

**IMPACT OF INTEREST RATE ON DEPOSIT MOBILIZATION  
AND PROFITABILITY: AN EVIDENCE  
FROM COMMERCIAL BANK IN NEPAL  
(A Comparative Analysis of NIBL, HBL, EBL and NABIL)**

**A Thesis**

**Submitted by:**

**Yubraj Belbase**

**Nepal Commerce Campus**

**T.U. Registration No: 7-1-305-134-2000**

**Campus Roll No: 365/064**

**Exam Roll No: 250710**

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**Nepal Commerce Campus**

**In partial fulfillment of the Requirements for the Degree of  
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**Minbhawan, Kathmandu**

**March 2013**

***RECOMMENDATION***

This is to certify that the thesis

*Submitted by:*

**Yubraj Belbase**

Entitled

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

-----  
Dr. Sushil Bhakta Mathema  
(Chair Person, Research Department)

-----  
Mrs. Jyoti Pandey  
(Campus Chief)

-----  
Nischal Risal, Lecturer  
(Thesis Supervisor)

Date: .....

**VIVA-VOCE SHEET**

We have conducted the viva-voce examination of the thesis presented by

**YUBRAJ BELBASE**

Entitled

**IMPACT OF INTEREST RATE ON DEPOSIT MOBILIZATION AND  
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and found the thesis to be the original work of the student written according to the prescribed format. We recommend the thesis to be accepted as partial fulfillment for  
**Master's Degree in Business Studies (M.B.S.)**

**Viva-Voce Committee**

Chairperson, Research Committee -----

Member (Thesis Supervisor) -----

Member (External Expert) -----

Date: -----

## DECLARATION

I, hereby declare that this thesis entitled "**IMPACT OF INTEREST RATE ON DEPOSIT MOBILIZATION AND PROFITABILITY: AN EVIDENCE FROM COMMERCIAL BANK IN NEPAL**". (A Comparative Analysis of NIBL, HBL, EBL and NABIL) submitted to office of the Dean, Faculty of Management, Tribhuvan University, is my original work as partial fulfillment of requirement for the Master's Degree of Business Study (M.B.S), under the supervision and guidance of Mr. Nischal Risal, Lecturer of Nepal Commerce Campus, Minbhawan.

.....

**Yubraj Belbase**

Nepal Commerce Campus  
TU Regd. No: 7-1-305-134-2000  
Campus Roll No: 365/064  
Exam Roll No: 250710

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Last but not least, every human being has error. I am solely responsible and apologize for the mistakes that have been found in this study.

Yubraj Belbase

March, 2013

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## **ABBREVIATIONS**

A.D.	Anno Domini
ADB	Agriculture Development Bank
B.S.	Bikram Sambat
CD ratio	Credit Deposit ratio
EBL	Everest Bank Limited
HBL	Himalayan Bank Limited
NABIL	Nabil Bank Limited
NGOs	Non-government organizations
NIBL	Nepal Investment Bank Limited
NRB	Nepal Rastra Bank
Rs.	Rupees

## CHAPTER ONE

### INTRODUCTION

#### **1.1 Background of the study**

Nepal, a country surrounded by two fastest growing Asian economies, India and Peoples Republic of China, is one of the least developed countries in the world. The pace of economic development of Nepal was still in its infancy stage despites more than five decades of planned economic efforts.

With the implicit objective of meeting the pressing needs of its people, Nepal adopted mixed and liberal economic policy. After the restoration of the democracy, the concept of the liberalization had been incorporated as directive principle of state policies. This led multinational companies, finance companies and joint venture banks. The economic liberalization process ushered the private sector initiatives in the development of the financial sector.

In Nepal banking in the true sense of term, started with the establishment of Nepal Bank Ltd on 30th Kartik, 1994 B.S. Right from its inception, it carried out the functions of a commercial bank. Nepal Bank Ltd had a herculean task of attracting people toward banking sector from predominant Sahu mahajan's transaction and of introducing other banking services as well. Nepal Bank Ltd as a first commercial bank of Nepal was established 128 years after the establishment of first commercial bank in India. On this ground, as compared to India, Nepal lags behind 128 years even for establishing a simple banking institution.

Having felt the need of development of banking sector and to help the government formulate monetary policies, Nepal Rastra Bank was set up in 2013 B.S. as the central bank of Nepal. Since then, it had been functioning as the government's bank and had contributed to the growth of financial sector integrated and speedy development of the country was possible only when competitive banking services reach nooks and corners of the country. In order to fulfill this objective, government set up Rastriya Banijya Bank in 2022 B.S. as a fully government owned commercial bank. With the coming up of Rastriya Banijya Bank, banking services spread to both the rural and urban areas.

Despite being an agricultural country, our farming system was still traditional with low productivity. To get rid of this problem, scientific agriculture was imperative, which requires adequate finance and other inputs. To meet this, Agricultural Development Bank was established in 2024 B.S. Moreover, Nepal Industrial Development Corporation had already been set up in 2016 B.S. to transform the agro-based economy to the industrial one, and much later Security Exchange Center to enhance capital market activities.

Nepal Government had also established five rural development banks namely:

- 1-Eastern Rural Development Bank
- 2-Central Rural Development Bank
- 3-Western Rural Development Bank
- 4-Mid-Western Rural Development Bank
- 5-Far-Eastern Rural Development Bank

In order to operate all commercial banks incorporated in Nepal, uniformity of laws of banking acts were essential. Thus, Commercial Bank Act 2031 B.S. was enacted and had been amended several times in accordance with the needs. With the promulgation of the act, Nepal witnessed growth in the number of banks in the private sector and the numbers continue to grow. Now the act had been replaced by an umbrella act called Bank and Financial Institutions Act, 2063. This act governs not only the commercial banks but also all the financial institutions operating within the country. It classified commercial banks as category 'A' financial institution, development bank as 'B', finance companies as 'C' and micro-finance as 'D' respectively. In table 1.1, the growth of financial institutions had been presented.

Table 1.1: Growth of Financial Institutions in Nepal

<b>Institutions</b>	<b>1980</b>	<b>1985</b>	<b>1990</b>	<b>1995</b>	<b>2000</b>	<b>2005</b>	<b>2012</b>
Commercial Banks	2	3	5	10	13	17	32
Development Banks	2	2	2	3	7	26	87
Finance Companies	-	-	-	21	45	60	79
Micro Credit Development Banks	-	-	-	4	7	11	21
Saving and Credit Cooperatives(limited Banking activities)	-	-	-	6	19	20	16
NGOs (financial intermediaries)	-	-	-	-	7	47	38
<b>Total</b>	<b>4</b>	<b>5</b>	<b>7</b>	<b>44</b>	<b>98</b>	<b>181</b>	<b>323</b>

Source: Nepal Rastra Bank

During the last two and half decades the number of financial institutions had grown significantly. At the beginning of the 1980s there were only two commercial banks and development banks in the country. Induction of economic liberalization policy, particularly the financial sector liberalization provided impetus in the establishment of bank and non-bank financial institutions. Consequently, by the end of mid-July 2012 altogether 323 bank and non bank financial institutions licensed by NRB were in operation. Out of them, 32 are "A" class commercial banks, 87 "B" class development banks, 79 "C" class finance companies, 21 "D" class micro-credit development banks, 16 saving and credit co-operatives, and 38 NGOs.

Capital formation and the investment were highly needed for the healthy economic development of every country. A healthy economy was equally dependent on efficient transfer of funds from people who were net savers to firms and individuals who need capital so that the problem of inadequate capital formulation could be wiped out. Without efficient transfers, the economy simply could not function and economic efficiency was simply impossible without a good system for allocating capital within the economy. As such, various banks and financial institutions that came into existence after the liberalization policy play a crucial role in the capital formulation and investment for the economic development of the country.

Banking sector had been known as the integral part of the economy. Banks and other financial institutions perform various activities. Among these, one of the major functions of the banks and other financial institutions was to act as financial

intermediaries wherein they collect funds from the surplus units and distribute as loans to those deficit units in the economy by providing interest to depositors and charging interest from the borrowers. In doing so, the financial intermediaries provide a link between saving and investment and between the present and the future. As a consequence, savers could earn higher returns from their saving and borrowers could execute their investment plans to earn future profits. Further, financial intermediation crucially affects the net return to savings and the gross return for investment too. The spread between these two returns mirrors the banks interest margins, in addition to transaction costs and taxes borne directly by savers and investors. This suggests that bank interest spreads could be interpreted as an indicator of the efficiency of the banking system.

Saving equals income minus current expenditure. For business sector, saving include current earning retained inside business firms after payment of taxes, stockholders dividend and other expenses. Government savings were when there was a surplus of current revenues over current expenditure. As people in the least developed countries had very low income source, most part of earning was spent in consumption. Even if some people save, their money remains idle at home. It was not invested in the productive sector. Hence, the flow of capital was low in the financial market for the economic development. Banks as an intermediary could influence savers to save and then deposit their money in bank by providing them attractive interest rate. Interest rate was one of the important factor which influence people to save and deposit their savings in banks for long period. "Interest is payment for the use of money". Therefore, when savers deposit their savings in bank, the banks pays certain percentage of interest on savings.

As the banks acquired more deposits, they could lend the funds to the needy businessmen/ entrepreneurs and earn interest-based income by charging certain percentage of interest on loan so that money could be used in the productive sector. The rate of interest was the price a borrower must pay to secure loan rate of interest at an agreed over a certain time period.

## **1.2 Interest rate strategies of NRB**

In the monetary system of all countries, the central bank was an apex institution of the monetary system, which seeks to regulate the functioning of the financial institutions of the country. Nepal Rastra Bank as the central bank under the Nepal Rastra Bank Act, 1955 was established in 26th April, 1956. Its function was to supervise commercial banks and to guide the basic monetary policy of the nation. Its major aims were to regulate the issue of paper money; secure countrywide circulation of Nepalese currency and achieve stability in its exchange rates, mobilize capital for economic development and for trade and industry growth; develop the banking system in the country, thereby ensuring the existence of banking facilities; and maintain the economic interests of the general public. Nepal Rastra Bank also was to oversee foreign exchange rates and foreign exchange reserves.

NRB was authorized to determine the interest rate charged and offered by the commercial banks and financial institutions. NRB enjoyed the authority in determining interest rate structure of banks and financial institutions in the period of 1960 to 1975. The financial system reforms started after the liberalization of interest rates in 1984 when commercial banks were given autonomy to fix interest rates over and above the central banks rates by 1.5 percentage points on saving and 1 percentage point on term deposits. The financial institutions got freedom in fixing their interest rates in their deposit and loans in 1986. However, there was limitation imposed on certain sectors of lending such as the rates of maximum of 15 percent on the priority sectors loan and for the other kinds of loans financial institutions were given freedom to maintain the interest rate structure. On December 1993, Banks and finance companies were not allowed to have more than 6 percentage interest rate spread between deposit and lending rates. Commercial banks were obliged to publish their interest rates and variations were permitted only to the extent of 1 percent on deposit and 2 percent in the lending rates between borrowers for the same purpose.

Interest was both a payment and receipt for the use of money. Interest, therefore, could be considered from the above two points. If the interest was paid, it could be considered as a "cost". On the other hand, if interest was received, it could be considered as a "return". Since, money could earn a return over a period of time; interest rates were often considered as an expression of the time value of money and were expressed in percentage. All business organizations or individuals were

responsive to interest rate of the banks and financial institutions in one way or another. A variety of interest rate risk exists in the financial markets. However, in the context of Nepal, interest rate was regulated by the central bank during the early stage of financial market, development taking the period from 1955 to 1965. But gradually dramatic change had been made in the regulation on the interest rate by the central bank i.e. Nepal Rastra Bank according to the compatibility of the banks and financial institutions through liberalization. In the early mid 1980's Nepal had adopted liberal economic policy as a result of which many banks and financial institutions came into existence. Regulation of the financial system aimed at control of the economy rather than foster safety and soundness of financial system. But the interest rate deregulation, curtailment or elimination of directed credits, lifting entry and exit barriers for financial intermediaries, restructuring of banking system and institution of regulatory and supervisory mechanism were some of the components which open the door of such liberalization. There was full discretion to NRB in determining interest rate structure of banks and financial institutions from the period 1960 to 1975 as it was the sole and whole institution authorized to determine the interest rate as per NRB Act (Shrestha & Bhandari, 2007).

The era of interest rate liberalization started in November 16, 1984 when NRB granted autonomy to commercial banks to fix the rates of interest over and above the NRB rates by 1.5 and 1.0 percentage points respectively on saving and term (fixed) deposit. NRB directed commercial banks to reduce the interest rates by 2 percent points than the normal credit for agricultural and cottage industries in 18 remote districts. Interest rates policy in Nepal was characterized by an elaborate system of mandatory deposit and lending rates for commercial banks and other financial institutions before the deregulatory moves of May 1986. The interest rates were further liberalized in May 29, 1986 when commercial banks were allowed to fix rates higher than the minimum deposit rates fixed by the NRB. Commercial banks were also set free to fix lending rates except certain items in the priority sector. The minimum interest rates were 8.5 percent on saving deposit and 12.5 percent for one year fixed deposit. The interest rates on fixed deposit with a maturity period or less than one year were left to the discretion of the banks themselves. Regarding lending rates, the interest rate was at 15 percent maximum.

On August 22, 1992, NRB issued some directives to commercial banks and other financial institutions to clearly spell out the interest rate on deposits. NRB also suggested to commercial banks and other financial institutions to limit the spread of interest rate at 6 percent within Mid- December 1993. A further instruction to banks and financial institution was issued in 2002 and now the interest rate spread required to be maintained by commercial banks and financial institutions had also been removed.

### **1.3 Brief profile of the sample commercial banks under study**

As there are 32 commercial banks that are operating within the country as on Mid-July 2012, only 4 commercial banks were taken as sample for the study. Ownership of the bank, size of the capital and establishment period were taken into consideration while selecting the sample banks. Among the 4 banks, 2 banks were established and/or operating with more than 50 percent foreign partnership and one had only 0-20% foreign share were rest of one bank had nearly 100% public share. All the banks in the sample are operating for more than last 10 years.

- ) Nepal Investment Bank Ltd.
- ) Everest Bank Ltd.
- ) Himalayan Bank Ltd.
- ) NABIL Bank Ltd.

#### **Nepal Investment Bank Ltd. (NIBL)**

NIBL, previously Nepal Indosuez Bank Ltd, was establish in 1986 as a joint venture between Nepal and French partner (holding 50% of Capital) Credit Agricole Indosuez, a subsidiary of one of the banking group in the world. With the decision of Credit Agricole Indosuez to divest, a group of companies comprising of bankers, professionals, industrialists and businessmen, in April 2002, acquired 50% of holding of Credit Agricole Indosuez in Nepal Indosuez Bank. The name of bank was changed to Nepal Investment Bank Ltd upon approval of the bank's Annual General Meeting, Nepal Rastra Bank and Company Registrar's Office. The shareholding structure comprise of:

1. A group of companies holding 50% of the capital
2. Rastriya Banijya Bank holding 15% of capital

3. Rastriya Bima Sansthan holding 15% of capital
4. The general public holding 20% of capital

The mission statement of NIBL is “To be the leading Nepali bank, delivering world class service through blending of state-of-the-art technology and visionary management in partnership with competent and committed staff, to achieve sound financial health with sustainable value addition to all our stakeholders. We were committed to do this mission while ensuring the highest level of ethical standard, professional integrity, corporate governance and regulatory compliance”. NIBL bank received as “Bank of the Year: 2003”, “Bank of the Year: 2005”, “Bank of the Year: 2008” and “Bank of the Year: 2010”.

### **Everest Bank Ltd. (EBL)**

EBL was established in 1993 A.D. It started its operation from 18th October 1994 with a view and objective of extending professional and efficient banking service to various segments of the society and thereby contributing to the economic development of the country. Under the technical service agreement signed between two banks, Punjab National Bank (PNB) as its joint venture partner in 1997 had been providing top management services and banking expertise to Everest Bank Ltd. PBN had helped the bank in laying down sound system and procedures. EBL had been steadily growing in its size and operations ever since its inception and today it had established itself as leading private sector bank of the nation, reckoned as one of the fastest growing commercial bank of the country. It had a main policy to grant a loan at possible rate and through easy procedures, beside many other commercial activities. Bank paid up capital had increased to 831.4 million (Ordinary shares 491.4 million, 9% Cumulative Non-Redeemable Preference shares 140 million and 7% Cumulative Convertible Preference Shares 200 million) against the Authorized Capital of 1000 million (Ordinary shares 650 million, 9% Cumulative Non-Redeemable Preference shares 150 million and 7% Cumulative Convertible Preference Shares 200 million) . The local Nepalese promoters hold 50% stake in bank's equity, while 20% of the equity contributed by joint venture partner PNB whereas remaining 30% is held by public.

### **Himalayan Bank Limited (HBL)**

HBL was incorporated in 1992 by the distinguished business personalities of Nepal in partnership with Employee Provident Fund and Habib Bank Limited, one of the largest commercial bank of Pakistan. Banks operations were commenced from January 1993. It was the first commercial bank of Nepal with maximum share holding by Nepalese private sector. Its authorized capital is Rs. 2,000 million, issued capital was Rs. 1,013.5125 million and paid up capital is Rs. 1,013.5125 million as on Mid-July 2008. HBL had its share listed on Nepal Stock Exchange in 5th July 1993. The share participation of the bank was 51% promoters' shareholders, 20% Habib Bank of Pakistan, 14% Employee Provident Fund and 15% Nepal Public Shareholders. Besides commercial activities, the bank also offers industrial and merchant banking.

The bank's policy was to extend quality and personalized service to its customers as promptly as possible. The bank, as far as possible, offers tailor made facilities to its clients, based on the unique needs and requirements, to extend more efficient services to its customers. Bank had been adopting innovative and the latest banking technology. This had not only helped the bank to constantly improve its service level but had also kept it prepared for future adoption of new technology. HBL was committed to be a "BANKING WITH A DIFFERENCE" which was awarded during 2059 BS as "NATIONAL EXCELLENT AWARD" by FNCCI. It also received Nepal's No. 1 Bank Award from the Bankers' Almanac for the year 2003 and 2006 and Best Presented Accounts Award 2008.

### **NABIL Bank Limited**

NABIL Bank Limited (NABIL) commenced its operation on 12 July, 1984 as the first Joint Venture bank of Nepal. Dubai Bank Limited, Dubai (DBL) was the initial foreign joint venture partner with 50% investment. Later, it was acquired by Emirates Bank International Limited, Dubai (EBIL). NABIL Bank Limited had the official name Nepal Arab Bank Limited till 31st December 2001. Also the number of outlasts in the country was the highest among the joint venture and private banks operating in Nepal. Success of NABIL was a milestone in the banking history of Nepal as it paved the way for the establishment of many commercial banks and financial institutions.

NABIL provides a full range of commercial banking services through its outlets spread across the nation and reputed correspondent banks across the globe. Moreover NABIL had a good name in the market for its highly personalized services to customers. So, NABIL bank received as “Bank of the Year: 2004”. The share subscription of the NABIL was divided in 5 parts. NB International Ltd. had taken 50%, Nepalese Public had taken 30%, Nepal Industrial Development Corporation had taken 6.15%, Rastriya Beema Sansthan had taken 9.67% and the remaining 0.33% of share was taken by Nepal stock Exchange.

#### **1.4 Statement of the problem**

This is modern and scientific age. Each and every thing including banking sector is heavily affected by science and technology. The world is changing very fast. Recent survey suggests that banks were currently undergoing sweeping changes in function and form. In fact, many industry analysts refer to these trends as a banking revolution.

Deposits were the funds collected by bank from account holders for the security and transaction motives. It was the amount of money or a valuable item that was received into a bank as security against possible loss. Utilization of the bank deposits indicates effectiveness of management. The management should be able to raise deposit fund in the lowest cost and use maximum portion of deposits safely into loan advancement to maximize profitability. Both the cost and amount of deposits that the bank could sell to the public were heavily influenced by the interest rate schedules and competitive maneuverings of the bank. Loan was the sum lent to others for certain time period with the agreement to charge interest on principal. The interest was charged calculating certain percentage on the principal. The basic objective of loan advancement was to earn interest as the reward for lending the sum for specific period.

