian Rupee is also of crucial importance for the Nepalese economy. So, Nepal had to follow a twin track policy: on one hand the Indian rupee had a fixed exchange rate and on the other hand similar fixed exchange with USD was observed. Hence, it can be understood how important it was to maintain the cross rates between NPR/INR/USD. This double parity exchange rate was possible only in the situation that INR and USD had a fixed exchange rate or if there was very little change. It was very difficult for Indian rupee to remain stable, and as a result, significant degree of broken cross rates between INR/USD and NPR emerged time to time.

For the rectification of the above problem, **Basket System** was introduced under which, the parity of USD to NPR also started to float on a daily basis. Under this system, the exchange rate of USD was arrived at first and then the rates of all other convertible currencies were subsequently determined. For determining the exchange rate of USD, a basket was fixed. All currencies, which were significant for the economy, were included in the basket. The movement of exchange rates of these currencies in the international forex market used to influences the basket rate. NRB never published the composition of the basket nor the weight assigned to each component, but it was obvious that the Indian Rupees must have had an overwhelming weight in the basket. Due to the nature and structure of Indian and Nepalese economy and the prevailing inflation rate in both the countries, this policy did not have any other alternative. This system had to be finally given in 5th March 1992.

Forward Exchange Rate System:

The exchange rate of USD remained unchanged until and unless NRB revalued or devalued it. This situation remained till 1st of June 1983. As the USD had a stable exchange rate, the business community did not have much to worry about. But as soon as this system was given up in 1983, the traders, especially the exporters of the country felt an uncertainty. If the rate of USD increased, say suppose from Rs. 70 to 80, the importer would impose it to the consumers and he was safe this way. If the rate went down, say from RS. 70 to 60, the exporter would not be able to impose it to the foreign buyers due to the tough price competition in the global market. In this way, the exporter had to bear all the losses in case the currency was revalued. To overcome this uncertainty in the business community, the forward exchange rate system was introduced.

Forward exchange facility was available only to exporters in the case of USD and the facility was made through commercial banks. The main theory behind the forward exchange facility was to protect the exporter from any unforeseen downward movement of foreign currency. Hence, the rate was normally quoted the prevailing rate. The commercial banks were required to cover all the forward exchange deals (contracts) with the Central bank through a reverse swap deal at the prescribed exchange rates and the commercial banks could

avail only the normal spread between buying and selling rates. This practice continued till February 1991 after which a policy of partial convertibility was adopted.

After this, NRB stopped fixing the spot rate as well as forward rate. The commercial banks could quote rates by themselves, banks were free to but and sell with the clients, and NRB did not provide any protection to the commercial banks' forward exposure. The facility, which was limited only to USD, was removed and could be applied to any currency then onwards.

4.2.3 Tools and Techniques used for Management of Foreign Exchange Risks by Nabil and Machhapuchchhre bank.

During the data collection period we face the problem on the collection of information under this topic. The authority of Nabil bank didn't flow the information because of security and privacy. Accordingly the authority of Machhapuchchhre bank flow the limited information due to same reason.

According to the data provided by Machhapuchchhre bank they are using forward for the of foreign exchange management.

4.3 Analysis of Market Interest Rate Risk

The money and capital markets are one vast pool of funds depleted by borrowing activities of households, businesses, and governments, and replenished by the savings these sectors supply to the financial system. The acts of saving and lending, borrowing and investing are intimately linked through the financial system. And one factor that significantly influences and ties all of them is the interest rate. The interest rate is the price a borrower must pay to secure scarce loan able funds from a lender for an agreed-upon period. It is the price of credit.

Global money and currency markets are liberalized. Neither the exchange rates nor the Interest rates are administered, but they move freely depending upon their demand and supply. This creates a lot of volatility in the interest rates of various currencies. **This is called interest rate risk.** In simple words, the impact of changing interest rates on a bank's margin of profit is usually called interest rate risk. Interest rate risk affects both the assets and liabilities of a bank. On an overall basis, the maturity gaps between assets and liabilities lead to the risk of a contraction of spreads if interest

rates fall and assets mature before liabilities, or interest rates rise and liabilities mature before assets.

4.3.1 Analysis of interest rate risk

A) Analysis of Interest Rate Risk of Nabil Bank and Machhapuchchhre Bank through Net Interest Income

Net interest income is the difference between interest income (revenues) and interest expenses. It measures how much total interest income on all earnings assets exceeds total interest expense on all sources of funding.

Net Interest Income = Total interest income - Total interest expenses

Table 4.3.1.1

Analysis of Interest Income and Interest Expenses

Year	Nabil Bank		Machhapuchchhre Bank	
	Interest Income(Rs)	Interest Expenses(Rs)	Interest Income(Rs)	Interest Expenses(Rs)
2061/62	1,068,746,769	243,544,611	381,930,447	187,027,981
2062/63	1,309,998,500	357,161,304	563,362,313	288,661,548
2063/64	1,587,758,714	555,710,109	694,482,220	397,721,715
2064/65	1,978,696,727	758,436,212	796,597,182	407,919,238
2065/66	2,798,486,196	1,153,280,052	1,041,476,434	580,036,192

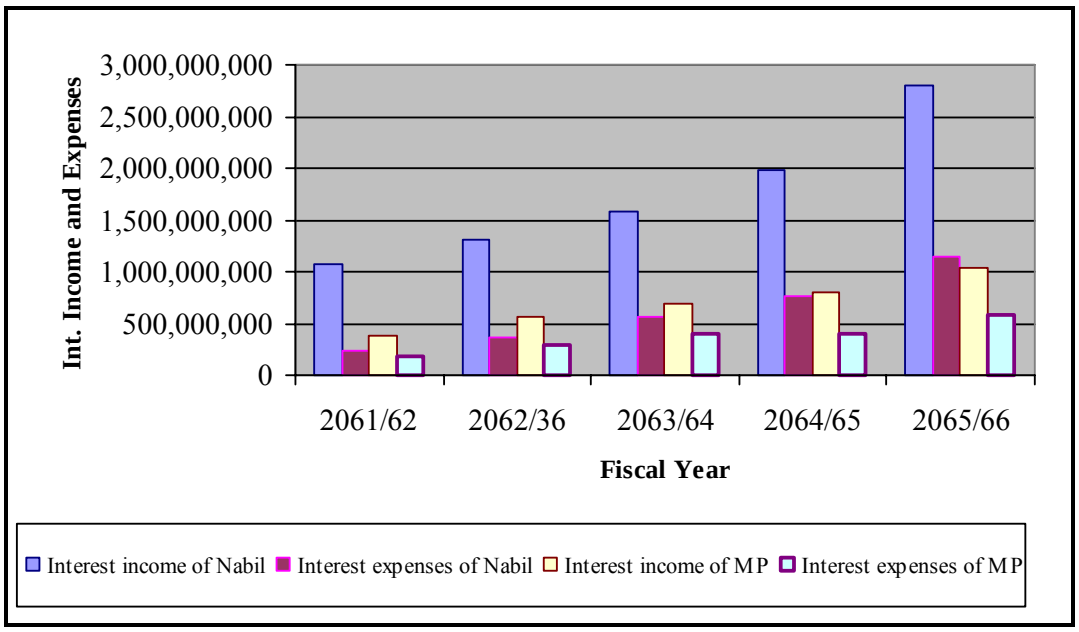
Source: Annual Reports of Nabil & Machhapuchchhre Bank

In the above table 4.3.1.1, it represents the interest income and interest expenses of Nabil bank and Machhapuchchhre bank. The interest income of Nabil bank is Rs. 1,068,746,769 and interest expenses in only Rs. 243,544,611in the year 2061/62 whereas the interest income of Nabil bank is only Rs. 381,930,447 and interest expenses is Rs. 187,027,981. The interest income and interest expenses of both banks are increasing through the year. The interest income of Nabil bank has increased to Rs. 1,309,998,500 and Machhapuchchhre bank has increased to Rs. 53,362,313 in the FY 2062/63. Similarly, in the FY 2062/63 interest expenses of Nabil bank is Rs. 357,161,304 and Machhapuchchhre bank is Rs. 288,661,548. It shows that the performance of both banks over the period is good. In the FY 2063/64, the interest income of Nabil bank is increased to Rs. 1,587,758,714 and interest expenses to Rs. 555,710,109. Whereas the interest income of Machhapuchchhre bank is Rs. 694,482,220 and interest expenses is Rs. 397,721,715 in the year 2063/64. It means

that both banks are receiving more interest on their specific assets than on their specific deposit or liability. In the FY 2065/66 the total interest income of Nabil bank is Rs. 2,798,486,196 and the total interest expenses is Rs. 1,153,280,052. Similarly, the total interest income of Machhapuchchhre bank has increased to Rs. 1,041,476,434 and total interest expenses to Rs. 580,036,192 in the year 2065/66.

Figure 4.3.1.1

Comparative Analysis of Interest Income and Interest Expenses



The above figure 4.3.1.1 represents clear picture of interest income and interest expenses of Nabil bank and Machhapuchchhre bank. The horizontal axis represents the fiscal year and the vertical axis represents the amount of both banks. The above figure shows that the interest income and interest expenses of both banks are in increasing trend. The figure shows that the total interest income and interest expenses of Nabil bank are much higher than that of Machhapuchchhre bank. The interest income of Nabil bank is Rs. 1,068,746,769 whereas Machhapuchchhre bank has only Rs. 381,930,447 and the interest expense of Nabil bank is Rs. 243,544,611 whereas the interest expense of Machhapuchchhre bank is Rs. 187,027,981 in the FY 2061/62. The interest income and interest expense of Nabil bank has increased to Rs. 1,978,696,727 and Rs. 758,436,212 respectively in the FY 2064/65. Similarly, the interest income and interest expense of Machhapuchchhre bank is increased to Rs. 796,597,182 and Rs. 407,919,238 respectively in the year 2064/65. The total interest

income and expenses of both banks are increasing through the year. The above figure shows that the total interest income and expenses of Nabil bank is higher than Machhapuchchhre bank in the FY 2064/65.

Table 4.3.1.2

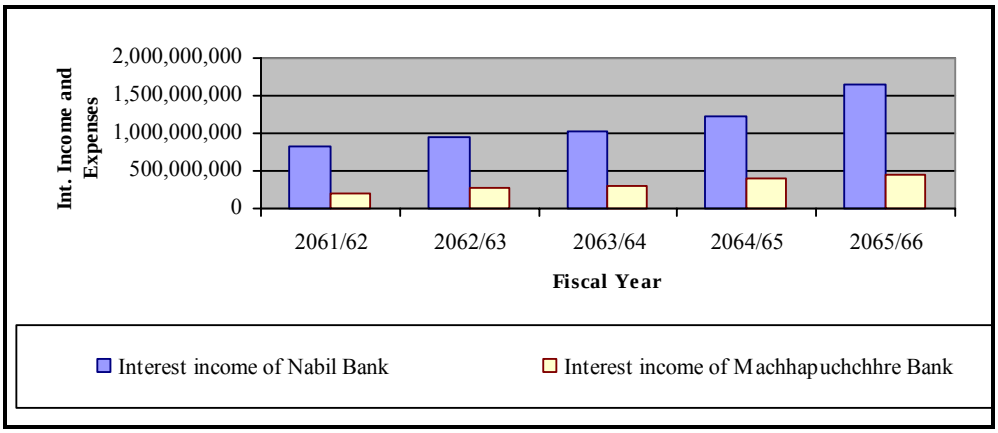
Net Interest Income of Nabil and Machhapuchchhre Bank

Year	Nabil Bank	Machhapuchchhre Bank
	Net Interest Income(Rs)	Net Interest Income(Rs)
2061/62	825,202,158	194,902,466
2062/63	952,837,196	274,700,765
2063/64	1,032,048,605	296,760,505
2064/65	1,220,260,515	388,677,944
2065/66	1,645,206,144	461,440,242

The above table 4.3.1.2 shows the net interest income of Nabil bank and Machhapuchchhre bank. Net interest income (NII) is calculated as total interest income minus total interest expenses. The NII of Nabil bank is Rs. 825,202,158 in the year 2061/62 and increased to Rs. 952,837,196 in the FY 2062/63. Similarly, the NII of Machhapuchchhre bank is Rs. 194,902,466 in the FY 2061/62 and increased by Rs. 79,798,299 i.e Rs. 274,700,765 in the year 2062/63. In the FY 2063/64, the NII of Nabil bank has increased to Rs. 1,032,048,605 whereas the NII of Machhapuchchhre bank has increased to only Rs. 296,760,505. It means that the earnings on assets of Nabil bank are higher than Machhapuchchhre bank. In the FY 2064/65, the NII of Nabil bank is Rs. 1,220,260,515 and increased to Rs. 1,645,206,144 in the FY 2065/66. Similarly, the NII of Machhapuchchhre bank is Rs. 388,677,944 in the FY 2064/65 and increased to Rs. 461,440,242.

Figure 4.3.1.2

Comparative Analysis of NII of Nabil & Machhapuchchhre Bank



B) Analysis of Interest Rate Risk of Nabil Bank and Machhapuchchhre Bank through Interest Spread Rate

The interest spread is the difference between the average rates on interest earning assets minus the average rate paid on interest paying liabilities. In other words, it is the difference between the weighted average lending rate minus weighted average deposit rate. The interest spreads of two banks are shown in the following table and figure.