Though banking sector had always been promising sector giving high return and value to its promoters and shareholders, its down looking financial scenario had created very less investment alternatives and comparatively lower return. Our country showed several joint venture banks within short period of time fighting for small amount of market share which requires excessive force making high operational cost. Interest rate as a major tool to change the fortune of the bank it had always been

modified as per situation and economy. After commercial banks received autonomy to determine their own interest rate they had greater burden to carry if it was to shoulder responsibility to drag country towards prosperity. An appropriate interest rate I always sought to keep both parties i.e. depositors and borrowers at profitable position, even if there were negative impacts of change in interest rate it would be minimum. Due to stiff competition between the banks to increase the volume of deposit and loans and investments it had been working very less interest spread which was able to hardly cover total cost. This had been because of excessive availability of financial institutions. Moreover frequent change in interest rate within and outside the bank had changed the banking habit of individual depositors. There had been high tendency to transfer fund from less interest bearing bank to higher interest bearing ones while lower rated lending banks were seeing huge loan applications.

The change in interest rates certainly had deep impact on the activities of the commercial banks. This study basically deals with such impacts of interest rate on the deposit mobilization and the ultimately the profitability of the company. The main attempt of this study was to answer the following questions.

- ) What will be the impact of increasing and decreasing interest rate on deposits, loans and investment and ultimately profitability of the company?
- ) Whether or not the interest rate structure effects the investment of commercial bank?
- ) Is interest rate main factor to attract customers to banks?
- ) Is there any stability in deposit mobilization policy of the bank?
- ) What is alternative to interest rate policy if we have to increase or decrease deposit and investment level?

### **1.5 Significance of the study**

The scope of interest rate policy was as broad as its definition. Many genuine research works had been done and many important theories were formed and even applied in the economic world. However, Nepal had yet to achieve a bit of what other foreign students and scholars had achieved. While in a process, this was another effort to fulfill the gap that had been left by other researcher and continue their genuine work.

Banks were major part of the economy as their policies and movements were always under financial scrutiny. Old bank had obvious advantages over new bank in terms operational cost and expertise gained through past experience. However, new banks had obvious advantage provided by the updated and software and technology, which was definitely going to pay back in the long run.

Interest rates offered by new banks were naturally competitive making the interest spread much narrower, for this they didn't have any other alternative in the short run. This stiff competition among banks had benefited all people relating to financial sector in terms of higher dependable interest on deposit, easy availability of modified lower rated loan and advances and wider range of products to accommodate all needy people. After the banks got autonomy to maintain their own interest rate it had to shoulder huge responsibility as they had to scrutiny every aspect of effect of increase or decrease in the interest level.

The study undertaken was deeply concentrated on impact of interest rate on deposit mobilization and profitability of the bank. It would thus be helpful to all directly or indirectly related to economic fields. The study would be well known for information, ideas brought forward, suggestion and conclusions drawn to respective problems etc.

## **1.6 Theoretical framework**

In the financial literature, interest rate decision was one of the major factors. It affects lending and borrowing of individual as well as firm. Interest was the amount paid by a borrower to a lender above the amount (the principal) that had been borrowed. Similarly, in the flows of fund, investors' attitude was affected by interest rate structures. In financial term, higher interest rate attracts deposit from customer which increases investment opportunity. Banks or financial institutions collect deposit from individual and lend that deposit to investor with higher interest rate as compared to interest rate provided to depositors. Therefore, the interest rate between risk and return had positive relationship i.e. higher risk equal to higher return and vice versa.

## **1.7 Objective of the Study**

The general objective of the present study was to understand and analyze the impact of interest rate on deposit mobilization and its long term effect on the profitability of the bank. The specific objectives were as follows:-

- ) To study the impact of interest rates on the mobilization of deposit
- ) To analyze the impact of lending interest rates on the lending disbursement.
- ) To determine the interest spread and its impact on the profitability on bank.
- ) To analyze the opinion survey of respondents.
- ) To provide recommendations and suggestions to further improve the standing and position of the bank in the competitive market.

## **1.8 Organization of the study**

This study was divided into five chapters.

### **Chapter 1: Introduction**

The subject matter of the study consisting introduction, background of the study, statement of problem, significance of the study, objectives of the study, limitation of the study and chapter plan of the study were presented in this chapter.

### **Chapter 2: Review of literature**

Chapter two would deal with the review of literature. It included a discussion on the conceptual framework, review of books, previous research work, articles, publications and policy document.

### **Chapter 3: Research methodology**

Chapter three would outline the research methods followed for the study. It deals with the hypothesis to be tested, research design, the population, the sampling procedure, the data gathering procedure, the variables and measures, the statistical procedure and the data processing procedure.

#### **Chapter 4: Data presentation and analysis**

Chapter four would deal with presentation and analysis of relevant data and information in line with the set research methodology. The general purpose of this chapter was to examine the processes by which the meaning and implications of research data could best be extracted. Inappropriately or incorrectly analyzed data could provide interpretations and conclusions that could be completely wrong. It was therefore, important to appreciate the influence and contribution of data analysis.

#### **Chapter 5: Summary, Conclusion and Recommendations**

The last chapter would state summary, highlights of the study, conclusion and recommendation derived from the findings of the study.

## CHAPTER TWO

### REVIEW OF LITERATURE

#### **2.1 Conceptual framework**

In this chapter, attempts had been made to review the literature related to interest rate structure and its impact on lending and deposit of commercial banks in Nepal. Both the theoretical aspect as well as findings of the previous studies had been included here so as to identify the broad aspects of interest rates structure and its impact on lending and deposit of commercial banks in Nepal. This chapter was to show how far and how much our present study was associated with different past researches. So, different journals, articles, books and research works were reviewed.

Attractive interest rates were always welcomed by every sector, higher interest on deposit and lower rated credit were good for everyone taking benefits of banking facilities. Undoubtedly, every bank had the objective to cast positive impact of its interest rate establishing good relationships with its customer as they grow together. While in process to do so impact of interest rate always comes under scrutiny whenever we judge the standing of bank in terms of its effect on collection and mobilization of deposit and profitability of the bank as a whole.

This chapter discusses briefly about the theoretical concept of interest rates and its relation with deposit, lending and profitability. The bank's sensitivity to changes on interest rates was another source of liquidity problems. When interest rates fall, some depositors would withdraw their funds in search of higher returns elsewhere. This trend would decrease the liquidity in the bank significantly. At the same time, many loan customers may flow into banks for loan requests or speed up their drawings on those credit lines that carry lower interest rates. When interest rates rise, many depositors may rush into bank to deposit in their fund. Bank interest rate was very sensible. It means comparatively little difference in the interest rate on deposits could significantly increase or decrease the volume of bank deposit, because majority of bank customers were always looking for higher interest rate. At the same time, when interest rates rised, many loan customers may postpone new loan requests or speed up their drawings on those credit lines that carry lower interest rates. "An important aspect of interest rate policy was the setting of an appropriate margin

between the lending and deposit rate. If the margin was too high, banks would make excessive profits and this may lead to waste of saved resources. If it was low, it will discourage intermediation and devitalize financial institution”, Schulty explains.

## **2.2 Concept of Interest**

A rate which was charged or paid for the use of money was known as interest rate. Interest was the amount paid by a borrower to a lender above the amount (the principal) that had been borrowed. An interest rate was often expressed as an annual percentage of the principal. It was calculated by dividing the amount of interest by the amount of principal. Conceptually, interest was both a payment and receipt for the use of money. Interest, therefore, could be considered from the above two point. If interest was paid, it could be considered as a 'cost'. One the other hand, if interest was received, it could be considered as a 'return'. Since, money could return over a period of time, interest rates were often considered as an expression of the time value of money. It was the price of credit but unlike other price in the economy, the rate of interest was really a ratio of two quantities-the money cost of borrowing divided by the amount of money actually borrowed, usually expressed on an annual percentage basis. For example, if a lender (such as a bank) charges a customer Rs90 in a year on a loan of Rs1000, then the interest rate would be  $90/1000 * 100\% = 9\%$ .

The neo-classical economist however defined the interest as the price for the use of loanable funds. But the modern economist, in their effort to avoid these divergent and controversial views about the nature of interest, had explained it in terms of productivity, saving, liquidity preference and money. In other words, interest was the rewards for the pure yield of capital of saving for forgoing of liquidity and surplus of money. The rate of interest, according to Keynes, was a purely monetary phenomenon and in his theory, he has presented “a proposition that the rate of interest influences the level of economic activity by first influencing the rate of real investment in the economy”. According to him, the real investment was in fixed capital or durable machines. Schulz had also expressed his view that, “An important aspect of interest rate policy was the setting of an appropriate margin between the lending and deposit rate. If the margin was too high, bank would make excessive profits and this leads to waste of save resources. If it was too low, it would discourage intermediation and devitalize financial institutions. At the same time, the demand for

credit goes on increasing being affected by the cheap loan rates. Hence, it could be concluded that changes in interest rate structure produce either positive or negative impact upon the growth of a developing economy such as ours”.

Interest rate was one of the crucial indicators of financial as well as economic system of the country. Interest rates send price signals to borrowers, lenders, savers and investors. For example, higher interest rate generally brings forth a greater volume of saving and stimulates the lending of funds. Lower rate of interest, on the other hand tends to dampen the flow of saving and reduce lending activity. Higher interest rate tends to reduce the volume of borrowing and capital investment and lower interest rates stimulate borrowing and investment spending.

### **2.3 Functions of the interest rate in the economy**

The interest rate performs various important functions in the economy. Some of them were as follows:-

- ) It helps guarantee that current saving would flow into investment to promote economic growth.
- ) It brings the supply of money into balance with the demand of public for money.
- ) It rations the available supply of credit, generally providing loanable funds to those investment projects with the highest expected returns.
- ) It was a significant tool of government policy through its influence on the volume of saving and investment. If the economy was growing too slowly and unemployment was rising, the government could use its policy tools to lower interest rate in order to stimulate borrowing and investment. On the other hand, an economy experiencing rapid inflation had traditionally called for a government policy of higher interest rate to slow borrowing and spending and encourage more saving.

### **2.4 Changes in interest rate and its effect on value of an asset:**

The price of security and the rate of interest were inversely related. A rise in the interest rate implies a decline in price; conversely, a fall in interest rate was associated with a rise in the security's price. The investing funds in financial assets could be viewed from two different perspectives, the borrowing and lending of money

or the buying and selling of securities. Similarly, the equilibrium rate of interest from the lending of funds could be determined by the interaction of the supply of loanable funds. Demanders of loanable fund (borrowers) supply securities in the financial marketplace and suppliers of loanable funds (lenders) demand securities for investment. Therefore, the equilibrium rate of return of yield on a security and the equilibrium price of that security were determined at one and the same instant and were simply different aspects of the same phenomenon, the borrowing and lending of loanable funds. This could be illustrated with the help of figure no 2.16 and 2.17 which show the demand and supply curves for both the rate of interest and the price of securities.

## **2.5 Factors affecting the difference in interest rates**

Although it was assumed that deposit increase as interest increases but interest rate was affected by numerous factors. In real world, different financial institutions quote different interest rate. It means that the same type of instrument carries different interest rate at the same time, so there is presence of interest spread (*Kohn, 1993*).

For this, there were various factors affecting the difference in interest rate:-

1. Credit or Default Risk
2. Liquidity Risk
3. Marketability Risk
4. Call or Prepayment Risk
5. Servicing Costs
6. Exchange Rate Risk
7. Taxability

***Credit or Default risk-*** The credit risk was the most commonly associated risk. It determines the different amount individuals or firms pay based on their credit worthiness. Different parties would be offered different rates on debt obligations (such as loans). The measure of credit worthiness of an individual was called a credit rating or credit score. Other entities (such as governments and companies) would acquire a bond rating if they were active in bond markets. Credit risk requires making estimates of the possibility of loss due to this reason. This probability was then converted into an interest rate premium, the credit or default risk premium and added to the saver's required nominal yield. The credit spread between an instrument and its risk free equivalent was called the risk premium.

**Liquidity risk-** A desirable quality of assets that were to be part of a precautionary reserve is liquidity. An asset was liquid if it could be turned into cash quickly without loss. But the risk that the lender might not be able to get cash on short notice is called the liquidity risk. The difference in interest rate due to liquidity risk was called liquidity spread. Instruments such as bonds had an active secondary market. The saving bond would obviously offer a higher return. Other instruments such as savings deposits were easily transferable to cash. Another interesting phenomenon observed from liquidity spread was that on-the-run securities (primary market) had lower interest rates compare to the off-the –run securities (secondary market). This implies that there was a higher demand for on-the-run securities.

**Marketability risk-** Marketability was the capacity of being sold quickly at low transaction cost. Marketability risk deals with the degree of difficulty in being able to convert a financial into cash at its most recent transaction price or very close to it. Savers who purchase poorly marketable investments expect to be compensated for the lack of marketability. This represents an additional interest spread and was referred to as the marketability risk premium.

**Call or Prepayment risk-** Some financial claims offer the borrower the right to repay the principal debt prior to maturity. On financial claims like bond, these provisions are referred to as call provision and on some financial claims such as home mortgage and installment auto loan, they were called prepayment provisions. These provisions are options. The borrower had the option to call or repay the debt before the maturity date. The investor in such callable financial claim must accept repayment risk. The repayment risk was that if interest rates fall, the borrower would call the bond or prepay the mortgage. The investor receiving cash could not reinvest it at an interest rate as high as risk. The compensation that investors demand to accept this risk was an additional interest spread offered as the call premium.

**Servicing cost-** Some financial claims were difficult to service. This means that the process of collecting interest and principal payment providing accurate records or monitoring the ongoing credit position of the borrowing involves considerable operating costs. This cost was included in the interest rate charged and was referred to as the servicing cost.

**Exchange rate risk-** As our financial market had become more global, there had been a significant growth in the borrowing and investment in foreign currency denominated financial claims. A U.S. company establishing manufacturing facility in Nepal might be inclined to issue shares and or bonds denominated in Nepalese rupees rather than U.S. dollars. Investors also had available to them many investments involving exchange rate risk. This risk refers to the potentiality that the rate of exchange between the domestic currency and foreign denominated currency would change as a result of any factors. The primary risk for the borrower was the devaluation of the domestic currency. This results in an unexpected cost on the international loans, since the loan would have to be repaid in the foreign currency that had risen in value relative to the domestic currency. This potential change in currency values must be reflected in computing the cost of borrowing.

**Taxability-** The final factor influencing the change in interest rate was taxability. Financial claim income was typically subject to taxation. Since the value of the financial claim was based on its anticipated cash flow, taxation acts to reduce those cash flows. Not all incomes were taxable equally. Thus, higher the tax, lower would be the cash flow and higher the interest rate and vice versa.

## **2.6 Concept of deposit**

An arrangement whereby an individual or organization may place cash for the safekeeping in a bank, discount house or financial institution was known as deposit. Deposit was nothing but it was a type of asset. It was understood that the institution may invest the cash and pay the depositor a specified amount of interest and that the depositor could reclaim the full value of the account according to the agreed upon procedures governing the account. The account holder retains rights to their deposit, although restrictions placed on access depend upon the terms and conditions of the account and the provider. The deposit account would be shown as a liability owed by the bank to its customer.

Commercial Bank Act 2031 defines “deposits” as the amount deposited in a current, saving or fixed accounts of a bank or financial institution. The deposits were subject to withdrawals by means of cheque on a short notice by customers. There were several restrictions on these deposits, regarding the amount of deposit, numbers of withdrawal etc. they were used more as investments and hence they earn some

interest. The rate of interest varies depending on the nature of the deposits. The bank attracts deposits from customers by offering different rates of interest and different kinds of facilities. Though the banks play an important role in influencing the customer to save and open deposit account with it, it was ultimately the customer who decides where s/he should deposit his surplus funds in current deposit account, saving deposit or fixed/time deposit account. Bank deposits arise in two ways. When the banker receives cash, it credits the customer's account, it was known as a primary or a simple deposit. People deposit cash in the banking system and thereby convert one form of money, cash into another form, bank money. They prefer to keep their money in deposit account and issue cheques against them to their creditors. Deposits also arise when customers were granted accommodation in the form of loans. Of course, there was nothing that prevents the borrower from withdrawing the entire amount of borrowing in cash but quite often s/he retains the amount with the bank as deposit (*Bhandari, 2003*).

## **2.7 Types of deposit**

In practice, there were mainly three type of deposit in banks. They were:-

### **) Current deposit**

A current deposit was a running account in the banking heritage offering various flexible payment methods to allow customers to distribute money directly to others. Most current accounts had a cheque book; offer the facility to arrange standing orders, direct debits and payment via a debit card. Current accounts may also allow borrowing via overdraft facility. These accounts were also called demand deposit or demand liabilities since a deposits account held at a bank or other financial institution was the funds deposited in which were payable on demand. The primary purpose of demand accounts was to facilitate cashless payments by means of check, bank draft, direct debit, electronic fund transfer, etc. These accounts were generally opened by business houses, corporate bodies, public institutions and other organizations whose banking transactions were numerous and frequent so that the amount was being paid into and drawn out of the account continuously. As these deposit were payable on demand, banker was obliged to keep larger cash reserves than were needed in the case of fixed and saving deposits. These types of account were just a facility offered by the bank to its customers. So, such deposit doesn't yield an interest return.

### ) **Saving deposit**

According to Commercial Bank Act 2031 saving account means “An account of amount deposited in a bank for saving purposes.” Saving deposit were accounts maintained by commercial bank, savings and loan associations, credit unions, and mutual savings banks that pay interest but could not be used directly as money (by, for example, writing a check). Saving accounts were maintained by a customer with a depository institution for the purpose of accumulating funds over a period of time. Funds deposited in a savings account may be withdrawn only by the account owner or a duly authorized agent, or on the owner's nontransferable order. The bank fixes the minimum and maximum amount to be withdrawn through a cheque from the deposit. The account may be owned by one or more persons. Some accounts require funds to be kept on deposit for a minimum length of time, while other permits unlimited access to funds. Funds could be deposited or withdrawn at will, and most savings accounts pay interest from day of deposit to day of withdrawal. The account holding financial institution may require up to seven day's notice before approving withdrawals; most, however, have waved this right.

### ) **Fixed deposit**

A fixed deposit was a money deposit at a bank that could not be withdrawn for a certain “term” or period of time. When the term was over it could be withdrawn or it could be held for another term. Generally speaking, the longer term the better the yield on the money. A deposit of funds in a savings institution under an agreement stipulating that (a) the funds must be kept on deposit for a stated period of time, or (b) the institution may require a minimum period of notification before a withdrawal was made. They were different from saving account in that the fixed deposit had a specific, fixed term—often three months, six months, or one to five years and, usually a fixed interest rate. It was intended that the fixed deposit be held until maturity, at which time the money may be withdrawn together with the accrued interest. Usually, the person or institution who wanted to gain more interest opens such type of account. In exchange for keeping the money on deposit for the agreed on term, institutions usually grant higher interest rate than they do on accounts from which money may be withdrawn on saving account.

## **2.8 Importance of deposit**

The income of an individual was divided into consumption and saving. Deposit arises from saving. S/he deposits the saved part of income in the bank and gets interest from it. Banks in turn lend this money and earn profit by charging high interest rates. The borrowers from banks, invests this fund in the productive sectors yielding more return than the interest on borrowed fund. This investment leads to create new employment opportunity in the economy. Ultimately, due to the new employment the purchasing power of the economy increases and finally GDP and growth of the country occurs. It means that the deposit had very important role in the economy. There was a direct relationship between deposit of banks and the investment in the economy. If the volume of deposit was low, the investment in the economy also lags behind due to lack of resources. The deposit of banks was the accumulated capital which could directly be invested. There was a great need of such deposit in the developing countries. Deposit includes the idle money of the public, bank being the mediator to accept this sort of money and help to channelize this in productive sector. So, the importance of banks and financial intermediaries was larger in present context.

## **2.9 Concept of lending (Credit)**

The word “credit” means 'trusting'. In credit transaction, the lender (or banks) must have confidence in the borrower that s/he would be able to repay the money. In credit transactions, the creditor turns over to the debtor to repay an equivalent amount usually money in future plus an added sum called interest. In other words, the commercial bank earns profit by lending the amount in terms of loan or credit and in return it gets interests. Banks loan were classified as (a) Loan advances (b) Overdraft (c) Cash credit (d) Discounting of bills and so on. But besides this, the other forms of credit were: Bills Exchange, Cheques, Drafts, Promissory Note, Travelers' Cheque, Treasury Bills (TBills), Letter of Credit (LC), Book Credit etc.(Shrestha & Bhandari, 2004).

If credit was made to the government the credit was known as public credit and if credit was transacted by the private for his own purposes the credit become private. There were certain distinctions between public and private credit. Bank was the major sources of credit to both private and public debtors. Sometimes banks also

take credit. There was another type of credit known as investment credit and commercial credit which could be divided according to the purposes of using credit. The former refers to the credit which was used for investment and the latter for trade purposes. Similarly, another classification was consumer's credit and producer's credit. The latter type of credit was the advances made to Individuals firms, companies and governments, which were used to facilitate the production of goods and services.