Interest Spread Rate = WALR-WABR

Where,

WALR = Weighted Average Lending Rate

WABR = Weighted Average Borrowing Rate

Table 4.3.1.3

Weighted Average Interest Spread of Nabil and Machhapuchchhre Bank

Year	Nabil Bank	Machhapuchchhre bank
	Interest Spread (%)	Interest Spread (%)
2061/62	5.01	3.97
2062/63	4.9	3.4
2063/64	4.15	3.38
2064/65	3.94	3.96
2065/66	4.18	3.6

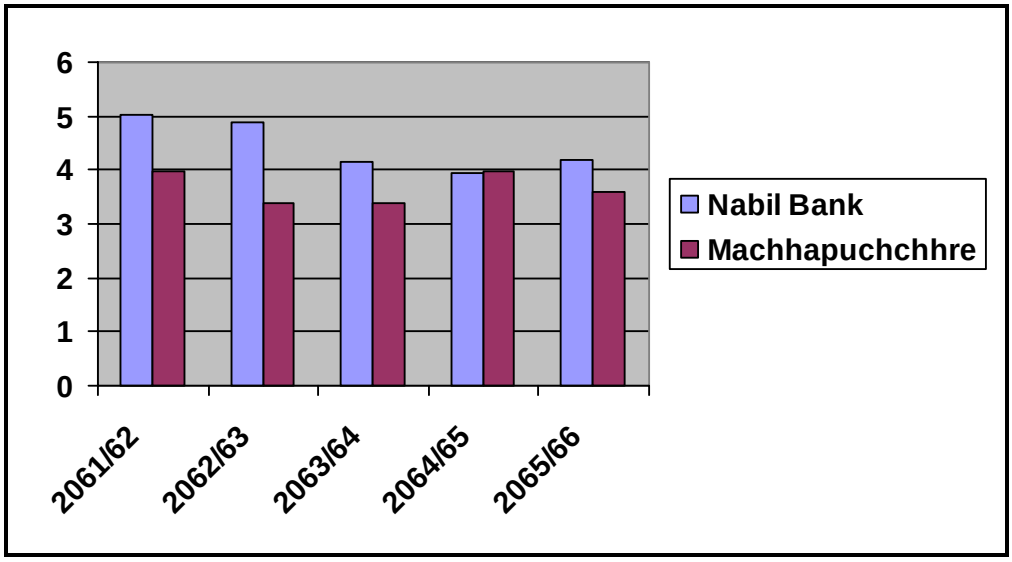
Source: Annual Reports of Nabil & Machhapuchchhre Bank

The above table shows the weighted average spread rate of Nabil bank and Machhapuchchhre bank. The average interest spread rates of both banks are in fluctuating situation. The interest spread of Nabil bank is 5.01% whereas a

Machhapuchchhre bank is 3.97% in the FY 2061/62. The interest spread of both banks is decreased to 4.9% and 3.4% respectively in the year 2062/63. In the fiscal year 2063/64, the interest spread of Nabil bank decreased to 4.15% and 3.94% in the FY 2064/65. Whereas the interest spread of Machhapuchchhre bank decreased by 0.02% i.e 3.38% in the FY 2063/64 and increased to 3.96% in the FY 2064/65. Similarly, the weighted average rate of Nabil bank is 4.18% and Machhapuchchhre bank is 3.6% in the year 2065/66.

Figure 4.3.1.3

Comparative Analysis of Weighted Average Interest Spread Rate of Nabil & Machhapuchchhre Bank



The above figure 4.3.1.3 shows the comparative analysis of weighted average interest spread rate of Nabil bank and Machhapuchchhre bank. In the above figure, x-axis represents the fiscal year of two banks and y-axis represents the interest spread rate. The interest spreads of both banks are in increasing and decreasing trend. Here, the above figure shows that the interest spread of Nabil bank is higher than Machhapuchchhre bank. In the above figure, the interest spreads of both banks are decreasing from FY 2061/62 to 2064/65. However, the interest spread of Nabil bank slightly increased to 4.18% in the FY 2065/66 whereas the interest spread of Machhapuchchhre bank decreased to 3.60% in the FY 2065/66.

Statistical Analysis

Calculation of Coefficient of Variation (c.v) of Nabil and Machhapuchchhre Bank by using Short-cut Method

Where,

N= Total Frequency=15

a = Assumed mean= 4.15

d = X-a deviation of the items from the assumed mean.

For Nabil Bank	For Machhapuchchhre Bank
We have, $X - a + \frac{\sum fd}{N}$ $= 4.15 + \frac{1.7}{15}$ $= 4.15 + 0.113$ $= 4.263$ Therefore, the average interest spread of Nabil bank is 4.263.	We have, $X1 - a + \frac{\sum fd1}{N}$ $= 3.4 + \frac{3.75}{15}$ $= 3.4 + 0.25$ $= 3.65$ Therefore, the average interest spread of Machhapuchchhre bank is 3.65.
Calculation of S.D of Nabil bank We have, $= \frac{\sum fd2}{N} \quad \left(\frac{\sum fd}{N}\right)^2$ $= \frac{2.0455}{15} - \left(\frac{1.7}{15}\right)^2$ $= 0.136 - 0.0128$ $= 0.1232$ Now, $\sqrt{0.1232} = 0.35$ Therefore, the S.D of Nabil bank is 0.35.	Calculation of Standard deviation of Machhapuchchhre bank We have, $= \frac{\sum fd_1 2}{N} \quad \left(\frac{\sum fd_1}{N}\right)^2$ $= \frac{1.7805}{15} - \left(\frac{3.75}{15}\right)^2$ $= 0.1187 - 0.0625$ $= 0.0562$ Now, $= \sqrt{0.0562} = 0.24$ Therefore, the S.D of Machhapuchchhre bank is 0.24.
Calculation of Co-efficient of variation Nabil bank We have, Co-efficient of variation (c.v) = coefficient of s.d x 100 $= \frac{s.d}{x} x\ 100 \qquad = \frac{0.35}{4.263} x\ 100$ $= 0.0821\ x\ 100 = 8.21\%.$ Therefore, the coefficient of variation of	**Calculation of Co-efficient of variation o Machhapuchchhre bank** We have, Co-efficient of variation (c.v) = coefficient of s.d x 100 $= \frac{s.d_1}{x_1} x\ 100$ $= \frac{0.24}{3.65} x\ 100$ $= 0.0658\ x\ 100 = 6.58\%.$ Therefore, the coefficient of variation of Machhapuchchhre bank is 6.58%.

Nabil bank is 8.21%.	

Interpretation:

Therefore, the c.v of Nabil bank is higher than the c.v of Machhapuchchhre bank. It means that Nabil bank has more risky assets than Machhapuchchhre bank because the weighted average lending rate of Nabil bank is higher than the average lending rate of Machhapuchchhre bank.

4.3.2 GAP management and Interest rate insurance

GAP management

It is a very popular hedging strategy among banks and other financial institutions is known as "Interest sensitivity analysis" or GAP management. Under GAP management a bank holding deposits whose interest rates rise along with increases in market rates could hold an equal volume of floating –rate loans. When the bank's deposit interest costs increases in a rising-rate period, interest revenues from floating-rate loans will increase by a similar amount, protecting the bank's net interest margin (or gap) between revenue and expenses. The bank is going to experience rising profits if interest rates fall, however rising interest rates will send liability costs soaring relative to asset revenues and profits will decline. Only if interest- sensitive assets equal interest sensitive liabilities the bank is fully hedged. **For the purpose of this study because of privacy option we lack to collect the information regarding GAP analysis.** But it is found that Nepalese banks are using GAP management effectively for the maximization of their operating income.

Here is an illustration of gap management.

	For next Year
The loans and securities reaching maturity.	550 million
Deposit and other borrowing reaching maturity.	560 million
Interest sensitivity gap	10 million
Interest sensitive position	Liabilities sensitive

Interest rate insurance

Borrowers who need very large loans may seek interest rate insurance that protects against losses due to rising loan rates. The insurer agrees to reimburse the borrower for any additional interest expenses the borrower must pay if rates climb above some maximum figure. In case of Nepal the concept of interest rate insurance is very new

concept, but the recent initiative of NRB for the insurance of deposit of Nepalese commercial banks has helped to decrease the interest rate risk.

4.3.3 Analysis of Exchange rate risk

Exchange rate means the amount of one currency that can be bought by or sold for a certain amount of another currency.

Table 4.3.3.1

Comparison of Exchange Income Fluctuation of Two Banks with Dollar Rate

Fiscal Year	Ex. Rate of $	Ex. Income of Nabil Bank	Ex. Income of MP Bank
2061/62	70.65	184,878,868	11,359,386
2062/63	74.4	185,483,662	35,152,376
2063/64	65.15	209,926,167	27,143,106
2064/65	68.8	196,487,415	45,699,321
2065/66	78.35	251,919,712	59,817,534

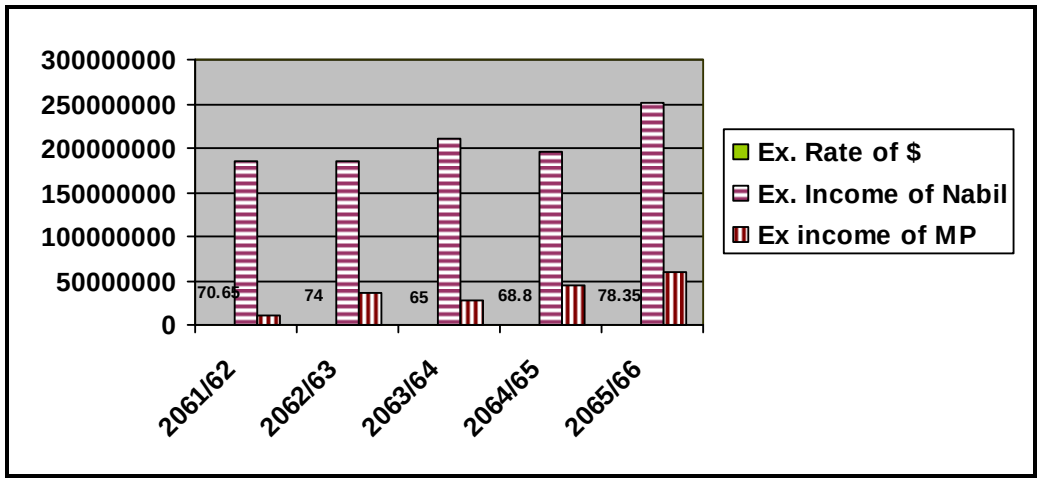
Source: Annual Reports of Nabil & Machhapuchchhre Bank

Note: The dollar rate consists of year end rate.

The above table shows the fluctuation in exchange income with dollar rate fluctuation of Nabil bank and Machhapuchchhre bank. The exchange income of Nabil bank is Rs. 184,878,868 whereas Machapuchchhre bank is only Rs. 11,359,386 when the rate of dollar is $70.65 in the year 2061/62. The exchange income of both Nabil bank and Machhapuchchhre bank increased to Rs. 185,483,662 and Rs. 35,152,376 respectively in the FY 2062/63 as the rate of dollar increased to $74.40. In the FY 2063/64, when the rate of dollar is $ 65.15 the exchange income of Nabil bank is Rs. 209,926,167 and Machhapuchchhre bank is only Rs. 27,143,106. In the year 2064/65, when the rate of dollar is 68.8 the exchange income of Nabil bank is Rs 196,487,415 and Machhapuchchhre bank is Rs 45,699,321. The exchange income of Nabil bank and Machhapuchchhre bank is Rs. 251,919,712 and Rs. 59,817,534 respectively when the dollar rate is $ 78.35 in the FY 2065/66.

Figure 4.3.3.1

Comparative Analysis of Exchange Income fluctuation with Dollar Rate



The above figure 4.3.2.1 shows the comparative analysis of exchange income fluctuation of Nabil bank and Machhapuchchhre bank. The above figure shows that the exchange income of both banks is fluctuating with the fluctuation in dollar rate. In the FY 2061/62, when the exchange rate of dollar is $70.65 the exchange income of Nabil bank and Machhapuchchhre bank is Rs. 184,878,868 and Rs. 11,359,386 respectively. The exchange income of Nabil bank and Machhapuchchhre bank increased to Rs 185,483,662 and 35,152,376 respectively when the rate of dollar is 74.40 in the FY 2062/63. In the FY 2063/64, when the exchange rate of dollar decreased to 65.15 the exchange income of Nabil bank increased to Rs 209,926,167 and the exchange income of Machhapuchchhre bank decreased to Rs. 27,143,106. In the fiscal year 2065/66, the exchange income of both banks increased as the rate of dollar increased to 78.35.

4.4 Role of Information Technology in Treasury Management

It is probably difficult to imagine business or day-to day life in general without ready availability of critical information. Whether it is price comparisons before beginning seasonal shopping , service comparisons before beginning seasonal shopping, service comparisons before we decide with which dentist to make an appointment, or market information before we launch a new product, it has often been observed that today we sometimes too much information. In order to use information and have ready access to it, information technology plays the deciding role. Accessing bank statements,

advising on medical records, verifying engineering specifications with regulated codes, information technology makes it all possible.