## **2.10 Factors affecting the volume of credit**

The volume of credit within a country depends upon different factors which were as follows:-

### ***Credit rate***

If the bank credit rate was very high, the volume of credit expansion was less and vice versa. It means that volume of credit and interest rate of credit had inverse relation. People invest very little in productive sectors when the interest rate was high in the market economy.

### ***Rate of return***

If the rate of return was high, people inclined to invest more. People earn more profit and they become able to afford higher rate of interest along with timely repayment of loan.

### ***Investment opportunity***

If the investment opportunity within the country was high, the volume of credit becomes high. The basic thing for investment stimulation was easy and cheap credit etc. more investment opportunity would be available when the interest rate was low.

### ***Pace of financial development***

If there were enough banking facilities to provide loans in easy terms, the volume of credit may be high. It was due to the lack of cheap money lenders that rural people were deprived from cheaper loan. If the banking facilities within the nation were expanded, the volume of credit rises. **Basic infrastructure**-Like transportation, marketability, availability of raw materials also plays an important role in raising volume of credit in the country.

### ***Political condition***

Political condition, especially political instability, was also one of the major causes of low volume of credit. In such a case none would like to risk his capital in new ventures. The present condition of the country was the glaring example of this. In addition to aforementioned point, other factors like trade condition, currency condition were also the factors affecting the volume of credit.

### **2.11 Term structure of interest rate**

The relationship between the rates of return on financial instruments and their maturity was called the term structure of interest rate. This term structure may be presented visually by drawing a yield curve for all securities having the same credit quality. The yield curve considers only the relationship between the maturity and term of a loan or security and its yield curve for securities bearing different degree of credit risk subject to different tax laws because both risks and tax laws affect relative yields along with maturity.

### **2.12 Review of previous thesis**

Prior to this thesis, several studies had been conducted by different researchers. Some of them as were supposed to be relevant for the justification of need and importance of this study was presented below:

**Rajbhandary, N. B. (1978).** revealed that the time deposits were positively and significantly correlated with the interest rates. There was significant correlation between the saving deposits and the rate of interest. Fixed deposit was more sensitive to the interest rate revision done by NRB. The correlation between the growth of fixed deposits and the interest rate particularly from 1974 and 1977 was most significant but the relation between interest rate and loan and advances was less significant. Among the entire sector, the private sector seems most sensitive to interest rate change. Most of the loans too correlated positively if absolute cumulative figure were taken. But the growth rate of total loans and advances except investment on NEPAL GOVERNMENT securities was negatively correlated more with the weighted average rate of interest since 1973. The growth of loan to private sector was also negatively correlated with interest rate since 1971.

Negative correlation between loans and interest rate meant that loan decrease at higher interest rate and vice versa. The net interest earning was depended upon interest coverage. The total interest received and the total interest paid significantly correlated in the case of both of the banks i.e. Nepal Bank Limited and Rastriya Banijya Bank, the sample organizations of the study. He was in view that NRB can well monitor the credit flow and profits of the commercial banks in Nepal by manipulating the rates of interest. It could manipulate the demand for and supply of money.

**Pandey, I.M. (1999).** analyzed the factors affecting money supply and price level. However, she had only explained the interest-rate history showing what NRB had done to interest rate rather than showing the relationship of interest with price level and money supply. It might be relevant because interest rate, at the time, was fully controlled by NRB.

**Kshetry, K.K. (1980).** Concluded that are kept constant, institutional interest rate was important explanatory variable to influence the volume of deposit in Nepal. Interest rates play an important role in under developed country like Nepal where the demand for capital was increased at each level of income. An appropriate interest rate can divert investment in proper field. This means that the upward movement in the deposit rates increased the volume of deposits. The fixation of attractive interest rates on deposit had been responsible for the substantial growth in the volume of deposits in recent years. He also opines that most of the commercial banks in Nepal were concentrated only in the urban areas. Regarding deposit mobilization in the present context, the urban areas had occupied major parts of the credit and the credit was concentrated in urban areas. The volume of deposit had overcome the volume of credit. Finally, the relationship between credit flow and loan rates was found out to be negative. If the loan rate of interest was in concession, there was the possibility of raising investment and thus the volume of credit.

**Bhatta,H.(2004).** Found that the deposit rates of all the sample banks under study were in decreasing trend; means that every year deposit rates of sample banks under study had decreased. Lending rates of all the sample banks under study were also in decreasing trend; means that every year lending rates of sample banks under study had decreased. Analysis shows that interest rates on lending were far higher than deposit rates of sample banks. The correlation coefficient between these two variables (deposit rate and lending rate) of sample banks came highly positive. The simple

correlation coefficient between deposit rate and deposit amount of sample banks were highly negative. But out of them, correlation coefficient analysis of one sample bank was found to be negative. It means that in that case the theory didn't match the analysis. So, writer concludes that case the result appears in that study was different than the theory. The correlation analysis between lending rate and lending amount of all sample banks under study comes highly negative. This relation between two variables (lending rate and lending amount) of sample banks matches with the theory which says with the increase in lending rate, lending amount decreases and vice-versa. So, he concluded that lending rate was the most important determinant of loan and advances of all commercial banks. This makes clear that borrower's seem more interest conscious. Finally, his conclusion about his study, in her own words, as follow:-

“There was significant relationship between deposit rate and deposit amount and Lending rate and lending amount of almost commercial banks except one. Test of significance for correlation coefficient between inflation rate and deposit and lending rate shows that these variables are not correlated”.

Another study was made on the topic “Interest rate and its relation with Deposit, Lending and Inflation in Nepal” by Parajuli in 2005. In this study, the disseminator tries to portrait the relation of interest rate with deposit and lending amount (i.e. existence of substitution effect). The findings drawn by Parajuli from his study were as follows:-

- ) The interest rate on both deposit and lending of all the sample banks are found to be in decreasing trend. Theoretically, there is positive relationship between saving amount and saving interest rate but here negative relationship is found. It states that there is no substitution effect in Nepalese financial market.
- ) Analysis of fixed deposit amount and fixed interest rate shows negative relationship except RBB and NBL. Theoretically, there is negative relationship between lending interest rate and lending amount. In this study for the 5 sample banks except NBL have negative correlation between these two variables.
- ) The relationship between interest rate on deposit and inflation rate is positive. Similarly, the correlation between interest rate on lending and inflation rate is

found to be moderately positive. He also concluded that the spread between deposit interest rate and lending interest rate is in decreasing trend.

### **2.13 Research gap**

Interest rate refers to a rate which was charged or paid for the use of money. Interest was the amount paid by a borrower to a lender above the amount (the principal) that had been borrowed. In finance literature, there was different form of theory of interest. They were classical theory, loan able fund theory, liquidity preference theory, and rational expectation theory. The term structures of interest rate were pure expectation theory, liquidity premium view of yield curve, segmented-marketed or hedging-pressure argument, and preferred habitat theory. Interest rate of deposit and lending was playing important role for bank and financial institution. Deposit was an arrangement whereby an individual or organization may place cash for the safekeeping in a bank, discount house or financial institution. The type of deposits is current, saving, fixed deposit. In credit transactions, the creditor turns over to the debtor to repay an equivalent amount usually money in future plus an added sum called interest. In other words, the commercial bank earns profit by lending the amount in terms of loan or credit and in return it gets interests. Banks loan were classified as (a) Loan advances (b) Overdraft (c) Cash credit (d) Discounting of bills and so on. But besides this, the other forms of credit were: Bills Exchange, Cheques, Drafts, Promissory Note, Travelers' Cheque, Treasury Bills (T-Bills), Letter of Credit (LC), Book Credit etc.

This study included the variables like deposit amount, interest rate on deposit, amount of loan, lending rate, and their relationship. For this four commercial banks (NIBL, EBL, HBL, NABIL) had studied. Further, we analyze as per standard terms of each ratios, correlation analysis, regression analysis, opinion survey from thirty respondents in this present study.

## CHAPTER THREE

### RESEARCH METHODOLOGY

The basic objective of this study “impact of interest rates on deposit mobilization and profitability” was to focus on how interest rate was playing an important role in the performance of the bank. It was basically all about finding impact of interest rate on deposit, lending and overall profitability of financial institutions and find out what the competitive issues in this regard. For this study several processes and methods were followed and tools were used in a systematic manner.

#### **3.1 Research design**

Research design was necessary for each research work. It was a plan for the collection and analysis of data. It presents a series of guide posts to enable the researcher to progress in the right direction in order to achieve the goal. So, selecting a suitable methodology was a good part of the research study. Then a suitable research design had been employed in order to analyze interest rate and its impact on deposit mobilization and profitability in Nepalese commercial banks. This study had followed the descriptive as well as analytical approaches were used to evaluate the interest rate and its impact on deposit mobilization and profitability of the sample banks and logical conclusion could be drawn. Most importantly, the study was designed as ex-post facto research as the study was based on historical data. However, descriptive approach had also been adopted for the analysis of primary data obtained from questionnaire (opinion survey).

#### **3.2 Population and Sample**

There are 32 commercial banks in the country till mid- July 2012 and their stocks were traded actively in stock market. However, the impact of interest on the performance of only four banks would be studied. In table 3.2.1 the list of Commercial Banks had been presented:

Table 3.2.1: List of Commercial Banks

<b>S.No</b>	<b>Name of Commercial Banks</b>	<b>Establishment date</b>
1	Nepal Bank Limited	1994/07/30
2	Rastriya Banijya Bank	2022/10/10
3	Agriculture Development Bank Limited	2024/10/07
4	NABIL Bank Limited	2041/03/31
5	Nepal Investment Bank Limited	2042/11/26
6	Standard Chartered Bank Nepal Limited	2043/10/16
7	Himalayan Bank Limited	2049/10/05
8	NSBI Bank Limited	2050/03/23
9	Nepal Bangladesh Bank Limited	2051/02/23
10	Everest Bank Limited	2051/07/01
11	Bank of Kathmandu Limited	2051/01/28
12	Nepal Credit & Commerce Bank Limited	2053/06/28
13	Lumbini Bank Limited	2055/04/01
14	Nepal Industrial & Commercial Bank Limited	2055/04/05
15	Machhapuchchhre Bank Limited	2057/06/17
16	Kumari Bank Limited	2057/12/21
17	Laxmi Bank Limited	2058/12/21
18	Siddhartha Bank Limited	2059/09/09
19	Global IME Bank Limited	2063/09/18
20	Citizens Bank International Limited	2064/01/07
21	Prime Commercial Bank Limited	2064/06/07
22	Sunrise Bank Limited	2064/06/05
23	Bank of Asia Nepal Limited	2064/06/25
24	Nepal Merchant Bank Limited	2065/02/20
25	Development Credit Bank Limited	2065/02/12
26	Kist Bank Limited	2066/01/24
27	Janata Bank Nepal Limited	2066/12/23
28	Mega Bank Limited	2067/04/07
29	Commerz and Trust Bank Limited	2067/06/10
30	Civil Bank Limited	2067/08/10
31	Century Commercial Bank Limited	2067/11/26
32	Sanima Bank Limited	2068/11/03

Source: - Nepal Rastra Bank

Out of these, only four commercial banks had been selected for the purpose of study.

They were:

1. Nepal Investment Bank Limited
2. Everest Bank Limited
3. Himalayan Bank Limited
4. NABIL Bank Limited

This study would try to explore the objectives set in the section 1.7.

### **Justification**

These commercial banks were very popular in the market. Nepal Investment Bank won bank of the year three times. Other banks had also received such and alike awards in different periods of time. These banks had been purposely selected for the study.

### **3.3 Sources of data**

Data may be obtained from several sources. The research works based on both primary and secondary data.

#### **3.3.1 Source of primary data**

Under this study questionnaire form would be developed to collect views from the respondents. We develop questions relating to which financial institution do you prefer to deposit, take loan, reasons for deposit money in bank, regarding higher interest rate or service provided by the banks, interest determination, relationship between lending interest rate and total lending, interest spread rate etc. in questionnaire form. thirty respondents will provide their valuable opinion about the matter. These would be collected from literate, students, bankers and service holders and people representing other fields.

#### **3.3.2 Source of secondary data**

The secondary data were gathered from the annual reports of the sampled banks.

According to the need and objectives, all the secondary data were compiled, processed and tabulated in time series. Formal and informal talks to the concerned official of the bank with a set of questionnaire would be used to obtain additional information of the related problem.

Similarly, information were collected from the periodicals, economic journals, managerial magazines and other published and unpublished reports and documents from various sources would also be used.

### **3.4 Methods of analysis**

To achieve the objectives of the study various financial, statistical and accounting tools would be used in this study. The analysis of data would be done according to pattern of data available. Data collected would be brought under statistical scrutiny after the raw data was edited, coded and tabulated. Data would be analyzed in descriptive form interpreting each part systematically.

The data covered from different sources would go through two different approaches:

1. Financial tool
2. Statistical tool

Under financial tools simple growth patterns and tools like ratio analysis would be used. Under statistical tools graph, Karl Pearson's co-efficient of correlation and method of least square will be used and corresponding hypothesis will be tested.

#### **i) Financial tool**

Out of various financial tools the analysis of the following ratios had been used for the evaluating the performance of the bank.

- a. loan and advances to total deposit ratio
- b. total investment to total deposit ratio
- c. return on total deposit ratio
- d. interest earning to total assets ratio
- e. net interest margin(NIM)
- f. analysis of net interest income
- g. analysis of return on assets
- h. analysis of interest rate spread
- i. growth ratio

#### **ii) Statistical tools used**

##### **A. Coefficient of correlation analysis(r)**

Correlation might be defined as the degree of linear relationship existing between two or more variables. Two variables were said to be correlated when the

change in the value of one variable was accompanied by the changed of another variable. Simple correlation coefficients measure the degree of simple relationship between the two variables. Among the various method of finding out coefficient of correlation, Karl Pearson's method was applied in the study. The result of coefficient of correlation was always between +1 and -1, when  $r = +1$ , it means there was perfect relationship between two variables and vice versa. When  $r = 0$ , it means there was no relationship between two variable. The Pearson's formula was:

$$r = \frac{\sum xy}{\sqrt{\sum x^2 \sum y^2}}$$

The correlation would be determined for the following group variables.

1. Co-efficient of correlation between average deposit interest rate and deposit.
2. Co-efficient of correlation between average lending interest rate and total Credit
3. Co-efficient of correlation between total deposit and total credits.
4. Co-efficient of correlation between interest spread and net profit.

### **B. Probable Error**

The probable error was used to measure the reliability and test of significance of correlation coefficient. It was calculated by the following formula.

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

Where,

$r$  = the value of correlation coefficient

$n$  = no. of pairs of observation

P.E. is used in interpretation whether the calculated value of  $r$  is significant or not.

- ) If  $r < P.E.$ , it is insignificant, i.e., there is no evidence of correlation.
- ) If  $r > 6P.E.$  it is significant.
- ) If  $P.E. < r < 6P.P.$  nothing can be calculated.

### **C. Regression analysis**

Regression analysis studied the statistical relationship between the variables. The main objective of regression analysis was to predict or estimate the value of dependent variable corresponding to a given value of independent variables. When there was one predictor variable, it was simple regression analysis. It was multiple regression analysis where there were two or more predictor variables. A

regression analysis provides us with more information about the slope of the relationship.

In our study we are doing regression analysis of the following dependent and independent variables.

1. Between deposit collection (dependent variable) and deposit interest rate (independent variable) of banking industry.
2. Between lending (dependent variable) and lending interest rate (independent variable) of banking industry.

Regression equation of y on x is given by.

$$Y = a + bx \dots\dots\dots (i)$$

Where,

Y = Dependent variable

X = Independent variable

a = Intercept of line

b = Slope of the line (it measures the average change of value of Y as a result of one unit change in value of X). It is also called regression coefficient of Y on X. In other words, it measures the rate of relationship.

The value of the constants a and b can be determined by solving following two normal equations (applying principle of least squares).

$$Y = na + b \sum X \dots\dots\dots (ii)$$

$$\sum XY = a \sum X + b \sum X^2 \dots\dots (iii)$$

Now, substituting the value of a and b in equation (i), we get required estimated regression equation of Y on X.

After finding the value of a and b, we analyze relationship between dependent variable and independent variable through t-statistic.

#### **D. T-statistic**

The t-test is appropriate when the sample size is less than 30 and the population's standard deviation is unknown. For applying t-test in the context of small sample, the 't' value is calculated first and compared with the table of 't' at a certain level of significance. If the value of 't' exceeds the table value (say 0.05) we infer that the difference is significant at 5% level. But if 't' is less than the concerning table value of 't' the difference is not treated as significant.

The test of following null hypothesis will be examined to draw the conclusion.

- ) Deposit interest rate does not play a significant role in deposit collection.
- ) Lending interest rate does not play a significant role in loan disbursements.

### **3.5 Limitation of Study**

The study had following limitations:

- ) The study covered a period of five years only.
- ) Deposit, loan, investments and profit were yearend figures where as interest earned, interest expenses were total figure occurred throughout the year. Any calculations related to this may show differences from the actual figure because yearend figures were not same over the period.
- ) There were too many factors that affect deposit mobilization decision. However, only interest rate was considered in this study.
- ) The samples were taken only from commercial banks; other financial intermediaries were not included in the study
- ) As the samples had been drawn at random for convenience there may exist some sampling errors and the sample size may not be sufficient to generalize the finding.

## CHAPTER FOUR

### PRESENTATION AND ANALYSIS

This chapter consists of various calculations made for the analysis of interest rate and its impact on deposit amount and lending amount of sample banks. To make our study effective and precise as well as easily understandable, this chapter is categorized into three parts; presentation, analysis, interpretation and findings. The analysis was mostly based on secondary data. Firstly, data are presented in the form of table, graph, and chart of figures according to the need. The presented data are then analyzed using various statistical tools as mentioned in chapter three according to the requirement of the study and at last interpretation was made as per properties of presented data and calculated value.

To make our study clear and result oriented, presentation, analysis and interpretation of the study was made bank wise i.e. the one after another. At first the interest rate structure was shown (that of deposit and lending) then after the relationship between interest rate on deposit and deposit amount and relationship between interest rate on lending and lending amount was shown and analyzed. Even relationship between deposit rate and lending rate was calculated and analyzed. Analysis was made on the basis of different statistical tools like correlation coefficient, coefficient of determination, and t-statistics for significance.

#### **4.1 Data presentation and analysis**

In this section, detail study of fluctuation in interest rate on deposit, lending of four sample banks was studied. For this study, we had used different ratios, Pearson correlation coefficient, regression analysis, t-test . To know the impact of interest rate structure on deposit, lending and profitability, we had used data of last five years of four sample banks.

Out of various financial tools the analysis of the following ratios had been used for the evaluating the performance of the four sample banks.

#### **4.1.1 Loan and advances to total deposit ratio:**

This ratio could be calculated by dividing loan and advances by total deposits. In banking term, this ratio was popular in the name of credit deposit ratio (C/D ratio). The credit/deposit (CD) ratio was a major tool to examine the liquidity of the bank. It measures the performance of the bank in terms of resources utilization irrespective of the quality of utilization. Higher the CD ratio better was the performance regarding deposit utilization whereas such high ratio may not be favored by the depositors as in case of improper investment, the depositor's fund may be at risk.

This ratio can be calculated as below:

$$\text{CD Ratio} = \frac{\text{Loans and advances}}{\text{Total deposits}}$$

As per the standard terms set by NRB, each and every financial institution should maintain its C/D ratio not more than 85%. It means C/D ratio below 85% was good financial indicator for financial institutions and vice versa.

In table 4.1.1, five years data relating to total deposit collection and total loan disbursement of four sample banks were presented for analysis whether the sample banks meet the standard terms set by NRB or not.