Information technology plays an important role in every aspect. During the past three decades, the number of computer based-information systems in private and public sector organizations has grown exponentially. Information technology plays a vital role in the management of treasury.

Although a large number of people are employed to design and operate information systems, many more individuals, such as Treasury Managers, are classified as users or "consumers" of information systems. Use of the information system includes the receipt of a report on, for example, exchange rate developments, the submission of input for a system, on, for example, money market positions. In Western Europe and the United States, it is estimated that fully one –half of the GNP is attributable to the production, use and distribution of computer based information. In Treasury Management, having the know-how to process and analyze information using computers is often a determining factor for success. This objective requires an Information System.

An information system may be described as a set of organized procedures that, when executed provide information to support decision making and control of an organization. Treasurer requires a myriad of information to manage his organization. Although gathering information, "intelligence" has been around as long as man; the formalization of this process is fairly new. Here, in the following figure……..we see a schematic representation of an idealized information system. Our Treasury Manager, as a user, would receive information from operations, production, accounting and external data on financial markets and consumers. Without a system it would be hard to imagine it being operational. Computers are a necessary ingredient to an information technology system because of the explosion in information and the needs to process large amount of data to extract small amounts of information have contributed to their pre-eminence. Although there is no general theory of how best to organize an information technology system, from the standpoint of Treasury Management it is best to remember that the ultimate goal is seldom to merely process information. Rather the goal in devising and implementing an information technology system must take into account the following questions:

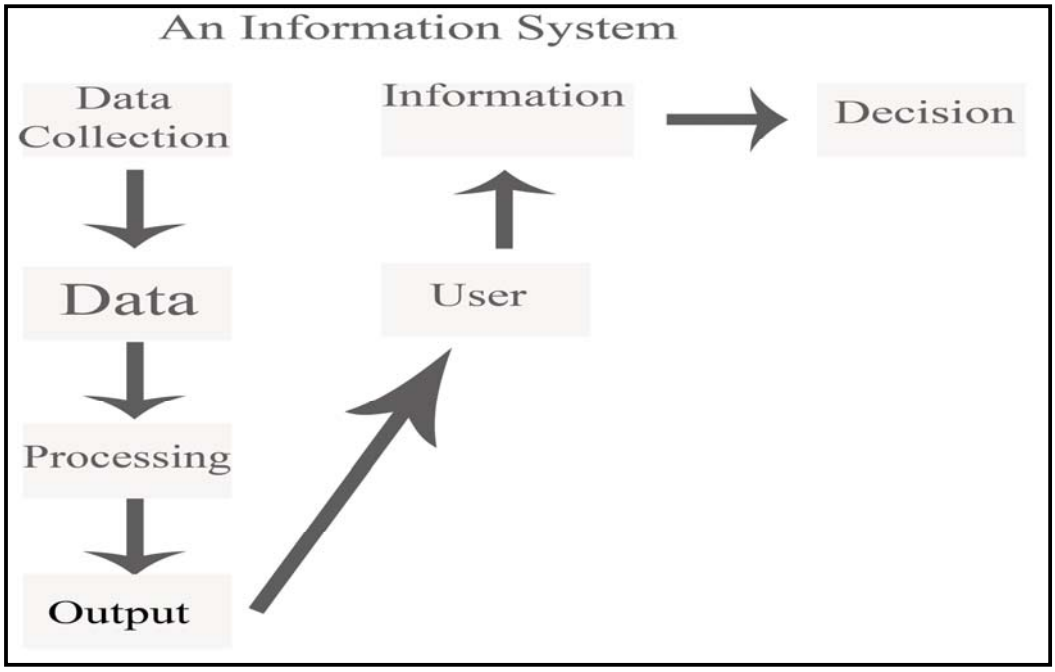
1. How is the information produced and analyzed;
2. How is it processed; and,
3. How does it contribute to the organization?

4.4.1 The Nature of Information and Decision Making

In designing an Information System for Treasury, it is critical to put the cart behind the horse. Ideally, the decision maker in Treasury, not the system designer, should specify what constitutes useful information. Here, the following picture depicts the clear picture of Information System.

Figure 4.4.1

Nature Information System in Treasury Management



The information may be interesting, but unless one is able to use it to make or not make a decision, there is no point in knowing about it. Moreover, it may actually be distracting. G.B. Davis (1974) defines information as "data that has been processed in a form that is meaningful to the recipient, and is of real perceived value in current or prospective decisions." Before one can describe decision making, one must nail down the issue of interpretation. For example, a decline in interest rates might prompt a treasurer to re-evaluate short-term leasing arrangements; and lastly there

are formal mathematical models, such as a 10% decline in the exchange rate will result in a 15% improvement in return on assets.

Although the nature of decision making cannot be categorized discretely, there are roughly three types of decision making applicable to the Treasury Manager in the use of Information Technology. The first area is strategic planning in which the Treasurer develops objectives and allocates resources to obtain these objectives. Decisions in this category are characterized by long time periods and usually involve a substantial investment and effort, as when a corporate treasurer is evaluating a major new capital project. Decisions which are classified as managerial control in nature, area two, deal with the use of resources by the Treasurer and invariably involve financial problems. An example would be a Treasurer comparing expected with actual borrowing costs. Thirdly, operational control decisions day with the day-to-day problems that affect a firm's Treasury Management. What sort of information is relevant to each type of decision making? Although is something of a generalization, but the more short-term or operational a decision is, the more the information must be structured. Structured information on Central Bank actions and exchange rate movements would be a clear example of the former; while the measurement of consumer preferences as might be used for launching a new consumer product would be less structured and more suitable for strategic decision making. However the information is presented, it is certainly true that without it, rational decision making for Treasury Management can neither occur nor be expected.

4.4.2 Frameworks for Information Systems

The framework for information system is important as it would be utilized by a corporate treasurer. A framework, we define, as a conceptual model that helps us to understand and communicate about the information systems. Although many information systems purpose to be "Management Information Systems", most studies have shown that they place a great deal of emphasis upon transactions and operational decisions. In structuring an ideal information system for treasury, management should consider all their information needs: on both a day-to-day basis as well as long term, what they need to know, what they should know, and what they would like to know; are all important. The framework for management information system should reflect these needs.

Loosely, five alternative frameworks may be described with regard to management information systems. Practically, only the last two frameworks are generally applicable to the needs of a modern treasury operation:

1. Simple Batch system, which allows only updating at one point in time.
2. Simple Inquiry System, which allows batch updating and online retrieval.
3. Inquiry and Post System, which allows update in batch, online retrieval, and enter and edit of data on-line.
4. Fully on-line System, which allows all input/ output updating on-line through terminals.
5. Command and Control System, which allows complete on-line and instantaneous feedback to control some process.