Table 4.1.1 Loan and advance to total deposit ratio

(Rs. In million)

Nepal Investment Bank Limited					
Year	2007	2008	2009	2010	2011
Deposit	18927	24489	34451	46697	50094
Loans and advances	13178	17769	27529	36827	40948
Loan & advance/deposit	0.70	0.73	0.80	0.79	0.82
Growth rate		4.21	10.13	-1.31	3.65
Everest Bank Limited					
Year	2007	2008	2009	2010	2011
Deposit	13802	18186	23976	33322	36932
Loans and advances	10136	14083	18836	24469	28156
Loan & advance/deposit	0.73	0.77	0.79	0.73	0.76
Growth rate		5.45	1.45	-6.53	3.82
Himalayan Bank Limited					
Year	2007	2008	2009	2010	2011
Deposit	26490	30048	31939	34746	37665
Loans and advances	15761	17793	20179	25519	29124
Loan & advance/deposit	0.59	0.59	0.63	0.73	0.77
Growth rate		-0.48	6.70	16.25	5.28
NABIL Bank Limited					
Year	2007	2008	2009	2010	2011
Deposit	19347	23342	31915	37348	46406
Loans and advances	12922	15545	21769	27589	33030
Loan & advance/deposit	0.67	0.67	0.68	0.74	0.71
Growth rate		-0.29	2.42	8.30	-3.65

Sources: Annual reports of sample banks

From the above table, we conclude that all the sample banks had good financial indicator in terms of C/D ratio. It means all the sample banks had invested its deposit collection within the ratio set by NRB i.e. 85%. However the ratio of NIBL shows it had comparatively invested high portion of its deposit funds into lending than other three banks. So NIBL had been much aggressive in lending larger portion of its deposit fund, after that EBL had been second position.

#### 4.1.2 Total investment to total deposit ratio:

This ratio could be calculated by dividing total investment by total deposits. It analyzed the how much portion of total deposit had been invested in lower risky assets. Higher the investments in lower risky assets better the indicator of the bank.

This ratio could be calculated by dividing total investment by total deposit. It could be stated as.

$$\text{Total Investment to Total Deposit Ratio} = \frac{\text{Investments}}{\text{Deposits}}$$

The total investment consists of government securities, investment on debentures and bonds, shares in subsidiary companies, shares in other companies and other investment.

Higher ratio of investment to total deposit means high investment in government securities, debenture and bonds, share in subsidiary companies etc. It means the bank had invested its deposit in low risk sector. It means return from lower risk. Thus higher ratio of investment to total deposit was considered as a good indicator.

In table 4.1.2, five years data relating to total deposit collection and total investment of four sample banks were presented for analysis. It would indicated whether the sample banks mobilized its deposit collection in low risky assets or not.

Table 4.1.2 Total investment to total deposit ratio

(Rs. In million)

Nepal Investment Bank Limited					
Year	2007	2008	2009	2010	2011
Deposit	18927	24489	34451	46697	50094
Investments	5672	6868	6874	7403	8635
Investments/deposit	0.30	0.28	0.20	0.16	0.17
Growth rate		-6.42	-28.85	-20.55	8.73
Everest Bank Limited					
Year	2007	2008	2009	2010	2011
Deposit	13802	18186	23976	33322	36932
Investments	4201	4985	4922	5948	5008
Investments/deposit	0.30	0.27	0.21	0.18	0.14
Growth rate		-9.94	-25.11	-13.05	-24.03
Himalayan Bank Limited					
Year	2007	2008	2009	2010	2011
Deposit	26490	30048	31939	34746	37665
Investments	10889	11822	12751	9181	8444
Investments/deposit	0.41	0.39	0.40	0.26	0.22
Growth rate		-4.29	1.47	-33.81	-15.16
NABIL Bank Limited					
Year	2007	2008	2009	2010	2011
Deposit	19347	23342	31915	37348	46406
Investments	6178	8945	9957	10826	13670
Investments/deposit	0.32	0.38	0.31	0.29	0.29
Growth rate		20.01	-18.59	-7.09	1.62

Sources: Annual reports of sample banks

The above table shows fluctuating investment pattern. NABIL had invested higher than other bank which reveals NABIL had mobilized its deposit in lower risky assets. HBL bank had second position. NIBL had mobilized its deposit in investment was in increasing trend although the figure was lower than NABIL, HBL. Bigger banks did not depend on lending of its deposit, they foresee the future prospects in investments and take risk to uncertain venture that was why they invested as high as in investments however, lower level bank with small deposit base preferred lower investment and lent larger amount of deposit as loans and advances.

#### **4.1.3 Return on total deposit ratio**

This ratio measures the degree of NPAT earned by using total deposits. In other words, it reveals the relationship between NPAT and total deposits with an explanation of the ability of management in efficient utilization of deposits. This ratio was the mirror of bank's overall financial performance as well as its success in profit generation. The reason was that deposits and earning from its utilization were the main aspects of Nepalese Commercial Banks. Higher ratio of return on total deposit was better indicator of financial performance and vice versa.

Return on total deposit ratio could be computed by using following formula:

$$\text{Return on total Deposit ratio} = \frac{\text{Net profit after tax}}{\text{Deposits}}$$

Here, NPAT denotes Net Profit after Tax whereas Total deposits denote all types of deposits shown in the balance sheet.

In table 4.1.3 five years yearend data relating total deposit collection and net profit after tax of four sample banks were presented for analysis.

Table 4.1.3 Return on total deposit ratio

(Rs. In million)					
<b>Nepal Investment Bank Limited</b>					
Year	2007	2008	2009	2010	2011
Deposit	18927	24489	34451	46697	50094
Net profit after tax	350	501	698	914	1265
NPAT/deposit	0.02	0.02	0.02	0.02	0.03
Growth rate		10.63	-0.97	-3.39	29.02
<b>Everest Bank Limited</b>					
Year	2007	2008	2009	2010	2011
Deposit	13802	18186	23976	33322	36932
Net profit after tax	137	296	450	624	831
NPAT/deposit	0.01	0.02	0.02	0.02	0.02
Growth rate		63.97	15.31	-0.23	20.16
<b>Himalayan Bank Limited</b>					
Year	2007	2008	2009	2010	2011
Deposit	26490	30048	31939	34746	37665
Net profit after tax	457	491	654	742	522
NPAT/deposit	0.02	0.02	0.02	0.02	0.01
Growth rate		-5.28	25.31	4.29	-35.10
<b>NABIL Bank Limited</b>					
Year	2007	2008	2009	2010	2011
Deposit	19347	23342	31915	37348	46406
Net profit after tax	635	573	750	1031	1146
NPAT/deposit	0.03	0.02	0.02	0.03	0.02
Growth rate		-25.21	-4.27	17.47	-10.54

Sources: Annual reports of sample banks

Looking at the above table, except last year NABIL had mobilized its deposit collection to earn higher profit as comparison to other sample banks. However NIBL had earned highest net profit after tax in last year. NIBL had aggressively increased in effective mobilization of deposit.

#### 4.1.4 Interest earned to total assets ratio:

This ratio reveals how much interest mobilizing the assets in the banks had generated. Interest occupies significant place in income for the banks. Generally, banks earn interest through the provision of loans and advances, overdraft and investments in securities.

Higher ratio indicates higher efficiency in the mobilization of resources and ability of interest earning and vice-versa.

This ratio is found by following way;

$$\text{Interest earned to total Assets ratio} = \frac{\text{Interest earned}}{\text{Total assets}}$$

Table 4.1.4 Interest earned to total assets ratio

(Rs. In million)

Nepal Investment Bank Limited					
Year	2007	2008	2009	2010	2011
Total assets	21330	27591	39409	53739	57935
Interest earned	1172	1584	2194	3267	4653
Interest earned/total assets	0.05	0.06	0.06	0.06	0.08
Growth rate		4.48	-3.03	9.20	32.11
Everest Bank Limited					
Year	2007	2008	2009	2010	2011
Total assets	15959	21432	27805	3749	41982
Interest earned	903	1144	1547	2186	3102
Interest earned/total assets	0.06	0.05	0.06	0.58	0.07
Growth rate		-5.66	4.23	948.01	-87.33
Himalayan Bank Limited					
Year	2007	2008	2009	2010	2011
Total assets	29460	33519	37648	41186	43929
Interest earned	1626	1775	1978	2347	3149
Interest earned/total assets	0.06	0.05	0.05	0.06	0.07
Growth rate		-4.06	-0.79	8.46	25.79
NABIL Bank Limited					
Year	2007	2008	2009	2010	2011
Total assets	22330	27253	37487	43867	52910
Interest earned	1309	1587	1978	2798	4047
Interest earned/total assets	0.06	0.06	0.05	0.06	0.08
Growth rate		-0.66	-9.39	20.88	19.92

Sources: Annual reports of sample banks

The above data showed NIBL had good figures as the trend was in increasing line. Similarly HBL also showed steady over the year as it slipped. The ratio of EBL HBL and NABIL banks were decreasing while NIBL was increasing.

#### 4.1.5 Interest coverage ratio:

This ratio was also called “Time Interest Earned Ratio (TIE Ratio).” This ratio indicates the ability of the company to meet its annual interest costs or it measures the debt servicing capacity of the firm. In other words, it measured the debt servicing capacity of a firm in so far as the fixed interest on the total loan is concerned. It was determined by dividing the operating profit or Earnings before Interest and Taxes (EBIT) by the fixed interest (I) charge on loan. Thus, in the calculation of Interest Coverage Ratio, IC-Ratio in times is expressed as.

$$\text{Interest coverage ratio} = \frac{\text{Earning before interest \& tax}}{\text{Interest}}$$

This ratio was very useful in determining whether a borrower was going to be able to service interest payment on a loan. This ratio was also known to determine whether a firm had the ability to meet its long-term obligations. From the creditors point of view the larger the coverage the greater the ability the firm to handle charges

In table 4.1.5 five years yearend data of total interest expenses and earning before interest and tax of sample banks are presented for analysis.

Table 4.1.5 Interest coverage ratio

(Rs. In million)

Nepal Investment Bank Limited					
Year	2007	2008	2009	2010	2011
Interest	491	685	991	1686	2553
Earning before interest & tax	996	1408	1650	2110	2730
Interest coverage ratio (in %)	2.03	2.06	1.66	1.25	1.07
Growth rate (in %)		1.33	-19.00	-24.84	-14.55
Everest Bank Limited					
Year	2007	2008	2009	2010	2011
Interest	401	517	632	1012	1572
Earning before interest & tax	746	971	1210	1550	1930
Interest coverage ratio (in %)	1.86	1.88	1.91	1.53	1.23
Growth rate (in %)		0.96	1.94	-20.00	-19.84
Himalayan Bank Limited					
Year	2007	2008	2009	2010	2011
Interest	648	767	823	934	1553
Earning before interest & tax	1312	1484	1620	1980	2160
Interest coverage ratio (in %)	2.02	1.93	1.97	2.12	1.39
Growth rate (in %)		-4.44	1.74	7.70	-34.39
NABIL Bank Limited					
Year	2007	2008	2009	2010	2011
Interest	357	555	758	1153	1960
Earning before interest & tax	1255	1549	1700	2220	2760
Interest coverage ratio (in %)	3.52	2.79	2.24	1.93	1.41
Growth rate (in %)		-20.61	-19.64	-14.15	-26.86

Sources: Annual reports of sample banks

From the above table, we could concluded that all sample bank IC-Ratio were in decreasing trend. This was due to increment of interest expenses of all sample banks. The main reason behind increase in interest expenses was due to increase in deposit interest rate or increase in deposit collection volume or both. However by comparing each sample bank, the figure of NABIL had enjoyed greater interest coverage although the figure was in decreasing trend.

#### 4.1.6 Net interest margin (NIM)

NIM was the different between interest charged on loan & advances and investments and interest paid on the deposits of the bank. This ratio was derived by employing the following formula.

$$\text{NIM} = \frac{\text{Interest Income} - \text{Interest expense}}{\text{Loans and advances} + \text{Investment on securities}}$$

This ratio was very useful in determining the profitability of any bank. Higher the NIM ratio higher would be the profit of that bank and vice versa. Because the major income of bank was derived from interest income from loan and advances. In table 4.1.6 five years yearend data relating net interest margin of sample banks were presented for analysis.

Table 4.1.6 Net interest margin

(Rs. In million)

Nepal Investment Bank Limited					
Year	2007	2008	2009	2010	2011
Interest Income	1172	1584	2194	3267	4653
Interest Expenses	491	685	991	1686	2553
Loans and advances	12922	15545	21769	27589	33030
Investments	5672	6868	6874	7403	8635
Net Interest margin	0.04	0.04	0.04	0.05	0.05
Growth rate		0.10	0.05	0.08	0.12
Everest Bank Limited					
Year	2007	2008	2009	2010	2011
Interest Income	903	1144	1547	2186	3102
Interest Expenses	401	517	632	1012	1572
Loans and advances	10136	14083	18836	24469	28156
Investments	4201	4985	4922	5948	5008
Net Interest margin	0.04	0.03	0.04	0.04	0.05
Growth rate		-0.06	0.17	0.00	0.20
Himalayan Bank Limited					
Year	2007	2008	2009	2010	2011
Interest Income	1626	1775	1978	2347	3149
Interest Expenses	648	767	823	934	1553
Loans and advances	15761	17793	20179	25519	29124
Investments	10889	11822	12751	9181	8444
Net Interest margin	0.04	0.03	0.04	0.04	0.04
Growth rate		-0.07	0.03	0.16	0.04
NABIL Bank Limited					
Year	2007	2008	2009	2010	2011
Interest Income	1309	1587	1978	2798	4047
Interest Expenses	357	555	758	1153	1960
Loans and advances	12922	15545	21769	27589	33030
Investments	6178	8945	9957	10826	13670
Net Interest margin	0.05	0.04	0.04	0.04	0.04
Growth rate		-0.15	-0.09	0.11	0.04

Sources: Annual reports of sample banks

From the above table, we could concluded that NIBL had higher interest and net interest margin as compare to EBL, HBL & NABIL. The ratio was at the increasing trend. The interest margin of NIBL was in the level of 4 to 5 %. While

NABIL bank was maintained second position lies between 4% and 5.00% in continuously decreasing over the year. EBL showed 3% in 2008 and after that increasing up to 5%. HBL had maintained in the level of 3 to 4%.

#### 4.1.7. Analysis of net interest income

Net interest income was the difference between the interest earned and interest paid. It was the excess of interest income over interest expenses borne by the bank. Higher the spread between interest income and interest expense shows the effective and efficient mobilization of deposits.

The table 4.1.7 below shows the net interest income of commercial, which is calculated as.

Net interest income = Interest from assets – Interest paid to liabilities

This ratio will determine the actual position of the bank. Higher the net interest income higher would be the profit of that bank and vice versa.

Table 4.1.7 Net interest income

(Rs. In million)					
<b>Nepal Investment Bank Limited</b>					
Year	2007	2008	2009	2010	2011
Interest Income	1172	1584	2194	3267	4653
Interest Expenses	491	685	991	1686	2553
Net Interest Income	681.00	899.00	1203.00	1581.00	2100.00
Growth rate		32.01	33.82	31.42	32.83
<b>Everest Bank Limited</b>					
Year	2007	2008	2009	2010	2011
Interest Income	903	1144	1547	2186	3102
Interest Expenses	401	517	632	1012	1572
Net Interest Income	502.00	627.00	915.00	1174.00	1530.00
Growth rate		24.90	45.93	28.31	30.32
<b>Himalayan Bank Limited</b>					
Year	2007	2008	2009	2010	2011
Interest Income	1626	1775	1978	2347	3149
Interest Expenses	648	767	823	934	1553
Net Interest Income	978.00	1008.00	1155.00	1413.00	1596.00
Growth rate		3.07	14.58	22.34	12.95
<b>NABIL Bank Limited</b>					
Year	2007	2008	2009	2010	2011
Interest Income	1309	1587	1978	2798	4047
Interest Expenses	357	555	758	1153	1960
Net Interest Income	952.00	1032.00	1220.00	1645.00	2087.00
Growth rate		8.40	18.22	34.84	26.87

Sources: Annual reports of sample banks

From the above table, we easily could say that NIBL bank had maintained comparatively higher net interest income than other three sample banks. So this would be the one reason to be the top among the 32 commercial bank. NIBL showed 2,100 million in 2011 and had able to made highest growth among the sample banks. Likewise NABIL had able to earned 2087 million in 2011 and able to be the second position among the sample banks.

#### **4.1.8 Return on assets**

This ratio measures the profitability of all invested in the firm's assets. This ratio provided the necessary foundation for a company to deliver a good return on equity. A company with out a good return on total assets finds it almost impossible to generate a satisfactory ROE. In this study ROA was computed to measure the profitability of all the financial resources in bank assets and calculated by applying the following formula

$$\text{Return on Asset (ROA)} = \frac{\text{Net profit after tax}}{\text{Total assets}}$$

Major assets of banks are loan and advances, ROA revealed how efficiently the total recourses had been utilized and measured the return on assets productive sectors that could generate profit for the banks. Higher ROA shows the better utilization and management on the assets and extend profit level. This ratio depicts how efficiently a bank was utilizing and mobilizing its assets to generate profit.

Following table 4.1.8 shows five years net profit after tax and total assets of four sample banks.

Table 4.1.8 Return on assets

(Rs. In million)

Nepal Investment Bank Limited					
Year	2007	2008	2009	2010	2011
Total assets	21330	27591	39409	53739	57935
Net profit after tax	350	501	698	914	1265
NPAT/total assets (In %)	1.64	1.82	1.77	1.70	2.18
Growth rate (In %)		9.63	-2.52	-4.14	22.11
Everest Bank Limited					
Year	2007	2008	2009	2010	2011
Total assets	15959	21432	27805	37490	41982
Net profit after tax	137	296	450	624	831
NPAT/total assets (In %)	0.86	1.38	1.62	1.66	1.98
Growth rate (In %)		37.84	14.66	2.77	15.91
Himalayan Bank Limited					
Year	2007	2008	2009	2010	2011
Total assets	29460	33519	37648	41186	43929
Net profit after tax	457	491	654	742	522
NPAT/total assets (In %)	1.55	1.46	1.74	1.80	1.19
Growth rate (In %)		-5.90	15.68	3.58	-51.61
NABIL Bank Limited					
Year	2007	2008	2009	2010	2011
Total assets	22330	27253	37487	43867	52910
Net profit after tax	635	573	750	1031	1146
NPAT/total assets (In %)	2.84	2.10	2.00	2.35	2.17
Growth rate (In %)		-35.25	-5.09	14.87	-8.51

Sources: Annual reports of sample banks

From the above table 4.1.8 we could conclude that NIBL had been able to utilize their assets to earn profit rather than other sample banks in 2011. However looking at the ROA of five years, NABIL had been utilizing assets more efficiently to earn profitability than other banks. EBL had made good growth rate over the five years period although the ROA is lower than NIBL and NABIL.

#### 4.1.9 Analysis of interest rate spread

Interest rate spread was difference in rate at which bank earned through investments and rate offered in attracting deposits and borrowings. In other words, rate of interest income on loan and investments minus rate of interest expenses on

deposits and borrowings. Higher the spread rate higher would be the income of the bank.

Following table 4.1.9 shows the interest spread rate and its average growth over the last five years of sample banks.

Table 4.1.9 Interest spread rate

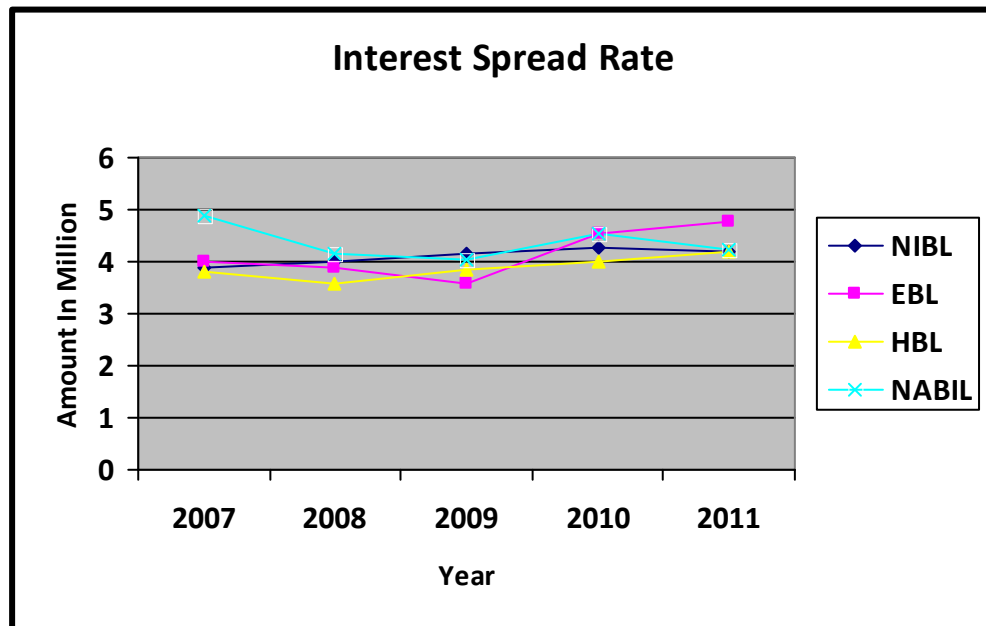
Year	Interest Spread Rate					Average growth Rate (%)
	2007	2008	2009	2010	2011	
NIBL	3.9	3.99	4.15	4.26	4.20	1.89
EBL	4	3.9	3.56	4.52	4.78	5.38
HBL	3.8	3.57	3.83	4.01	4.18	2.54
NABIL	4.9	4.15	4.03	4.54	4.25	-2.98

Sources: Annual reports of sample banks

The above table showed the interest spread of NIBL, EBL, HBL & NABIL. NABIL bank enjoyed highest interest spread among NIBL, EBL, & HBL. It maintained above 4% over five years periods. It maintained highest average interest spread of five years at 4.37% although data shows -2.98% average growth rate of interest spread over the last five years. However EBL had increased highest average growth rate i.e. 5.38% and has maintained 4.78% as highest interest spread rate in 2011 among the other sample banks. As compared to other sample bank, HBL has maintained lowest interest spread rate i.e. it had maintained average spread rate of 3.878 over the period of 5 years. By looking at the trend of interest spread rate, all the above sample banks had been increasing the interest spread rate over the last five year. It means all the sample banks are concentrated to increase profit.