4.4.3 Information Technology used by Nepalese Banks

Due to the secrecy and privacy reason both the bank denied to provide information regarding the technology they are using. Despite this Machhapuchchhre Bank informed us that they are using "Royters" for the treasury management department

Besides this the information technology used by Nepalese banks is as follows:

1. SWIFT (Society for Worldwide Inter bank Financial Technology Communications)

SWIFT is one of the most used information technology used by Nepalese bank for the international banking system. SWIFT provides users with a communication service for inter banking messages which, in the past, were sent by mail or cable. The prime objective of the system is to facilitate the automation of foreign bank departments.

The SWIFT Network covers most of Western Europe and North America. It is a two-centre Financial Transaction Control System with the banks connected through terminals to concentrators in each country. Messages are temporarily stored at switching centers, and users are able to input transactions, whether the receiving terminals available or not. Each of the operating centers provides back-up at the centre level as well. The system has helped to create standards among banks exchanging information at the international level. Beginning with 15 countries, today it operates worldwide, supporting a range of management activities. This kind of instant communication of a grand scale is only possible through the use of computer system.

SWIFT is a bank owned cooperative society. Though it doesn't perform financial transactions, it transmits financial message. In terms of speed, accuracy and security this is the best system. It covers transactions such as customer transfer, collection,

documentary letter of credit, forex information etc. for each message type there is a field specification. SWIFT could be called a modified version of TT message.

4.5 Major Findings

From the above analysis and interpretation of data, the major findings of this study during the period are summarized below:

- CRR was calculated by dividing NRB Lcy balance by total Lcy balance minus margin deposit. The CRR regulated by NRB is 5.5% of their total deposit. Both banks have maintained their CRR adequately throughout the year. SLR is also called investment in government securities which are risk free. The SLR of Nabil bank is higher than Machhapuchchhre bank through the year. The multiple correlation coefficient between CRR of NRB, Nabil & Machhapuchchhre bank is 0.83 which indicates that it is highly positively correlated and the coefficient of multiple determination is 68.89%.
- Total short term deposit is addition of current and call a/c. The total short term deposit of Nabil bank is much higher than Machhapuchchhre bank. The total short term deposit of Nabil bank is Rs. 13,918,804,876 in the year 2065/66 whereas Machhapuchchhre bank has only Rs. 4,858,838,724. It shows that though it is a low interest bearing account customers are depositing their amount in current and call account.
- In general, NRB manages the foreign exchanges. The foreign exchange income of both banks are in fluctuating trend. The exchange income of Nabil bank is Rs. 251,919,712 out of total income of Rs. 1,031,053,,098 in the fiscal year 2065/66 whereas Machhapuchchhre bank has only Rs. 59,817,534 out of total income of Rs. 123,251,098. Similarly, the percentage change in exchange income on total income of Machhapuchchhre bank is higher than Nabil bank i.e 48.53% > 24.43% in the fiscal year 2065/66 because the total income of Machhapuchchhre bank is less than Nabil bank.
- The average exchange income of Nabil bank is Rs. 215,411,528 which is much higher than average exchange income of Machhapuchchhre bank i.e Rs. 36,463,675. It means that Nabil bank is generating more profit from foreign exchange income than Machhapuchchhre bank.
- The main tools and techniques used for the management of FX risks are foreign exchange forwards, currency futures, debt instead of forwards & currency options. However, the tools used by NRB for the management of FX

risks are swaps, advance exchange rate, cash & other negotiable instruments, spots and options.

- According to the information provided by the authority of Machhapuchchhre bank, they are using only forward for the management of FX. But, Nabil bank didn't flow the information because of privacy and security. Hence, both banks didn't provide the adequate information for the privacy.
- In the analysis of interest income and interest expenses, it is found that both the interest income & interest expenses of Nabil bank is higher than Machhapuchchhre bank through the year. The interest income of Nabil bank is higher than the interest income of Machhapuchchhre bank as they are receiving more interest on their assets.
- Net Interest Income can be calculated as interest income minus interest expenses. The NII of Nabil bank is much more higher than the NII of Machhapuchchhre bank through the year. The NII of Nabil bank is 1,645,206,144 in the fiscal year 2065/66 whereas Machhapuchchhre bank has only Rs. 461,440,242.
- The weighted average interest spread of both banks are in fluctuating trend. The interest spread of Nabil bank is 4.18% whereas Machhapuchchhre bank has only 3.60% in the FY 2065/66. It means that the interest on earning assets of Nabil bank is higher than the interest on earning assets of Machhapuchchhre bank.
- From the calculation of coefficient of variation (c.v), the c.v of Nabil bank is 8.21% and the c.v of Machhapuchchhre bank is 6.58%. The c.v of Nabil bank is greater than Machhapuchchhre bank which means that weighted average interest spread of Nabil bank is more risky.
- The exchange income of both banks are fluctuating with the fluctuation in dollar rate. Here, the dollar rate consists of year end rate. The exchange income of Nabil and Machhapuchchhre bank is Rs. 251,919,712 & Rs. 59,817,534 respectively when the rate of dollar is 78.35.
- The framework for information system generally applicable to the needs of a modern treasury operations are fully online system and command & control system. One of the information technology used by the Nepalese banks is SWIFT.

CHPATER - V

Summary, Conclusion and Recommendation

5.1 Summary

Treasury plays a vital role in the viability and success of a bank. The definition of treasury is the treasure or valuables of the government, centre and states and extended to semi-government bodies, corporate and non-corporate bodies, and financial institutions including banks that operate this treasury. Treasury management therefore refers to all activities involving the management of revenues, inflow and outflow of government, banks and incorporates, etc. treasury function as defined above is a general concept applicable to all funds management and in its wider form it encompasses cash, currency and funds, including credits, inflow and outflows as part of the general financial management. Thus, treasury management is a crucial activity in banks and financial institutions as they deal with funds, borrowings and lending and investments. The treasury management has three approaches: Cost Centre Approach, Service Centre Approach and Profit Centre Approach. Treasury management involves the management of sources and uses of funds for any type of organization in the broadest sense. Thus, the term treasury is constructed in terms of following four dimensions. They are: 1) Market Risk Management, 2) Liquidity Management, 3) Investment Portfolio Management, and 4) Foreign Exchange Management. Thus, in today's fast changing market environment treasury management has acquired a greater degree of complexity and sophistication. The success of any treasury depends a great deal on strong risk management, independent back office operations and first rate technology.

This study covers a period of 5 years beginning from 2061/062 to 2065/66. For the purpose of conducting this study, mainly the secondary data are used. In chapter 4, the data have been presented and analyzed.