The interest spread rate of four sample banks of last five years can be illustrated in figure below:

Figure 4.1 *Interest spread rate*



The above graphical represented of interest rate spread of NIBL, EBL, HBL & NABIL. NIBL's trend line had been increasing slowly and it showed the slope line has inclined up to 4.26% in 2011. EBL showed dramatic growth on interest spread in 2007 at 4.0 % and after that declined for two year and then continuously increased up to 4.78%. HBL showed increasing trend after 2008 and NABIL showed a bit normal line through it increased in 2007 and decreased in succeeding year. The line of HBL went up to 4.18% in 2011. NABIL showed steady upwards 4.9% in 2007 and after that it showed declining trend.

#### 4.1.10 Growth ratio

Growth ratios were directly related to the deposit mobilization and investment management of a commercial bank. Growth ratio represents how well the commercial bank maintaining its performance. Higher the ratios better the performance of the bank and vice-versa. The equation of the growth ratio was given by.

$$A_n = A_o (1+g)^{nZ}$$

Where,

$$A_n = \text{Total amount in the } n \text{ year}$$

$A_o$  = Total amount in the initial year

$g$  = Growth rate of the amount during the study period.

$n$  = Total no. of study period

To examine and analysis following growth ratios were calculated in this study.

#### 4.1.10.1 Growth ratio of total deposit

The following table showed the growth ratio of total deposit of NIBL, EBL, HBL & NABIL from 2007 to 2011. NIBL and NABIL having huge deposit based showed 28.22% and 24.66% growth rate in total deposit respectively. EBL and HBL reached around 37 and 38 billion in the year 2011 respectively. EBL maintained 28.35% growth over 5 year period, while HBL maintained 9.23% of growth for the same period. The total deposit of NIBL and NABIL were 50 and 46 billion respectively.

Table 4.1.10.1 Growth ratio of total deposit

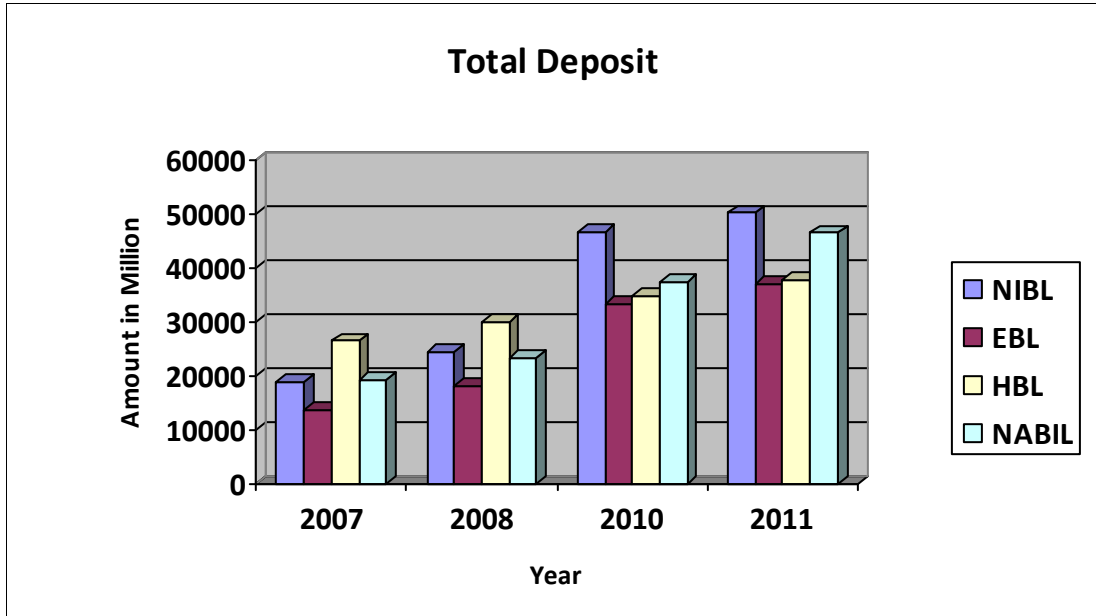
Year	Total deposit (Rs. In million)					Average growth Rate (%)
	2007	2008	2009	2010	2011	
NIBL	18927	24489	34451	46697	50094	28.22
EBL	13802	18186	23976	33322	36932	28.35
HBL	26490	30048	31939	34746	37665	9.23
NABIL	19347	23342	31915	37348	46406	24.66

Sources: Annual reports of sample banks

From the above table we could conclude that the EBL had increased its deposit collection aggressively than other sample bank. It means people believe EBL than other sample bank for deposit collection. NIBL had been in second position in high growth rate of deposit collection. The deposit collection was affected by trustworthiness, goodwill, deposit interest rate, market coverage, service etc. of bank. Higher the growth rate of deposit collection was considered as better liquidity of bank.

We also could see following diagram to understand about the total deposit position & growth rate of all four banks comparatively.

Figure 4.2 *Total deposit*



#### 4.1.10.2 Growth ratio of loan and investment

The following table showed the growth ratio of loan and investment from 2007 to 2011. The growth ratio of Loan and Investment for NIBL for the period of five year was 33.68% on the contrary its growth ratio for deposit for same period was 28.22%. Similarly growth ratio of loan and investment for EBL also exceed than deposit growth ratio and had maintained at 29.42%. Total loan and investment disbursed by NIBL and EBL for the last year were 41 and 28 billion respectively. HBL and NABIL relatively had 16.72% and 26.70% respectively in loan and investment growth rate over 5 year period. Total loan and investment for HBL and NABIL reached 29 and 33 billion in 2011 respectively.

Table 4.1.10.2 Growth ratio of Loan and Investment

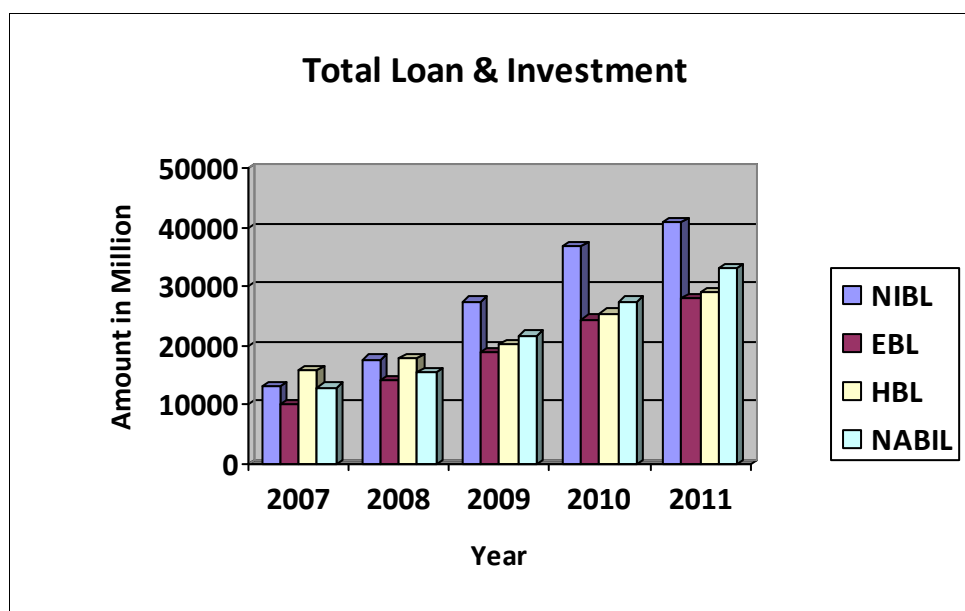
Total Loan and Investment (Rs. In million)						Average growth Rate (%)
Year	2007	2008	2009	2010	2011	
NIBL	13178	17769	27529	36827	40948	33.68
EBL	10136	14083	18836	24469	28156	29.42
HBL	15761	17793	20179	25519	29124	16.72
NABIL	12922	15545	21769	27589	33030	26.70

Sources: Annual reports of sample banks

Higher the growth of total loan and investment higher was the amount of total profit because interest income from total loan and investment was major portion of total profit of any bank. From the above table, NIBL had aggressively increased its loan and investment than other sample bank. HBL had increased its growth rate on loan and investment in low growth rate than other sample banks. It means HBL had increased its profit slowly than other sample banks.

We also can see following diagram to know about the total loan and investment and its growth rate over 5 year period of all four banks.

Figure 4.3 Total loan and investment



#### 4.1.10.3 Growth ratio of interest income

The following table showed the growth ratio of interest income of NIBL, EBL, HBL & NABIL from 2007 to 2011. NIBL and EBL both maintained growth rate for

41.25% and 36.28% respectively over five year period. Interest income of NIBL and EBL reached 4.6 and 3.1 billion respectively in the last year. While HBL and NABIL maintained 18.36% and 32.99% growth rate respectively over 5 year period and reached 3.1 and 4.0 billion interest income in the last year.

Table 4.1.10.3 Growth ratio of interest income

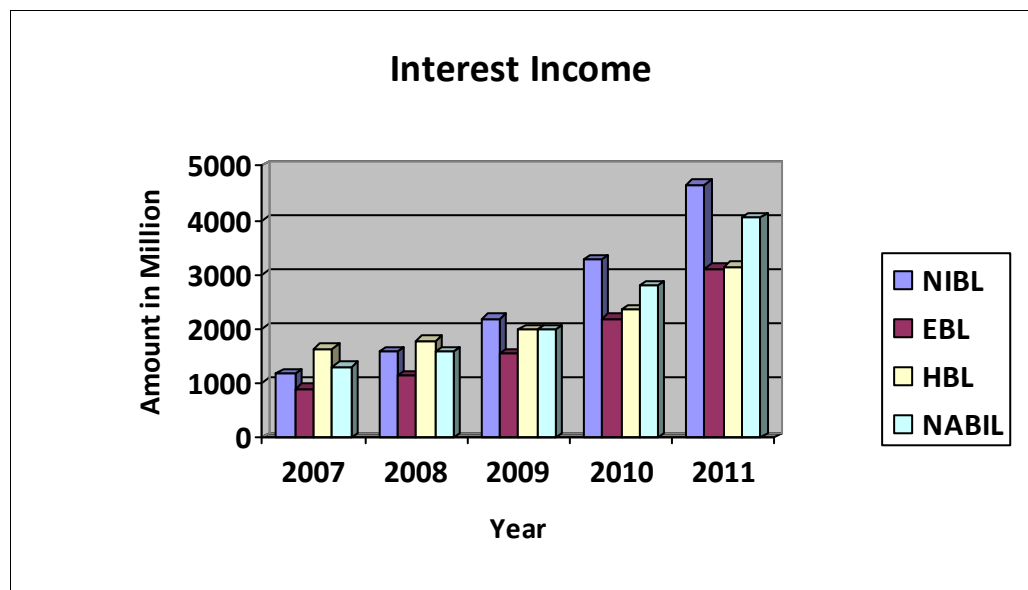
Year	Interest Income (Rs. In million)					Average growth Rate (%)
	2007	2008	2009	2010	2011	
NIBL	1172	1584	2194	3267	4653	41.25
EBL	903	1144	1547	2186	3102	36.28
HBL	1626	1775	1978	2347	3149	18.36
NABIL	1309	1587	1978	2798	4047	32.99

Sources: Annual reports of sample banks

Higher the growth of total interest income higher was the amount of total profit because interest income was major portion while calculating total profit of any bank. From the above table, NIBL had aggressively increased its interest income than other sample bank. HBL had increased its growth rate on interest income in low growth rate than other sample banks. It means HBL had increased its profit slow growth rate than other sample banks.

The following diagram showed that the total interest income and growth position of NIBL, EBL, HBL & NABIL from 2007 to 2011.

Figure 4.4 *Interest income*



#### 4.1.10.4 Growth ratio of interest expenses

The following table showed the growth ratio of interest expenses of NIBL, EBL, HBL & NABIL from 2007 to 2011. NIBL and EBL showed growth rate of interest expenses 51.43% and 41.66% respectively for the five year period and reached 2.5 billion and 1.5 billion in last year respectively. While HBL and NABIL had 26.36% and 53.54 % growth rate over 5 year period and reached interest expenses 1.5 billion and 1.9 billion in last year respectively.

Table 4.1.10.4 Growth ratio of interest expenses

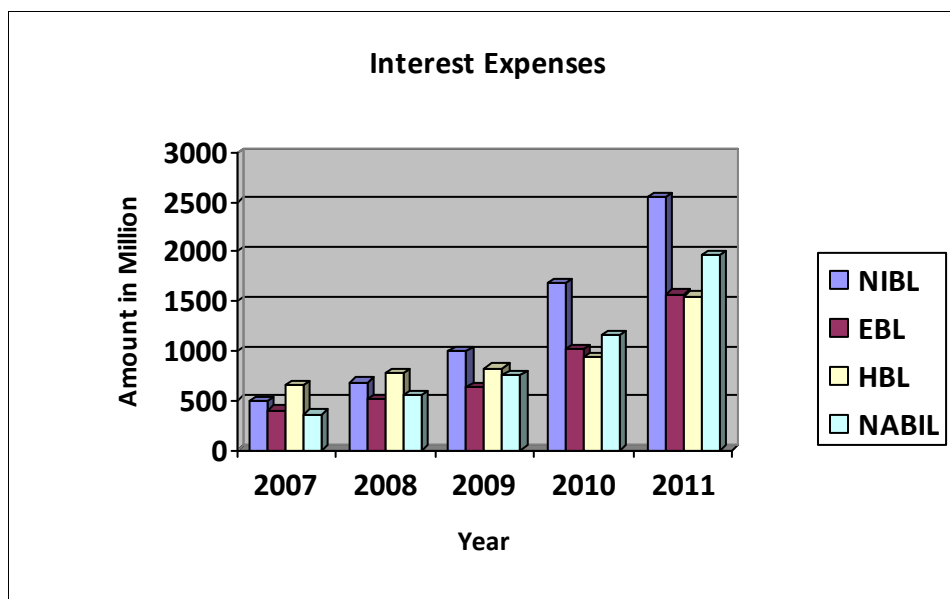
Year	Interest Expenses (Rs. In million)					Average growth Rate (%)
	2007	2008	2009	2010	2011	
NIBL	491	685	991	1686	2553	51.43
EBL	401	517	632	1012	1572	41.66
HBL	648	767	823	934	1553	26.36
NABIL	357	555	758	1153	1960	53.54

Sources: Annual reports of sample banks

From our theoretical study, we could say that lower the growth of interest expenses means higher the growth in profitability and vice versa. From the above table, we could conclude that HBL had maintained low growth rate in interest expenses which means better the chance of increase in profitability of HBL. NABIL had maintained highest growth rate in interest expenses which means higher the chance of decrease in profit.

We could also see the following diagram to know about the interest expenses over five year period and growth rate of its of four banks.

Figure 4.5 Interest expenses



## 4.2 Statistical analysis

Out of various statistical tools the analysis of coefficient of correlation analysis, probable error analysis, regression analysis and t-statistic had been done to describe the 'impact of interest rate on deposit mobilization and profitability'. The following statistical tools had been used for the evaluating the performance of the four sample banks.

### 4.2.1 Correlation coefficient and probable error analysis

Correlation analysis was the statistical tools that we could use to describe the degree to which one variable was linearly related to another. It did not tell us anything about cause and effect relationship. It helped in determination relationship between two or more variables.

The probable error of the coefficient of correlation helped in interpretation its value. With the help of the probable error it was possible to determine the reliability of the value of the coefficient in so far as it depends on the condition of random sampling.

#### 4.2.1.1 Correlation coefficient and probable error of average deposit interest rate and total deposit

To know relationship between average deposit interest rate and total deposit, first of all we should calculate each sample bank's correlation coefficient and probable error between deposit interest rate and total deposit separately which were as follows:

*Correlation coefficient and probable error of average deposit interest rate and total deposit of Nepal Investment Bank Ltd (Appendix A)*

$$r = 0.8437$$

$$r^2 = 0.7118$$

$$P.E. = 0.0869$$

$$6PE(r) = 0.5216$$

The correlation coefficient between average deposit interest rate and total deposit of NIBL was 0.8437 i.e. there was highly positively correlated between deposit interest rate and total deposit. Thus, we could say that the increase in deposit interest rate causes the increase in total deposit and vice versa. While testing the significant of  $r$  i.e., P.E. we find that P.E.( $r$ ) of NIBL had lowered value than  $r$ . Hence it could be concluded that there was significant relationship between deposit interest rate and deposits of NIBL.

*Correlation coefficient and probable error of average deposit interest rate and total deposit of Everest Bank Ltd. (Appendix B)*

$$r = 0.7803$$

$$r^2 = 0.609$$

$$P.E. = 0.1179$$

$$6PE(r) = 0.7076$$

The correlation coefficient between average deposit interest rate and total deposit of EBL was 0.7803 i.e. there was highly positively correlated between deposit interest rate and total deposit. Thus, we could say that the increase in deposit interest rate of EBL causes the increase in total deposit of EBL and vice versa. While testing the significant of  $r$  i.e., P.E. we find that P.E.( $r$ ) of EBL has lowered value than  $r$ .

Hence it could be concluded that there was significant relationship between deposit interest rate and deposits of EBL.

*Correlation coefficient and probable error of average deposit interest rate and total deposit of Himalayan Bank Ltd ( Appendix C)*

$$r = 0.7958$$

$$r^2 = 0.6333$$

$$P.E. = 0.1106$$

$$6PE(r) = 0.6636$$

The correlation coefficient between average deposit interest rate and total deposit of HBL was 0.7958 i.e. there was highly positively correlated between deposit interest rate and total deposit. Thus, we could say that the increase in deposit interest rate causes the increase in total deposit and vice versa. While testing the significant of  $r$  i.e., P.E. we find that P.E.( $r$ ) of HBL had lowered value than  $r$ . Hence it could be concluded that there was significant relationship between deposit interest rate and deposits of HBL.

*Correlation coefficient and probable error of average deposit interest rate and total deposit of Nabil Bank Ltd ( Appendix D)*

$$r = 0.7288$$

$$r^2 = 0.5311$$

$$P.E. = 0.1414$$

$$6PE(r) = 0.8484$$

The correlation coefficient between average deposit interest rate and total deposit of NABIL was 0.7288 i.e. there was moderately positively correlated between deposit interest rate and total deposit. Thus, we could say that the increase in deposit interest rate of NABIL causes the increase in total deposit of NABIL and vice versa. While testing the significant of  $r$  i.e., P.E. we find that P.E.( $r$ ) of NABIL had lowered value than  $r$ . Hence it could be concluded that there was significant relationship between deposit interest rate and deposits of NABIL.

After calculating each sample banks correlation coefficients and significant of  $r$  i.e. PE between deposit interest rate and total deposit, the following table 4.2.1.1 shows correlation coefficients and significant of  $r$  i.e. PE between deposit interest rate

and total deposit of all sample banks which had calculated above. The objective of calculating r was whether deposit interest rate had the relationship with deposit collection or not.

**Table 4.2.1.1 Correlation coefficient and probable error of average deposit interest rate and total deposit**

BANKS	Evaluation Criterion			
	r	$r^2$	P.E.(r)	6P.E.(r)
NIBL	0.8437	0.7118	0.0869	0.5216
EBL	0.7804	0.609	0.4996	2.9978
HBL	0.7958	0.6333	0.1106	0.984
NABIL	0.7288	0.5311	0.1414	0.8484

We have interest rate (independent variable) and deposit amount (dependent variable) from the above table. We could conclude that all the banks had positive correlation i.e., interest rate and amount deposits were positively correlated. While testing the significant of r i.e., P.E. we find that P.E.(r) of all banks had lowered value than r. Hence it could be concluded that there was significant relationship between deposit interest rate and deposits of these banks. Thus from the above calculation, we could say that higher the deposit interest rate higher would be the deposit of bank and vice versa.