From the analysis of CRR, it shows that the CRR of Nabil bank is less than Machhapuchchhre bank in the year 2061/062. The CRR regulated by NRB is 5% of their total deposit and increased to 5.5% in the year 2065/066. However, both banks have maintained their CRR adequately. The SLR of Nabil bank and Machhapuchchhre bank are in fluctuating situation. The investment in government securities of Nabil bank is higher than Machhapuchchhre bank through the year. The

SLR of Nabil bank and Machhapuchchhre bank is 9.92% and 3.06% in the year 2065/066 respectively. This shows that Machhapuchchhre bank is keeping their funds idle. The multiple correlation coefficients between NRB, Nabil bank and Machhapuchchhre bank shows that it is highly positively correlated i.e. 0.83.

Current account is a non interest bearing account and no withdrawal restrictions can be imposed on such accounts. Call account is a hybrid account having mix features of saving a/c and current a/c. Current and call a/c is a short term deposit a/c. the combination of these a/c is called total short term deposit account. The total short term deposit of Nabil bank is higher than Machhapuchchhre bank. In the FY 2065/066, the total short term deposit of Nabil bank is Rs. 13,918,804,876 whereas Machhapuchchhre bank is only Rs. 4,858,838,724.

The second topic is about foreign exchange management. From the analysis of current status of foreign exchange income, the exchange income of Nabil bank is higher than the exchange income of Machhapuchchhre bank. The percentage of exchange income on total income of Machhapuchchhre bank is higher than the Nabil bank through the year. The percentage of exchange income on total income of Machhapuchchhre bank is 48.53% whereas Nabil bank has only 24.43% in the FY 2065/066. The statistical analysis of foreign exchange income shows that the average exchange income of Nabil bank is higher than the average exchange income of Machhapuchchhre bank i.e Rs. 215,411,528 > Rs. 36,463,675. The tools and techniques for the management of foreign exchange risks are foreign exchange forwards, currency futures, debt instead of forwards or futures and options. In Nepal, the NRB uses spot, futures or forwards, options and swaps for the management of FX risks. We are unable to list the tools and techniques used by Nabil bank and Machhapuchchhre bank because of their privacy and security.

The third topic is about the market interest rate risk. From the analysis of interest rate risk through net interest income, the NII of Nabil bank and Machhapuchchhre bank are in increasing trend. The NII of Nabil bank is Rs. 1,645,206,144 whereas Machhapuchchhre bank has only Rs. 461,440,242 in the FY 2065/066. The difference between weighted average lending rate and weighted average borrowing rate is called interest spread. The interest spreads of both banks are in fluctuating situation. The interest spread of Nabil bank is higher than Machhapuchchhre bank in the FY 2065/066. The statistical analysis of interest spread shows that the standard deviation and coefficient of variation of Nabil bank is greater than Machhapuchchhre bank.

GAP management is a very popular hedging strategy. Under GAP management, a bank holding deposits whose interest rise along with increase in market rates could hold an equal volume of floating rate loans.

Exchange rate means the amount of one currency that can be bought by or sold for a certain amount another currency. From, the analysis of exchange income fluctuation with dollar rate fluctuation, it shows that both banks exchange are fluctuating with dollar rate fluctuation. With the increase in dollar rate in the FY 2064/65, the exchange income of Nabil bank decreased to Rs. 196,487,415 but the exchange income of Machhapuchchhre bank increased to Rs. 45,699,321.

The fourth and final topic is about information technology. Information technology plays a vital role in the management of technology. In terms of technology used by those commercial banks, Nabil bank denied providing information in it but the authorities of Machhapuchchhre bank said that they are using Royters for the management of treasury department. We have explained some important technological sources that are available for management of treasury department.

5.2 Conclusion

1. Both banks have maintained their CRR adequately through the year. The CRR of Machhapuchchhre bank is higher than the CRR of Nabil bank. It means that Machhapuchchhre banks treasury department is quite weak.
2. The SLR of Nabil bank is 9.92% and Machhapuchchhre bank is 3.06% in the FY 2065/066. It shows that the liquidity position of Nabil bank is in good position. But, Machhapuchchhre bank has not invested their deposit in government securities.
3. The multiple correlation coefficient of CRR between NRB, Nabil bank and Machhapuchchhre bank is highly positively correlated. The coefficient of multiple determinations between the dependent variable and independent variable is 0.6889 which means that 68.89% of the total variation of the variable X1 is due to the independent variable X2 and X3 and the remaining is due to the other factor.
4. The total short term deposits of both banks are increasing through the year. The total short term deposit of Nabil bank is Rs. 13,918,804,876 in the FY 2065/066 which is higher than that of Machhapuchchhre bank. It might be because the amount deposited in current and call account of Nabil bank is higher than

Machhapuchchhre bank. It shows that banks are ready to pay the depositors at hand to pay according to the needs of the customers.

5. The FX income of Nabil bank is Rs. 251,919,712 whereas Machhapuchchhre bank has only Rs. 59,817,534 in the FY 2065/066. The percentage change in exchange income on total income of Machhapuchchhre bank is higher than the percentage change in exchange income on total income of Nabil bank. It is because the total income of Machhapuchchhre bank is less than the total income of Nabil bank. The lower foreign exchange income of Machhapuchchhre bank shows that it is performing weak transaction and making bad decision in terms of foreign exchange management. It means that the treasury management of Machhapuchchhre is poor.
6. The average exchange income of Nabil bank is greater than the average exchange income of Machhapuchchhre bank. It means that Nabil bank is generating more profit from foreign exchange income than Machhapuchchhre bank.
7. The tools and techniques used by NRB for the management of FX risks are spot, futures or forwards, options, swaps. For the management of FX risks NRB has used two methods. They are basket system and forward exchange rate system.
8. Nabil bank didn't provide the information that they are using for the management of FX. Machhapuchchhre bank has used only forward for the management of foreign exchange.
9. Gap management is a very popular hedging strategy among banks and other financial institutions which is known as "Interest Sensitivity Analysis". But Nepalese banks are using Gap management for the maximization of their operating income.
10. Interest rate insurance helps to protect against losses of rising loan rates for the borrowers who need very large loans. But, the recent initiative of NRB for the insurance of deposit of Nepalese commercial banks has helped to decrease the interest rate risk.
11. After analyzing the figures like interest income, interest expenses and interest spread, our study concluded that Net interest income of Machhapuchchhre bank is poor and lower than Nabil bank. We realize that it is not because of higher interest expenses but is because of lower performance.
12. The interest spread of both banks is in increasing and decreasing trend. The interest spread of Nabil bank is higher than Machhapuchchhre bank. It might be

because the WALR of Nabil bank is higher than the WALR of Machhapuchchhre bank. It seems that Machhapuchchhre bank is not willing to take any more risk.

13. The s.d and c.v of Nabil bank is 0.35 & 8.31% respectively whereas the S.D AND C.V OF Machhapuchchhre bank is 0.24 & 6.58% respectively. The c.v of Nabil bank is greater than the c.v of Machhapuchchhre bank. It means that Nabil bank has more risky assets than Machhapuchchhre bank.
14. Interest rate insurance helps to protect against losses of rising loan rates. In Nepal, it is a very new concept but NRB has helped to decrease interest rate risk for Nepalese commercial banks
15. The exchange incomes of both banks are fluctuating with the fluctuation in dollar rate. This might be because of excessive use of dollar in foreign exchange transaction. It might be also because of high holding of dollar. But the point to be noted is that the income is increasing and decreasing respectively with the fluctuation in dollar rate. This depicts the fact that they are not using exchange rate strategy successfully.
16. In the background of inappropriate information this researcher is unable to conclude about the technology that they are using for the management of treasury and its department. But besides this some of the important technologies used by Nepalese commercial banks are listed and explained.

5.3 Recommendation

1. With respect to fund management by treasury department our study on CRR shows that for Machhapuchchhre bank it is better to hold less cash. By another way Machhapuchchhre bank can increase its profit through treasury department by reducing CRR or by reducing idle cash in CRR.
2. While going through the data of investment in government securities, we realized that, it would have been better if Machhapuchchhre bank treasury department pay its attention to invest the excess amount of liquid cash in short term government securities and increase its SLR ratio.
3. In terms of short term deposit, both banks are possessing increasing short term deposit. This is good to maintain liquid cash in an organization. But they must focus on the cost of such short term fund. We can say that increasing short term deposit is not only opportunity but also increase risk. So both banks should be aware to utilize fund in short term money market instrument.

4. Whole dealing with foreign exchange income the foreign exchange income of Machhapuchchhre bank is comparative lower than that of Nabil bank. To solve this problem Machhapuchchhre bank has to increase its efficiency in foreign exchange transaction. It should be careful also in losses that arise due to the devaluation of exchange rate.
5. Machhapuchchhre bank can increase its performance in foreign exchange transaction by using other technique like to minimize risk of foreign exchange.
6. To solve the problem of lower interest income and lower interest spread we can recommend that Machhapuchchhre bank should be careful in pooling deposit from depositor and should invest in securities and other option in cost effective way. In terms of interest spread, the weighted average lending rate of Nabil is higher. Because of this net income spread of Nabil bank is higher. Another important reason is that Nabil bank is in "high risk – high return" strategy as shown in statistical analysis. To resolve this problem, it is better to promote goodwill of the organization and attract new customers. But shouldn't increase weighted average lending ratio.
7. As per the analysis showed, both banks should use hedging strategy and interest rate insurance to magnify their income and to receive.
8. To solve the problem of risk from dollar fluctuation, they should be careful in holding dollars and should introduce other currencies to make opportunity gain. Besides this treasury department should be capable to predict the corresponding changes international currencies.
9. Finally since we do not have adequate information to recommend about the technology and its use in those banks. But we can say that Nepalese bank drive less priority to the use and development of technology, it is recommended that they should focus on the development, change and updating the technology for the smooth functioning of treasury department.

After all these analysis and conclusion, we realize the weak performance of Machhapuchchhre bank in most of the issues. So this researcher recommends to improve treasury department with the use of technology and human resource. Accordingly the result of Nabil bank shows that it is in aggressive strategy in most of the analysis. So it is recommended to be more analytical and less aggressive in the issues of treasury department.

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Annex-I

1) Calculation of Multiple Correlation Coefficient of Cash Reserve Ratios of NRB, Nabil Bank and Machhapuchchhre bank

X_1	X_2	X_3	x_1= X1-X_1	x_2= X_2-X_2	x_3= X_3-X_3	x_1x_2	x_1x_3	x_2x_3	x_1^2	x_2^2	x_3^2
5	3.83	8.27	-0.1	-2.308	-0.154	0.2308	0.0154	0.3554	0.01	5.3269	0.0237
5	3.26	5.18	-0.1	-2.878	-3.244	0.2878	0.3244	9.3362	0.01	8.2829	10.523
5	6	8.29	-0.1	-0.138	-0.134	0.0138	0.0134	0.0185	0.01	0.019	0.0179
5	8.57	8.05	-0.1	2.432	0.374	-0.243	-0.0374	0.9096	0.01	5.9146	1.1399
5.5	9.03	12.3	0.4	2.892	3.906	1.1568	1.5624	11.296	0.16	8.3637	15.2568
$\sum X_1$= 25.5	$\sum X_2$= 30.69	$\sum X_3$= 42.09				$\sum x_1x_2$= 1.446	$\sum x_1x_3$= 1.8782	$\sum x_2x_3$= 21.916	$\sum x_1^2$= 0.2	$\sum x_2^2$= 27.907	$\sum x_2^2$ =26.9618

2) Calculation of Average Exchange Income of Nabil and Machhapuchchhre Bank by using Short-cut Method

	Nabil Bank			**Machhapuchchhre Bank**		
F	X_1	d_1=X_1-A	fd_1	X_2	d_2=X_2-A	fd_2
1	184,878,868	-25,047,299	-25,047,299	11,359,386	-15,783,720	-15,783,720
2	185,483,662	-24,442,505	-48,885,010	35,152,376	8,009,270	16,018,540
3	209,926,167	0	0	27,143,106	0	0
4	196,487,415	-13,438,752	-53,755,008	45,699,321	18.556,215	7,424,860
5	251,919,712	41,993,545	209,967,725	59,817,534	32,674,428	65,348,856
N=15			$\sum fd_1$=82,280,408			$\sum fd_2$=139,808,536

Table 4.2.1.2 Calculation of average exchange income

Annex-II

3) Calculation of Standard Deviation and Coefficient of variation of Interest Spread of Nabil bank and Machhapuchchhre bank

Let, the fequency (f) denotes the FY and variable X_1 and X_2 denotes the interest spread of Nabil bank and Machhapuchchhre bank respectively.

f	X	d=X-a(a = 4.15)	fd	fd
1	5.01	0.86	0.86	0.73
2	4.9	0.75	1.5	1.1
3	4.15	0	0	0
4	3.94	-0.21	-0.81	0.17
5	4.18	0.03	0.15	0.00
N=15			$\sum fd=1.7$	$\sum fd^2=2$

f	X_1	$d_1=x_1-a(a = 3.4)$	fd_1	fd_1^2
1	3.97	0.57	0.57	(
2	3.4	0	0	
3	3.38	-0.02	-0.06	(
4	3.96	0.56	2.24	1
5	3.6	0.2	1	
N=15			$\sum fd_1=3.75$	$\sum fd_1^2=1$

Table no. 4.3.1.4: Calculation of interest spread of Nabil and Machhapuchchhre Bank.