**4.2.1.2 Correlation coefficient and probable error of average lending interest rate and total lending.**

To know correlation coefficient between average lending interest rate and total lending, first of all we should calculate each sample bank's correlation coefficient between lending interest rate and total lending separately which were as follows:

*Correlation coefficient and probable error of average lending interest rate and total lending disbursement of Nepal Investment Bank Ltd (Appendix E)*

$$r = 0.889$$

$$r^2 = 0.7903$$

$$P.E. = 0.06325$$

$$6PE(r) = 0.3795$$

The correlation coefficient between average lending interest rate and total lending of NIBL was 0.889 i.e. there was highly positively correlated between lending interest rate and total lending disbursement. Thus, we could say that the increase in lending interest rate causes increase in total lending and vice versa. While testing the significant of r i.e., P.E. we found that P.E.(r) of NIBL had lowered value than r. Hence it could be concluded that there was significant relationship between lending interest rate and lending of NIBL.

*Correlation coefficient and probable error of average lending interest rate and total lending of Everest Bank Ltd\_(Appendix F)*

$$r = 0.8621$$

$$r^2 = 0.7432$$

$$P.E. = 0.0775$$

$$6PE(r) = 0.4648$$

The correlation coefficient between average lending interest rate and total lending of EBL was 0.8621 i.e. there was highly positively correlated between lending interest rate and total lending disbursement. Thus, we could say that the increase in lending interest rate of EBL caused the increase in total lending of EBL and vice versa. While testing the significant of r i.e., P.E. we found that P.E.(r) of EBL had lowered value than r. Hence it could be concluded that there was significant relationship between lending interest rate and lending of EBL.

*Correlation coefficient and probable error of average lending interest rate and total lending of Himalayan Bank Ltd\_( Appendix G)*

$$r = 0.8260$$

$$r^2 = 0.6823$$

$$P.E. = 0.4687$$

$$6PE(r) = 2.8122$$

The correlation coefficient between average lending interest rate and total lending of HBL was 0.826 i.e. there was highly positively correlated between lending interest rate and total lending disbursement. Thus, we could say that the increase in lending interest rate causes the increase in total lending and vice versa. While testing the significant of r i.e., P.E. we found that P.E.(r) of HBL has lowered value than r.

Hence it could be concluded that there was significant relationship between lending interest rate and lending of HBL.

*Correlation coefficient and probable error of average lending interest rate and total lending of Nabil Bank Ltd.(Appendix H)*

$$r = 0.5461$$

$$r^2 = 0.2982$$

$$P.E. = 0.2117$$

$$6PE(r) = 1.2702$$

The correlation coefficient between average lending interest rate and total lending of NABIL was 0.5461 i.e. there was moderately positively correlated between lending interest rate and total lending. Thus, we could say that the increase in lending interest rate of NABIL caused the increase in total lending of NABIL and vice versa. While testing the significant of r i.e., P.E. we found that P.E.(r) of NABIL had lowered value than r. Hence it could be concluded that there was significant relationship between lending interest rate and lending of NABIL.

After calculating each sample banks correlation coefficients and significant of r i.e. PE between lending interest rate and total lending disbursement, the following table 4.2.1.2 showed correlation coefficients and significant of r i.e. PE between lending interest rate and total lending of all sample banks which had calculated above. The objective of calculating r was whether lending interest rate had the relationship with lending disbursement or not.

**Table 4.2.1.2 Correlation coefficient and probable error of average lending interest rate and total lending disbursement**

BANKS	Evaluation Criterion			
	r	$r^2$	P.E.(r)	6P.E.(r)
NIBL	0.889	0.7903	0.06325	0.3795
EBL	0.8621	0.7432	0.0775	0.4648
HBL	0.826	0.6823	0.4687	2.8122
NABIL	0.5461	0.2982	0.2117	1.2702

From the above table, it had been found that correlation coefficient between lending interest rate (independent variable) and total lending amount (dependent

variable) of NIBL, EBL, HBL & NABIL had positive correlation i.e. if lending interest rate was increased and lending amount is also in increasing trend. At the same time while testing the significant of  $r$  i.e. P.E ( $r$ ) all the banks had lower value than  $r$ . Hence it could be concluded that there was significant relationship between lending interest rate and lending amount. Thus from the above calculation, we could say that higher the lending interest rate higher would be the total lending disbursement of bank.

#### **4.2.1.3 Correlation coefficient and probable error of interest spread rate and net profit after tax**

To know correlation coefficient between Interest Spread Rate and Net Profit after Tax, first of all we should calculated each sample bank's correlation coefficient between Interest Spread Rate and Net Profit after Tax separately which were as follows:

Correlation coefficient and probable error of Interest Spread Rate and Net Profit after Tax of Nepal Investment Bank Ltd (Appendix I)

$$r = 0.8455$$

$$r^2 = 0.7148$$

$$P.E. = 0.0861$$

$$6PE(r) = 0.516$$

The correlation coefficient between interest spread rate and net profit after tax of NIBL is 0.8455 i.e. there was highly positively correlated between interest spread rate and net profit after tax of NIBL. Thus, we could say that the increase in interest spread rate results increase in net profit after tax and vice versa. While testing the significant of  $r$  i.e., P.E. we find that P.E. ( $r$ ) of NIBL had lowered value than  $r$ . Hence it could be concluded that there was significant relationship between interest spread rate and net profit after tax of NIBL.

*Correlation coefficient and probable error of Interest Spread Rate and Net Profit after Tax of Everest Bank Ltd (Appendix J)*

$$r = 0.7289$$

$$r^2 = 0.5313$$

$$P.E. = 0.1414$$

$$6PE(r) = 0.848$$

The correlation coefficient between interest spread rate and net profit after tax of EBL is 0.7289 i.e. there was highly positively correlated between interest spread rate and net profit after tax of EBL. Thus, we could say that increase in interest spread rate of EBL consequences increased in net profit after tax of EBL and vice versa. While testing the significant of r i.e., P.E. we found that P.E.(r) of EBL had lowered value than r. Hence it could be concluded that there was significant relationship between interest spread rate and net profit after tax of EBL.

*Correlation coefficient and probable error of Interest Spread Rate and Net Profit after Tax of Himalayan Bank Ltd (Appendix K)*

$$r = 0.3358$$

$$r^2 = 0.1125$$

$$P.E. = 0.2674$$

$$6PE(r) = 1.6044$$

The correlation coefficient between interest spread rate and net profit after tax of HBL was 0.3358 i.e. there was highly positively correlated between interest spread rate and net profit after tax of HBL. Thus, we could say that the increased in interest spread rate of HBL outcomes increase in net profit after tax of HBL and vice versa. While testing the significant of r i.e., P.E. we found that P.E.(r) of HBL had lowered value than r. Hence it could be concluded that there was significant relationship between interest spread rate and net profit after tax of HBL.

*Correlation coefficient and probable error of Interest Spread Rate and Net Profit after Tax of Nabil Bank Ltd ( Appendix L)*

$$r = -0.06626$$

$$r^2 = 0.0043$$

$$P.E. = 0.3003$$

$$6PE(r) = 1.8018$$

The correlation coefficient between interest spread rate and net profit after tax of NABIL is -0.06626 i.e. there was lowly negatively correlated between interest spread rate and net profit after tax. Thus, we could say that the increase in interest spread rate of NABIL results the decrease in net profit after tax of NABIL and vice versa. While testing the significant of r i.e., P.E. we found that r of NABIL had

lowered value than P.E.(r). Hence it could be concluded that there was no significant relationship between interest spread rate and net profit after tax of NABIL. However increase in net profit after tax of NABIL was not sole factor of interest spread rate. After 2008, NPAT was increasing although interest spread rate was increasing. The main reason behind increase in net profit from commission base income too.

After calculating each sample banks correlation coefficients and significant of r i.e. PE between interest spread rate and net profit after tax, the following table 4.2.1.3 showed correlation coefficients and significant of r i.e. PE between interest spread rate and net profit after tax of all sample banks which had calculated above. The objective of calculating r is whether interest spread has positive relationship with net profit after tax or not.

**Table 4.2.1.3 Correlation coefficient and probable error of interest spread rate and net profit after tax**

BANKS	Evaluation Criterion			
	r	$r^2$	P.E.(r)	6 P.E.(r)
NIBL	0.8455	0.7148	0.0861	0.5162
EBL	0.7281	0.5313	0.1414	0.8482
HBL	0.3358	0.1135	0.2674	1.6044
NABIL	-0.06626	0.00443	0.3003	1.2018

From the above table, it had been found that correlation coefficient between interest spread rate (independent variable) and net profit after tax (dependent variable) of NIBL, EBL, HBL had positive correlation where at the same time NABIL had negative correlation. While testing the significant of r i.e., P.E (r) all the banks except HBL, P.E. (r) was less than r of other banks. Hence it could be concluded that there was significant relationship between interest spread rate and net profit after tax.

#### **4.2.2 Regression and T- statistic analysis**

The term ‘regression’ literally means ‘stepping back towards the average’. The concept of regression was first given by the English biometrician Sir Francis Galton in reports of his research on heredity. The regression analysis was used to estimate the likely value of one variable from the known value of

other variable. The caused and effected relationship was clearly indicated through regression analysis than by correlation.

There were two types of variables in regression analysis – dependent variable and independent variable. The dependent variable was also known as regressed or explained variable while the independent variable was called as regressor or predictor or explanatory variable. It studied the statistical relationship between variables. The main objective of regression analysis was to predict or estimate the value of dependent variable corresponding to a given value of independent variables.

After getting the results from regression analysis, we analyzed the result from hypothesis test i.e. T-test. Under this, null and alternative hypothesis was undertaken and give decision.

#### **4.2.2.1 Regression and T- statistic analysis of total lending of sample banks (Y) on Lending interest rate(X)**

Let the regression equation of Y on X be,

$$Y = a + bx \dots\dots\dots(i)$$

To find out the value of a and b we have the following two normal equation

$$Y = na + b \sum X \dots\dots(ii)$$

$$\sum XY = a \sum X + b \sum X^2 \dots\dots(iii)$$

Or,  $b = 29348.40$  (Detail calculation shown in Appendix M)

Or,  $a = 19426.70$

Now substituting the value of a and b in equation (i), we get required estimated regression equation of Y on X is,

$$Y = 19426.70 + 29348.40X$$

#### **Test of significance of the regression coefficient**

#### **Setting of hypothesis**

**Null Hypothesis H<sub>0</sub>:**  $b = 0$  i.e. value of regression coefficient is insignificant  
(Deposit interest rate does not play a significant role in deposit collection)

**Alternative Hypothesis H<sub>1</sub>:**  $b \neq 0$  i.e. value of regression coefficient is significant  
(Deposit interest rate plays a significant role in deposit collection)

Since the no. of observation is less than 30, we use t – test to know the significance of the regression coefficient.

Formula of t-test is given by

$$T = \frac{b}{SE}$$

$t = 2.963$  (Detail calculation has shown in Appendix N)

Degree of freedom (d.f) =  $n - 2 = 5 - 2 = 3$

Critical Value: - the tabulated value of t at 5% level of significance for 3 d.f is 2.353.

**Decision:** - Since calculated value of t at 5% is higher than tabulated value of t therefore alternative hypothesis H<sub>1</sub> is accepted. Thus, we can conclude that deposit interest rate plays a significant role in deposit collection.

#### **4. 2.2.2 Regression and T- statistic analysis of total lending of sample banks (Y) on lending interest rate(X)**

Let the regression equation of Y on X be,

$$Y = a + bx \dots\dots\dots (i)$$

To find out the value of a and b we have the following two normal equations

$$Y = na + b \sum X \dots\dots\dots(ii)$$

$$\sum XY = a \sum X + b \sum X^2 \dots\dots\dots(iii)$$

Or,  $b = 20423.86818$  (Detail calculation shown in Appendix O)

Or,  $a = -69931.57428$

Now substituting the value of  $a$  and  $b$  in equation (i), we get required estimated regression equation of  $Y$  on  $X$  is,

$$Y = -69931.57 + 20423.87X$$

### **Test of significance of the regress coefficient**

#### **Setting of hypothesis**

**Null Hypothesis  $H_0$ :**  $b = 0$  i.e. value of regression coefficient is insignificant  
(Lending interest rate does not play a significant role in Loan disbursements.)

**Alternative Hypothesis  $H_1$ :**  $b \neq 0$  i.e. value of regression coefficient is significant  
(Lending interest rate plays a significant role in Loan disbursements.)

Since the no. of observation is less than 30, we use  $t$  – test to know the significance of the regression coefficient.

Formula of  $t$ -test is given by

$$T = \frac{b}{SE}$$

$$t = 0.00138 \text{ (Detail calculation shown in Appendix P)}$$

$$\text{Degree of freedom (d.f)} = n - 2 = 5 - 2 = 3$$

**Critical Value:** - the tabulated value of  $t$  at 5% level of significance for 3 d.f is 2.353.

**Decision:** - Since calculated value of  $t$  at 5% is lower than tabulated value of  $t$  therefore null hypothesis  $H_0$  is accepted i.e. lending interest rate does not play a significant role in Loan disbursements. It means that higher the lending rate then also higher the request for loan.

### 4.3 Findings on survey analysis

A small survey was conducted to know about the perception of respondents regarding impact of interest on deposit collection and mobilization. There were 30 respondents who provided their valuable opinion about the matter? The sources however were collected from literate, students, bankers and service holders and none of the people representing other fields were involved in it. All the questions asked in the survey were closed-end except one asking the respondent to comment on the impact of interest rate on deposit mobilization. The set of close-end questions and their alternative answer asked in the survey are presented below in tabular form.

The responses from respondent to the questions asked in the survey are given below.

#### Regarding the interest rate

In order to know whether people were deposit money in bank for higher interest rate or for getting excellent services, we had received thirty responses from thirty respondents. More than 41% of the respondent believed that the people deposit money for earning higher interest rate, while 19% respondents believed that people deposit money for getting excellent service and remaining 40% respondents believe that people deposit money for gaining interest income as well as for getting service too.

Out of thirty respondents, 19% respondents said that they are happy with the interest rate offered by commercial banks, 39% of the respondents were not happy with interest rates offered by commercial banks. 30% said new banks are providing good interest rates and they are happy to bank with them. 12% do not care about interest rate they are happy with services provided by the bank.

While responding to quite change in interest rate offered by Commercial Bank, 40% of respondents watch the market rates and shift over, 30% do not mind unless it is not decreasing while 27% were least bothered about the changes and 13% respondents say that they were close the account if interest change frequently.

In order to know whether interest rate is determined by market forces or NRB or bank itself or negotiation with customer, we have received thirty responses. Among thirty responses, 60% says market forces that determine the interest rate where demand and supply meets. 20% thinks bank should negotiate interest rate with

customer. 10% respondents gave their view that NRB determine the interest rate of NRB. 10% said bank can itself determine interest rate as per market situation and target market.

While responding to why they deposit their money in a bank, around 45% respondents answered that they deposit their money in a bank for security reason, 39% respondents said that to earn interest, 10% respondents deposits to easy withdraw money when needed and 6% referred to other reasons. Our purpose was to know out whether the interest rate affects to the deposit collection or not. From this method we can say that there is positive relationship between interest rate and deposit collection which also proved by the five years data of sample banks.

#### Lending interest rate and lending disbursement

In order to know whether there is any relationship between lending interest rate and lending disbursement, we have received thirty responses from the respondents. Among them, 59% of respondents have given their view that there is inverse relationship between lending interest rate and lending disbursement. 25% of respondents said that there is positive relationship and 16% of respondents said that lending disbursement is affected by other factor.

But in our study of five years data of sample banks, we found there is positive relationship between lending disbursement and lending interest rate. However in practical, we can conclude that lending interest rate is not only sole factor which affect lending disbursement. It depends on other factors like liquidity in market, need of borrower, capacity of repayment, character of borrower, cash flow of borrower, collateral etc. In the above table also, we find the lending interest rate is increasing trend then also lending disbursement is also increasing trend.

#### Interest spread rate

Regarding huge interest rate, 36% of respondents think that commercial banks are enjoying huge interest rate. 20% thinks that interest spread rate of commercial banks is genuine. 10% believes only new banks have the ability to stretch the interest spread. The rest 34% were unaware about the rate and interest spread.

From the five years data analysis, we conclude that commercial bank are enjoying higher interest spread rate. The interest spread rate of commercial banks is in

increasing trend throughout the fiscal year 2007 to 2011 which our opinion survey also proved.

Regarding the opinion in impact of interest rate on deposit mobilization

Higher deposit interest rate and lower lending rate has been regarded important for customers to come to bank. It of course is particularly applicable to developing country like Nepal where very less people can offer to save. Therefore many commercial banks and other financial institutions are as main factor for competing in the market. It has seen new banks are implementing this idea to survive in the market. They maintain very low interest spread than old banks having higher deposit based and coincidence of the customer. Since our market is considerably small and there exist many financial institutions increasing stiff competition among themselves. This has led the competition to another level where mere interest rate is not enough to compete in the market gradually, more and more banks are increasing their service standard by floating different service product to stay and to compete of higher market share. Some of the highlights of opinion received from the respondent.

- ) Goodwill of bank has more weight than the role of interest rate.
- ) If interest rate and service together offered by bank is placed effectively it can cover the maximum market coverage.
- ) It has significant impact upon the mobilization of deposit, because most of customers are interest conscious rather than the added values.
- ) In Nepalese market, it's the main factor which holds the reason behind mobilization of the deposit of commercial banks.
- ) In the modern era people like to have various services rendered by bank like credit card, online banking services, providing interest rate is not only conclusive evidence for public to deposit money. In order to attract public deposit, besides attractive interest rates, various modern banking facilities should not be avoided.
- ) Interest rate does play a vital role in Nepalese market, however there are other factors governing influence in deposit of commercial banks.

## CHAPTER FIVE

### SUMMARY, CONCLUSION & RECOMMENDATIONS

In this chapter, summary and conclusion made after analyzing and interpreting the necessary data regarding structure of interest rates and its impact on deposit and lending of selected commercial banks. Finally, constructive suggestions and recommendation, which can be of immense help to improve interest rates and its impact on deposit and lending of commercial banks, if pursued, have been presented. In this way, an attempt has been made to summaries the whole study in this chapter categorizing in three subsections namely summary, conclusion and recommendation.

#### **5.1 Summary**

Banking sector plays an important role in the economic development of the country. Commercial banks are one of the vital aspects of this sector, which deals in the process of making channel the available resources in the needed sectors. It is the intermediary between the deficit and surplus of financial resources. In order to mobilize the limited capital, the government of Nepal adopted the liberalization policy. As a result up to now 32 commercial banks, 87 development banks, 79 financial companies, 21 micro credit development banks 16 saving and co-operatives and 38 financial NGOs are established within the financial system of Nepal which is hoped to contribute for economic development by playing important role in the financial system of the country and living standard of people. Financial institution act as an intermediary between the individual who lend and who borrow. These institutions accept deposits and in turn lend it to people who are in need of financial resources. These institutions make the flow of fund easier. So we can not deny the role a bank plays in developing an economy. It pools the fund scattered in the economy and mobilizes them to the productive sector.

After Nepal Rastra Bank gave full autonomy to commercial banks to determine own interest rate, bank at different level is offering different rates as per their cost of funds and market standing. Bigger banks have been able to maintain good interest spread while new and small banks are operating at tighter interest

spread. Since the banking industry dominated by interest income such as wider or smaller interest spread have greater role to play in the profitability of the bank. It seems that newly established banks are providing higher interest rate on deposit as compared to well set bank but when it comes to lending big banks enjoys same or slightly lower rate maintaining wider spread in interest income.

As focus on the above explanation the study has covered on the study of interest rates regarding its impact on deposit, lending and profitability by five years data and mainly concerns the below issues:

- To examine the interest rate structure on deposit and lending of Nepalese commercial banks.
- ☐To study and analyze the relationship of interest rate on deposit amount and lending amount of commercial banks.
- ☐To analyze the impact of interest rate on deposit amount and lending amount of commercial banks on its profitability.

Though there are various factors in the economy that affects the volume of deposit and lending, interest rate is one of the major factor that affect deposit and lending amount. With the major objective of showing relationship between deposit rate and deposit amount, lending rate and lending amount, this study is undertaken.

The study is conducted to identify whether some of the theories of finance and economics are applicable or not in the Nepalese financial markets. The major theories are substitution effect, fisher effect and inverse relationship between interest rate and lending amount. For this purpose, brief introduction about Nepalese economy, interest rate, sample organizations, statement of problem, significance of the study, theoretical framework, objective of the study, and limitation of study are made in the first chapter of this dissertation.

In second chapter, theoretical review as well as review of previous research has been made. different views about interest, function of interest, effect of interest rate on assets, factors affecting interest rate, structure of interest rate, concept of deposit, types of deposit, importance of deposit, concept of lending, factor affecting in volume of lending, and so on are reviewed. Similarly, the factor

affecting interest rate like credit or default risk, liquidity risk, marketability risk, call or prepayment risk, servicing cost, exchange rate risk, taxability are explained. Similarly, factors affecting the volume of credit like credit risk, rate of return, investment opportunity and so on are explained in this chapter.

Research design used is mainly analytical. Out of the total financial system, four commercial banks are chosen for sample purpose. The study is mainly based on secondary data used for the analysis. These all are made on third chapter. Secondary data are collected form NRB's economic reports and annual reports of related banks.

Lastly on fourth chapter, collected data are presented in tabular and graphic form and analyzed using various financial and statistical tools like mean, standard deviation, correlation coefficient, probable error, regression analysis, t-statistics and different ratio.

### **5.1.1 Major findings of the study:**

1. New and small bank showed very aggressive lending policy which ranges from 70 percent to 90 percent of the deposit collected which make them bear higher risk whereas established banks dare to lend between 50 percent to 70 percent total deposit collected. But big banks prefer investing as huge money in directed towards investment in low risky assets. Smaller banks are opting to decrease the dependence on interest income and trying to head towards non-fund based activities.
2. Total loan to total deposit ratio of NIBL, EBL, HBL and NABIL shows that NIBL has comparatively invested high portion of its deposit funds into lending than other three banks. So NIBL has been much aggressive in lending larger portion of its deposit fund and EBL in second position. NABIL shows it has been much conservative in lending than others.
3. Total investment to total deposit shows fluctuating investment pattern. HBL has invested higher than other banks, and NABIL in second position. Bigger banks do not depend on lending of its deposit, they foresee the future prospects in investments and take risk to uncertain venture that is why they invested as high as

in investments however, lower level bank with small deposit base preferred lower investment and lent larger amount of deposit as loans and advances.

4. Return on total deposit of these banks, NABIL has mobilized its deposits more effectively than other three banks, however, its decreasing growth rates. The ratio of NIBL showed second position but it has been steady increasing trend. EBL showed constant rate on return on total deposit. HBL showed comparatively better than EBL but after 2010 it showed decreasing trend.
5. Ratio of interest earned to total deposit ratio of these banks shows NIBL had good figures as it earned 8% of total assets in last year and it showed steady increase over the year. Similarly NABIL which lies same with NABIL in last year however looking at five years it showed fluctuation in ratio. The ratio of HBL has been in increasing trend after 2009 and stood at 7% in last year. Similarly, the ratio of EBL has been fluctuating in the range of 5 to 7% over the last 5 year. The ratio of EBL, HBL and NABIL banks are decreasing while NIBL is increasing.
6. Interest coverage ratio of NABIL has maintained comparatively higher interest coverage ratio than other banks.
7. Net interest margin of NIBL has made higher as compared to other sample bank. Net interest margin of NIBL were in increasing trend and stood at 5% in last. EBL has occupied second position in net interest margin. The ratio has been increased continuously after 2007. HBL has maintained in the range of 3-4% over the 5 year. NABIL has maintained higher in 2007 and slightly decline there after.
8. Net interest income of these banks shows NABIL has maintained comparatively higher net interest income than other three banks.
9. ROA of NIBL has showed first position in 2011 as compare to other sample banks. However looking at five years data, NABIL has occupied higher ROA than other sample banks.

10. Interest spread of these banks shows that NABIL bank enjoyed high interest spread among other banks. It maintained above 4% over five years periods. It maintained highest average interest spread of five years at 4.37%.
11. Growth ratio of total deposit of these banks reveals that NIBL has maintained huge deposit i.e. 50 billion in last year and it showed 28.22% growth rate over the 5 year. Although the growth rate of EBL has made highest position over the five year; the deposit volume is only 37 billion which is lowest among the other sample bank. Similarly, NABIL reached NPR 46 billion in last year has showed 24.66% growth rate over the period.
12. Growth ratio of total loan and investment of these banks reveals that NIBL has maintained huge loan and investment i.e. 41 billion in last year and has occupied highest growth rate i.e. 33.68% growth rate over the 5 year. By considering the loan and investment volume, NABIL has occupied second position and it has made NPR 33 billion in last year.
13. Growth ratio of interest income of these banks from 2007 to 2011 reveals that NIBL has maintained growth rate for 41.25% over the last 5 years has met NPR 4.6 billion in last year. By considering growth rate and volume of interest income, NABIL has occupied second position.
14. Growth ratio of interest expenses these banks from 2007 to 2011 disclose that NIBL and EBL showed growth rate of interest expenses 51.43% and 41.66% respectively for the five year period and reached 2.5 billion and 1.5 billion in last year respectively. While HBL and NABIL had 26.36% and 53.54 % growth rate over 5 year period and reached interest expenses 1.5 billion and 1.9 billion in last year.
15. Deposit interest rate plays a significant role in deposit collection as well as lending interest rate plays a significant role in loan disbursements.

Interest spread rate plays a significant role to increase profit of the banks. Higher the spread rate higher is the amount of profit.

## 5.2 Conclusion

Interest is the price that one pays for utilizing a certain amount of money for specified period of time. Interest rate has been the dominating factor for collection and mobilization of deposits and it still continues to be the important one for much longer time. People prefer to deposit when the deposit interest rate is high and like to take loan when lending rate is low but what rate is high and low is determined by the market forces and position of the bank in the market. Big banks in the present market situation are giving lower interest rate on deposit and expect higher interest in return. On the contrary to the small and new banks are offering comparatively higher interest rates on deposits and disburses loan at interest rate similar to well established bank. This has comparatively decreased interest spread of smaller banks. But still there are seen huge customers traffics in big banks despite many facilities offered by smaller banks.

After the economic liberalization policy of the government Nepalese market saw many commercial banks in decade time. Those established in the beginning have grown much bigger having many braches within and outside the valley. They have developed chain of network within and outside the country. This has caused good amount of trust and confidence among the public. New banks which started just before three to four years are growing in the competitive market with its strength as low cost service and facilities. Public too started appreciating this approach over the years and good amount of interest conscious customers are attracted towards these banks.

The overall performance of commercial banks has been sound over the years despite many changes in the interest rates. Since profit of all banks is increasing it is beloved considering interest rate on the higher note, impacts of interest rates have been seen positive. Though interest income of bigger banks is increasing and expenses are at decreasing trend than the smaller banks. These shows that it is not interest rate but there are other factors than interest rate determines the position of big banks. However, the decreasing deposit base and lending of bigger banks cannot be ignored; currently people are shifting to new banks and other financial institutions for earning reasonable returns. This has been proved by the result of the survey that the many respondents said they are happy with new banks offering higher interest rates and good services. This is the good example of impact of interest rate on the

mobilization of funds of bigger banks. Another important reason why change in interest rate can change the profit position of the banks is its dependency on interest income. Since the study shows that top banks have comparatively lower dependency than smaller banks. Smaller banks are prone to face higher impact of interest on the mobilization of its funds. This is reason why smaller banks need to increase deposits interest rate and decrease lending rate to minimize the expected impact of interest rate.

To conclude the followings these are some of the important impact of changing interest rate that are emerged from the study.

- ) Changing interest rate structure can create a competitive environment among commercial banks.
- ) The wider spread interest rate helps the commercial bank to manage the higher liquidity position and good profitability.
- ) A high interest in deposit and low in lending is important to attract customers to the bank but a facilities offer by the banks also plays an important role for the success of the banks.
- ) An appropriate and realistic interest rate on lending can help in optimum utilization of available resources. However, interest rate on lending is not sole dominant factor for lending disbursement. Lending disbursement affect different factors like liquidity of market, capability of repayment, collateral required, character of borrower etc.
- ) The result of the survey people deposit their amount in bank for gain services and security because if they want to earn more return from their amount they invest other field of investment opportunity but political situation is going out of track therefore it has no alternative option to customer.

So the interest rate plays a significant role in economic development. Any banks willing to increase the business should always presents its interest rate structure in such a way that the impact of it should be positive of all. Currently, banks in the market are able to structure its interest accordingly which is the reason of increasing profits year after year. If the bigger banks are the leaders in the market, new and smaller banks are trend setters, they all will run smoothly and see a progressive path if they are able to continue some positive impact of interest rates and facilities.

### **5.3 Recommendations**

The main source of fund of commercial banks is collecting deposits from publics. Without enough deposits collection, bank cannot operate smoothly. So it is recommended to collect more amounts as deposits through large variety of schemes and facilities. Similarly, customization of credit card, provide facility of transfer money to their home who work/live in foreign country. The minimum amount needed to open an account should be minimized so that it will attract other smaller depositors and entrepreneurs for mobilizing their small investment.

NRB has directed to commercial banks to invest their certain percentage in deprived and priority sector. The study has found that NIBL has earned high profit because of its good performance at the same time their services are limited only to profitable sectors. It reveals that it has not granted loan on priority and deprived sector.

Portfolio management of the bank assets basically means allocation of funds in different components of banking assets having different degrees of risk and varying rate of return in such a way that the conflicting goal of maximum heat and minimum risk can be achieved. The banks should make continuous yield investment portfolio.

Loans and advances are the main sources of income and also means of utilization of resources of commercial banks. Negligence in administrating these assets could be the cause of liquidity crisis in the bank and one of the main reasons of the bank failure. Collection of loan has been most challenging task for commercial banks these days, increase on non- performing assets discloses the failure of commercial banks in the recovery of loan.

Commercial banks are suggested to charge higher rate in unproductive sectors and lower rate in productive sectors. So that scarce deposit collected from public goes to productive sector which ultimately enhances GDP and productivity of the country and provides safety to the deposits. On the contrary if deposit gets invested in unproductive sector, it does not generate any productive return and ultimately collapses rendering losses to banks and depositors as well. Productive sector implies trade, commerce, industry, hydropower, tourism and cultural sectors. Unproductive sector implies consumer loans, hire purchase loans, personal loans, pledge loans and those sectors which do not create wealth and do not add to GDP of the country.

In the light of growing competition in the banking sector the business of the bank should be customer oriented. Marketing is an effective to attract customers. Different marketing techniques like advertisement through audiovisual published websites, documentary etc. Similarly, draw attention of customers through new technologies like E-banking and Internet banking service increase investment through their wide range international banking method should be introduced.

Banks face problems in recovering loans and Advances and their larger amount of loan is blocked as non- performing assets and which sometimes reduce income. To overcome problem, special loan recovery act should be enacted to improve its profitability.

If the services of commercial banks expand all over the nation it will collect ideal money from different areas and can be utilized for income generation purpose. So the commercial banks should expand its branches all over the rural and urban areas. Commercial banks should formulate and implement a client oriented service policy while fixing deposit rates and lending rates. It helps the banks to face the cutthroat competition very boldly.

Although the belief those high interest rates tend to avoid capital flights to India, yet the actual fact is that increase in interest rate of government securities has compelled banks to raise interest rate on deposits and there by making lending to productive sectors costly. Thus, it is advisable to lower interest on government securities enjoying tax advantage so that there will be better effect on deposit and lending rates.

Future researchers are requested to undertake research work on different factors influencing interest rate like maturity period, open border with India, political instability, liquidity situation and its impact on deposit.

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## **APPENDIX**

## APPENDIX A

Calculation of Co-efficient of correlation between Average Deposit Interest Rate and Deposit of NIBL.

Year	Int. Rate(X)	Deposit(Y)	dx = (X - $\bar{X}$ )	Dx <sup>2</sup>	dy = (Y - $\bar{Y}$ )	dy <sup>2</sup>	dx dy
2007	2.71	18927	-1.352	1.828	-16004.60	256147221.16	21638.22
2008	2.71	24489	-1.352	1.828	-10442.60	109047894.76	14118.40
2009	3.84	34451	-0.222	0.049	-480.60	230976.36	106.69
2010	4.05	46697	-0.012	0.000	11765.40	138424637.16	-141.18
2011	7	50094	2.938	8.632	15162.40	229898373.76	44547.13
N = 5	20.31	174658		12.34		733749103.2	80269.25

We have,

$$N = 5$$

$$\bar{X} = \frac{20.31}{5} = 4.062$$

$$\bar{Y} = \frac{80269.25}{5} = 34931.6$$

Correlation coefficient 'r' can be calculated by using following formula

$$r = \frac{\sum dx dy}{\sqrt{\sum dx^2 \sum dy^2}} = \frac{80269.25}{\sqrt{12.34 * 733749103.2}}$$

$$= \frac{80269.25}{95143.77} = 0.8437$$

$$r^2 = 0.7118$$

$$\begin{aligned} \text{P.E.} &= 0.6745 \times \frac{1 Z r^2}{\sqrt{n}} \\ &= 0.6745 \times \frac{1 Z 0.7118}{\sqrt{5}} \end{aligned}$$

$$= .6745 \times 0.1288$$

$$= 0.0869$$

$$6\text{PE}(r) = 6 \times$$

$$= 0.5216$$

## APPENDIX B

### Calculation of Co-efficient of correlation between Average Deposit Interest Rate and Deposit of EBL.

Year	Int. Rate(X)	Deposit(Y)	dx = (X - $\bar{X}$ )	dx <sup>2</sup>	dy = (Y - $\bar{Y}$ )	dy <sup>2</sup>	Dxdy
2007	3.18	13802	-0.424	0.180	-11441.60	130910210.56	4851.24
2008	3.28	18186	-0.324	0.105	-7057.60	49809717.76	2286.66
2009	3.33	23976	-0.274	0.075	-1267.60	1606809.76	347.32
2010	3.48	33322	-0.124	0.015	8078.40	65260546.56	-1001.72
2011	4.75	36932	1.146	1.313	11688.40	136618694.56	13394.91
N = 5	18.02	126218		1.689		384205979.20	19878.41

We have,

$$N = 5$$

$$\bar{X} = \frac{18.02}{5} = 3.604$$

$$\bar{Y} = \frac{126218}{5} = 25243.6$$

Correlation coefficient 'r' can be calculated by using following formula

$$r = \frac{\sum \frac{dx \cdot dy}{\sqrt{dx^2 \cdot dy^2}}}{N} = \frac{19878.41}{\sqrt{1.689 \cdot 384205979.2}}$$

$$= \frac{19878.41}{25472.87} = 0.7803$$

$$r^2 = 0.609$$

$$P.E. = 0.6745 \times \frac{1 \cdot Z \cdot r^2}{\sqrt{n}}$$

$$= 0.6745 \times \frac{1 \cdot Z \cdot 0.609}{\sqrt{5}}$$

$$= 0.1179$$

$$6PE(r) = 6 \times 0.1179$$

$$= 0.7076$$

## APPENDIX C

### Calculation of Co-efficient of correlation between Average Deposit Interest Rate and Deposit of HBL.

Year	Int. Rate(X)	Deposit(Y)	Dx = (X - $\bar{X}$ )	dx <sup>2</sup>	dy = (Y - $\bar{Y}$ )	dy <sup>2</sup>	dxdy
2007	2.68	26490	-0.424	0.180	-5687.60	32348793.76	2411.54
2008	2.65	30048	-0.454	0.206	-2129.60	4535196.16	966.84
2009	2.64	31939	-0.464	0.215	-238.60	56929.96	110.71
2010	2.75	34746	-0.354	0.125	2568.40	6596678.56	-909.21
2011	4.8	37665	1.696	2.876	5487.40	30111558.76	9306.63
N = 5	15.52	160888		3.603		73649157.20	11886.51

We have,

$$N = 5$$

$$\bar{X} = \frac{15.52}{5} = 3.104$$

$$\bar{Y} = \frac{160888}{5} = 32177.6$$

Correlation coefficient 'r' can be calculated by using following formula

$$r = \frac{\sum dxdy}{\sqrt{\sum dx^2 \sum dy^2}} = \frac{11886.51}{\sqrt{3.6029 * 73649157.20}}$$

$$= \frac{11886.51}{14935.97} = 0.7958$$

$$r^2 = 0.6333$$

$$P.E. = 0.6745 \times \frac{1 - Zr^2}{\sqrt{n}}$$

$$= 0.6745 \times \frac{1 - Z0.6333}{\sqrt{5}}$$

$$= 0.6745 \times 0.16399$$

$$= 0.1106$$

$$6PE(r) = 6 \times 0.1106$$

$$= 0.984$$

## APPENDIX D

Calculation of Co-efficient of correlation between Average Deposit Interest Rate and Deposit of NABIL.

Year	Int. Rate(X)	Deposit(Y)	dx = (X - $\bar{X}$ )	dx <sup>2</sup>	dy = (Y - $\bar{Y}$ )	dy <sup>2</sup>	dx dy
2007	3.31	19347	-0.172	0.030	-12324.60	151895765.16	2119.83
2008	2.9	23342	-0.582	0.339	-8329.60	69382236.16	4847.83
2009	2.98	31915	-0.502	0.252	243.40	59243.56	-122.19
2010	3.17	37348	-0.312	0.097	5676.40	32221516.96	-1771.04
2011	5.05	46406	1.568	2.459	14734.40	217102543.36	23103.54
N = 5	17.41	158358		3.176		470661305.20	28177.97

We have,

$$N = 5$$

$$\bar{X} = \frac{17.41}{5} = 3.482$$

$$\bar{Y} = \frac{158358}{5} = 31671.6$$

Correlation coefficient 'r' can be calculated by using following formula

$$r = \frac{\sum dx dy}{\sqrt{\sum dx^2} \sqrt{\sum dy^2}} = \frac{28177.97}{\sqrt{3.176 * 470661305.2}}$$

$$= \frac{28177.97}{38664.61} = 0.7288$$

$$r^2 = 0.5311$$

$$P.E. = 0.6745 \times \frac{1 - Zr^2}{\sqrt{n}}$$

$$= 0.6745 \times \frac{1 - 0.5311}{\sqrt{5}}$$

$$= 0.6745 \times 0.2096$$

$$= 0.1414$$

$$6PE(r) = 6 \times 0.1414$$

$$= 0.8484$$

## APPENDIX E

### Calculation of Co-efficient of correlation between Average Lending Interest Rate and Lending of NIBL.

Year	Int. Rate(X)	Loan(Y)	dx = (X - $\bar{X}$ )	Dx <sup>2</sup>	dy= (Y - $\bar{Y}$ )	dy <sup>2</sup>	dxdy
2007	6.6	13178	-1.560	2.434	-14072.20	198026812.84	21952.63
2008	6.7	17769	-1.460	2.132	-9481.20	89893153.44	13842.55
2009	7.99	27529	-0.170	0.029	278.80	77729.44	-47.40
2010	8.31	36827	0.150	0.023	9576.80	91715098.24	1436.52
2011	11.2	40948	3.040	9.242	13697.80	187629724.84	41641.31
N = 5	40.8	136251		13.86		567342518.80	78825.62

We have,

$$N = 5$$

$$\bar{X} = \frac{40.8}{5} = 8.16$$

$$\bar{Y} = \frac{136251}{5} = 27250.2$$

Correlation coefficient 'r' can be calculated by using following formula

$$r = \frac{\sum \frac{dxdy}{dx^2 dy^2}}{\sqrt{\sum dx^2 \sum dy^2}} = \frac{78825.62}{\sqrt{13.86 * 567342518.8}}$$

$$= \frac{78825.62}{88669.87} = 0.889$$

$$r^2 = 0.7903$$

$$P.E. = 0.6745 \times \frac{1 - Zr^2}{\sqrt{n}}$$

$$= 0.6745 \times \frac{1 - 0.7903}{\sqrt{5}}$$

$$= 0.6745 \times 0.0978$$

$$= 0.06325$$

$$6PE(r) = 6 \times 0.06325$$

$$= 0.3795$$

## APPENDIX F

Calculation of Co-efficient of correlation between Average Landing Interest Rate and Lending of EBL.

Year	Int. Rate(X)	Loan(Y)	dx = (X - $\bar{X}$ )	dx <sup>2</sup>	dy = (Y - $\bar{Y}$ )	dy <sup>2</sup>	dxdy
2007	7.18	10136	-1.192	1.421	-9000.00	81000000.00	10728.00
2008	7.18	14083	-1.192	1.421	-5053.00	25532809.00	6023.18
2009	7.99	18836	-0.382	0.146	-300.00	90000.00	114.60
2010	8.31	24469	-0.062	0.004	5333.00	28440889.00	-330.65
2011	11.2	28156	2.828	7.998	9020.00	81360400.00	25508.56
N = 5	41.86	95680		10.989		216424098.00	42043.69

We have,

$$N = 5$$

$$\bar{X} = \frac{41.86}{5} = 8.372$$

$$\bar{Y} = \frac{95680}{5} = 19136$$

Correlation coefficient 'r' can be calculated by using following formula

$$r = \frac{\sum dxdy}{\sqrt{\sum dx^2 \sum dy^2}} = \frac{42043.69}{\sqrt{10.989 * 216424098}}$$

$$= \frac{42043.69}{48767.88} = 0.8621$$

$$r^2 = 0.7432$$

$$P.E. = 0.6745 \times \frac{1 - Zr^2}{\sqrt{n}}$$

$$= 0.6745 \times \frac{1 - 0.7432}{\sqrt{5}}$$

$$= 0.6745 \times 0.1148$$

$$= 0.0775$$

$$6PE(r) = 6 \times 0.0775$$

$$= 0.4648$$

## APPENDIX G

Calculation of Co-efficient of correlation between Average Landing Interest Rate and Lending of HBL.

Year	Int. Rate(X)	Loan(Y)	dx= (X - $\bar{X}$ )	dx <sup>2</sup>	dy= (Y - $\bar{Y}$ )	dy <sup>2</sup>	Dxdy
2007	6.48	15761	-0.502	0.252	-5914.20	34977761.64	2968.93
2008	6.22	17793	-0.762	0.581	-3882.20	15071476.84	2958.24
2009	6.47	20179	-0.512	0.262	-1496.20	2238614.44	766.05
2010	6.76	25519	-0.222	0.049	3843.80	14774798.44	-853.32
2011	8.98	29124	1.998	3.992	7448.80	55484621.44	14882.70
N = 5	34.91	108376		5.14		122547272.80	20722.60

We have,

$$N = 5$$

$$\bar{X} = \frac{34.91}{5} = 6.982$$

$$\bar{Y} = \frac{108376}{5} = 21675.2$$

Correlation coefficient 'r' can be calculated by using following formula

$$r = \frac{\sum dx dy}{\sqrt{\sum dx^2 \sum dy^2}} = \frac{20722.60}{\sqrt{5.14 * 122547272.8}}$$

$$= \frac{20722.60}{25088.09} = 0.8260$$

$$r^2 = 0.6823$$

$$P.E. = 0.6745 \times \frac{1 - Zr^2}{\sqrt{n}}$$

$$= 0.6745 \times \frac{1 - 0.6823}{\sqrt{5}}$$

$$= 0.6745 \times 0.6949$$

$$= 0.4687$$

$$6PE(r) = 6 \times 0.4687$$

$$= 2.8122$$

## APPENDIX H

Calculation of Co-efficient of correlation between Average Landing Interest Rate and Lending of NABIL.

Year	Int. Rate(X)	Loan(Y)	dx= (X- $\bar{X}$ )	dx <sup>2</sup>	dy= (Y- $\bar{Y}$ )	dy <sup>2</sup>	dxdy
2007	8.21	12922	0.356	0.127	-9249.00	85544001.00	-3292.64
2008	7.05	15545	-0.804	0.646	-6626.00	43903876.00	5327.30
2009	7.01	21769	-0.844	0.712	-402.00	161604.00	339.29
2010	7.7	27589	-0.154	0.024	5418.00	29354724.00	-834.37
2011	9.3	33030	1.446	2.091	10859.00	117917881.00	15702.11
N = 5	39.27	110855		3.60		276882086.00	17241.69

We have,

$$N = 5$$

$$\bar{X} = \frac{39.27}{5} = 7.854$$

$$\bar{Y} = \frac{110855}{5} = 22171$$

Correlation coefficient 'r' can be calculated by using following formula

$$r = \frac{\sum dxdy}{\sqrt{\sum dx^2 \sum dy^2}} = \frac{17241.69}{\sqrt{3.60 * 276882086}}$$

$$= \frac{17241.69}{31572.27} = 0.5461$$

$$r^2 = 0.2982$$

$$\begin{aligned} P.E. &= 0.6745 \times \frac{1 - Zr^2}{\sqrt{n}} \\ &= 0.6745 \times \frac{1 - 0.2982}{\sqrt{5}} \\ &= 0.6745 \times 0.3139 \\ &= 0.2117 \end{aligned}$$

$$\begin{aligned} 6PE(r) &= 6 \times 0.2117 \\ &= 1.2702 \end{aligned}$$

## APPENDIX I

Calculation of Co-efficient of correlation between Interest Spread Rate and Net Profit after Tax of NIBL.

Year	Int. Spread(X)	NPAT (Y)	dx= (X- $\bar{X}$ )	dx <sup>2</sup>	dy= (Y- $\bar{Y}$ )	dy <sup>2</sup>	dxdy
2007	3.9	350	-0.200	0.040	-395.60	156499.36	79.12
2008	3.99	501	-0.110	0.012	-244.60	59829.16	26.91
2009	4.15	698	0.050	0.003	-47.60	2265.76	-2.38
2010	4.26	914	0.160	0.026	168.40	28358.56	26.94
2011	4.2	1265	0.100	0.010	519.40	269776.36	51.94
N = 5	20.5	3728		0.0902		516729.20	182.53

We have,

$$N = 5$$

$$\bar{X} = \frac{20.5}{5} = 4.1$$

$$\bar{Y} = \frac{3728}{5} = 745$$

Correlation coefficient 'r' can be calculated by using following formula

$$r = \frac{\sum dxdy}{\sqrt{\sum dx^2} \sqrt{\sum dy^2}} = \frac{182.53}{\sqrt{0.0902 * 516729.2}}$$

$$= \frac{182.53}{215.89} = 0.8455$$

$$r^2 = 0.7148$$

$$\begin{aligned} P.E. &= 0.6745 \times \frac{1}{\sqrt{n}} \\ &= 0.6745 \times \frac{1}{\sqrt{5}} \\ &= 0.6745 \times 0.4472 \\ &= 0.3016 \end{aligned}$$

$$\begin{aligned} 6PE(r) &= 6 \times 0.0861 \\ &= 0.516 \end{aligned}$$

## APPENDIX J

Calculation of Co-efficient of correlation between Interest Spread Rate and Net Profit after Tax of EBL.

Year	Int. Spread(X)	NPAT (Y)	Dx= (X- $\bar{X}$ )	dx <sup>2</sup>	dy= (Y- $\bar{Y}$ )	dy <sup>2</sup>	dx dy
2007	4	137	-0.152	0.023	-330.60	109296.36	50.25
2008	3.9	296	-0.252	0.064	-171.60	29446.56	43.24
2009	3.56	450	-0.592	0.350	-17.60	309.76	10.42
2010	4.52	624	0.368	0.135	156.40	24460.96	57.56
2011	4.78	831	0.628	0.394	363.40	132059.56	228.22
N = 5	20.76	2338	0	0.96688	0.00	295573.20	389.68

We have,

$$N = 5$$

$$\bar{X} = \frac{20.76}{5} = 4.152$$

$$\bar{Y} = \frac{2338}{5} = 467.6$$

Correlation coefficient 'r' can be calculated by using following formula

$$r = \frac{\sum dx dy}{\sqrt{\sum dx^2} \sqrt{\sum dy^2}} = \frac{389.68}{\sqrt{0.96688} \sqrt{295573.20}}$$

$$= \frac{389.68}{534.59} = 0.7289$$

$$r^2 = 0.5313$$

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

$$= 0.6745 \times \frac{1 - 0.5313}{\sqrt{5}}$$

$$= 0.6745 \times 0.2096$$

$$= 0.1414$$

$$6PE(r) = 6 \times 0.1414$$

$$= 0.848$$

## APPENDIX K

### Calculation of Co-efficient of correlation between Interest Spread Rate and Net Profit

#### After Tax of HBL.

Year	Int. Spread(X)	NPAT	dx= (X- $\bar{X}$ )	dx <sup>2</sup>	dy= (Y- $\bar{Y}$ )	dy <sup>2</sup>	Dxdy
2007	3.8	457	-0.078	0.006	-116.20	13502.44	9.06
2008	3.57	491	-0.308	0.095	-82.20	6756.84	25.32
2009	3.83	654	-0.048	0.002	80.80	6528.64	-3.88
2010	4.01	742	0.132	0.017	168.80	28493.44	22.28
2011	4.18	522	0.302	0.091	-51.20	2621.44	-15.46
N = 5	19.39	2866		0.212		57902.80	<b>37.32</b>

We have,

$$N = 5$$

$$\bar{X} = \frac{19.39}{5} = 3.878$$

$$\bar{Y} = \frac{2866}{5} = 573.2$$

Correlation coefficient 'r' can be calculated by using following formula

$$r = \frac{\sum dx dy}{\sqrt{\sum dx^2} \sqrt{\sum dy^2}} = \frac{37.32}{\sqrt{0.212 * 57902.80}}$$

$$= \frac{37.2}{110.79} = 0.3358$$

$$r^2 = 0.1125$$

$$P.E. = 0.6745 \times \frac{1 - Zr^2}{\sqrt{n}}$$

$$= 0.6745 \times \frac{1 - 0.1125}{\sqrt{5}}$$

$$= 0.6745 \times 0.3964$$

$$= 0.2674$$

$$6PE(r) = 6 \times 0.2674$$

$$= 1.6044$$

## APPENDIX L

### Calculation of Co-efficient of correlation between Interest Spread Rate and Net Profit

#### After Tax of NABIL.

Year	Int. Spread(X)	NPAT	dx= (X- $\bar{X}$ )	Dx <sup>2</sup>	dy= (Y- $\bar{Y}$ )	dy <sup>2</sup>	dxdy
2007	4.9	635	0.526	0.277	-192.00	36864.00	-100.99
2008	4.15	573	-0.224	0.050	-254.00	64516.00	56.90
2009	4.03	750	-0.344	0.118	-77.00	5929.00	26.49
2010	4.54	1031	0.166	0.028	204.00	41616.00	33.86
2011	4.25	1146	-0.124	0.015	319.00	101761.00	-39.56
N = 5	21.87	4135		0.489		250686.00	-23.30

We have,

$$N = 5$$

$$\bar{X} = \frac{21.87}{5} = 4.374 \quad 0$$

$$\bar{Y} = \frac{4135}{5} = 827$$

Correlation coefficient 'r' can be calculated by using following formula

$$r = \frac{\sum dxdy}{\sqrt{\sum dx^2} \sqrt{\sum dy^2}} = \frac{-23.30}{\sqrt{0.489} \sqrt{250686}}$$

$$= \frac{-23.30}{350.12} = -0.06626$$

$$r^2 = 0.0043$$

$$P.E. = 0.6745 \times \frac{1}{\sqrt{n}}$$

$$= 0.6745 \times \frac{1}{\sqrt{5}}$$

$$= 0.6745 \times 0.4452$$

$$= 0.3003$$

$$6PE(r) = 6 \times 0.3003$$

$$= 1.8018$$

## APPENDIX M

### Calculation of Regression Analysis of Total Deposit of sample banks (Y) on Deposit

#### Interest Rate(X)

Year	X	Y	XY	X <sup>2</sup>	(X - $\bar{X}$ ) <sup>2</sup>	(Y - $\bar{Y}$ ) <sup>2</sup>
2007	2.97	78566.00	233341.02	8.82	0.35	2066466130.56
2008	2.89	96065.00	277147.53	8.32	0.46	781728048.36
2009	3.20	122281.00	390993.50	10.22	0.13	3039443.56
2010	3.36	152113.00	511479.96	11.31	0.04	788969449.96
2011	5.40	171097.00	923923.80	29.16	3.37	2215829670.76
N =5	17.82	620122.00	2336885.81	67.83	4.36	5856032743.20

Let the regression equation of Y on X be,

$$Y = a + bx \dots\dots\dots(i)$$

To find out the value of a and b we have the following two normal equations

$$Y = na + b \sum X \dots\dots(ii)$$

$$\sum XY = a \sum X + b \sum X^2 \dots\dots(iii)$$

Substituting the value of n,  $\sum Y$ ,  $\sum X$ ,  $\sum XY$ ,  $\sum X^2$  in (i) and (ii), we get

$$620122.00 = 5a + 17.82b \dots\dots(iv)$$

$$2336885.81 = 17.82a + 67.83b \dots\dots(v)$$

Now, multiplying (iv) by 3.564 and then subtracting from (v), we get

$$2336885.81 = 17.82a + 67.83b$$

$$2210114.808 = 17.82a + 63.51048b$$

$$\begin{array}{r} - \quad - \quad - \\ \hline \end{array}$$

$$126771.002 = 4.31952b$$

$$\text{Or, } b = 29348.40029$$

Putting the value of b in (iv), we get

$$620122.00 = 5a + 17.82 * 29348.40029$$

$$\text{Or, } 5a = 620122.00 - 522988.4931$$

$$\text{Or, } 5a = 97133.50692$$

$$\text{Or, } a = 19426.70138$$

Now substituting the value of a and b in equation (i), we get required estimated regression equation of Y on X is,  $Y = 19426.70138 + 29348.40029X$ .

## APPENDIX N

### Test of significance of the regression coefficient

#### Setting of hypothesis

**Null Hypothesis  $H_0$ :**  $b = 0$  i.e. value of regression coefficient is insignificant  
(Deposit interest rate does not play a significant role in deposit collection)

**Alternative Hypothesis  $H_1$ :**  $b \neq 0$  i.e. value of regression coefficient is significant

(Deposit interest rate plays a significant role in deposit collection)

Since the no. of observation is less than 30, we use t – test to know the significance of the regression coefficient.

Formula of t-test is given by

$$T = \frac{b}{SE}$$

The standard deviation of the Deposit Rate

$$s_x = \sqrt{\frac{\sum (X - \bar{X})^2}{n}}$$
$$= \sqrt{\frac{4.36}{5}} = 0.9338$$

The standard deviation of the Total Deposit

$$s_y = \sqrt{\frac{\sum (Y - \bar{Y})^2}{n}}$$
$$= \sqrt{\frac{5856032743.20}{5}} = 34222.89$$

The correlation (r) between deposit interest rate (X) and total deposit collection of sample banks (Y) can be calculated by following formula.

Year	X	Y	dx= (X- $\bar{X}$ )	dx <sup>2</sup>	dy= (Y- $\bar{Y}$ )	dy <sup>2</sup>	dx dy
2007	2.97	78566.00	-0.594	0.35	-45458.4	2066466131	27002.29
2008	2.89	96065.00	-0.674	0.45	-27959.4	781728048	18844.64
2009	3.20	122281.00	-0.364	0.13	-1743.4	3039443.56	634.60
2010	3.36	152113.00	-0.204	0.04	28088.6	788969450	-5730.07
2011	5.40	171097.00	1.836	3.37	47072.6	2215829671	86425.29
N = 5	17.82	620122.00	0	4.35	0	5856032743	127176.74

We know,

$$r = \frac{\sum dx dy}{\sqrt{\sum dx^2 \sum dy^2}} = \frac{127176.74}{\sqrt{4.35 * 5856032743}}$$

$$= \frac{127176.4}{159604.96} = 0.797$$

$$r^2 = 0.635$$

$$\begin{aligned} \text{Standard Error (SE)} &= \frac{t_y}{t_x} \times \frac{\sqrt{1 - r^2}}{\sqrt{n}} \\ &= \frac{34222.89}{0.9338} * \frac{\sqrt{1 - 0.635}}{\sqrt{5}} \\ &= 36649.06 \times 0.2702 \\ &= 9902.58 \end{aligned}$$

Value of t when b = 29348.40029 and SE = 9902.58

$$t = \frac{29348.40029}{9902.58} = 2.963$$

$$t = 2.963$$

Degree of freedom (d.f) = n - 2 = 5 - 2 = 3

Critical Value: - the tabulated value of t at 5% level of significance for 3 d.f is 2.353.

## APPENDIX O

Calculation of Regression Analysis of Total Lending of sample banks (Y) on Lending Interest Rate(X)

YEAR	X	Y	XY	X <sup>2</sup>	(X - $\bar{X}$ ) <sup>2</sup>	(Y - $\bar{Y}$ ) <sup>2</sup>
2007	7.12	51997.00	370088.65	50.66	0.52	1461945813.16
2008	6.79	65190.00	442477.13	46.07	1.11	627121797.76
2009	7.37	88313.00	650425.25	54.24	0.23	3684096.36
2010	7.77	114404.00	888919.08	60.37	0.01	584266246.56
2011	10.17	131258.00	1334893.86	103.43	5.42	1683099855.36
N =5	39.22	451162.00	3686803.96	314.77	7.29	4360117809.20

Let the regression equation of Y on X be,

$$Y = a + bx \dots\dots\dots (i)$$

To find out the value of a and b we have the following two normal equations

$$Y = na + b X \dots\dots\dots(ii)$$

$$XY = a \sum X + b \sum X^2 \dots\dots\dots(iii)$$

Substituting the value of n,  $\sum Y$ ,  $\sum X$ ,  $\sum XY$ ,  $\sum X^2$  in (i) and (ii), we get

$$451162.00 = 5a + 39.21b \dots\dots\dots(iv)$$

$$3686803.96 = 39.21a + 314.77b \dots\dots\dots(v)$$

Now, multiplying (iv) by 7.842 and then subtracting from (v), we get

$$3686803.96 = 39.21a + 314.77b$$

$$3538012.404 = 39.21a + 307.48482b$$

$$\begin{array}{r} - \qquad \qquad - \qquad \qquad - \\ \hline \end{array}$$

$$148791.556 = 7.28518b$$

Or,  $b = 20423.86818$

Putting the value of b in (iv), we get

$$451162.00 = 5a + 39.21 \times 20423.86818$$

Or,  $451162.00 = 5a + 800819.8714$

$$\text{Or, } a = \frac{451162 - 800819.8714}{5}$$

Or,  $a = -69931.57428$

Now substituting the value of a and b in equation (i), we get required estimated regression equation of Y on X is,

$$Y = -69931.57428 + 20423.86818X$$

## APPENDIX P

### Test of significance of the regression coefficient

#### Setting of hypothesis

**Null Hypothesis  $H_0$ :**  $b = 0$  i.e. value of regression coefficient is insignificant  
(Lending interest rate does not play a significant role in Loan disbursements.)

**Alternative Hypothesis  $H_1$ :**  $b \neq 0$  i.e. value of regression coefficient is significant  
(Lending interest rate plays a significant role in Loan disbursements.)

Since the no. of observation is less than 30, we use t – test to know the significance of the regression coefficient.

Formula of t-test is given by

$$T = \frac{b}{SE}$$

The standard deviation of the Lending Rate

$$\begin{aligned} & \sqrt{\frac{\sum (X - \bar{X})^2}{n}} \\ & \sqrt{\frac{7.29}{5}} \\ & = 1.458 \end{aligned}$$

The standard deviation of the Total Lending

$$\begin{aligned} & \sqrt{\frac{\sum (Y - \bar{Y})^2}{n}} \\ & \sqrt{\frac{4360117809.20}{5}} \\ & = 872023561.84 \end{aligned}$$

The correlation (r) between lending interest rate (X) and total lending of sample banks (Y) can be calculated by following formula.

Year	X	Y	Dx= (X- $\bar{X}$ )	Dx <sup>2</sup>	Dy= (Y- $\bar{Y}$ )	dy <sup>2</sup>	dxdy
2007	7.12	51997	-0.724	0.52	-38235.4	1461945813	27682.43
2008	6.79	65190	-1.054	1.11	-25042.4	627121798	26394.69
2009	7.37	88313	-0.474	0.22	-1919.4	3684096.36	909.80
2010	7.77	114404	-0.074	0.01	24171.6	584266247	-1788.70
2011	10.17	131258	2.326	5.41	41025.6	1683099855	95425.55
N = 5	39.22	451162	0	7.28	0	4360117809	148623.76

We know,

$$r = \frac{\sum dxdy}{\sqrt{\sum dx^2 \sum dy^2}} = \frac{148623.76}{\sqrt{7.28 * 4360117809}}$$

$$= \frac{148623.76}{178161.89} = 0.834$$

$$r^2 = 0.696$$

$$\text{Standard Error (SE)} = \text{Standard Error (SE)} = \frac{t_y}{t_x} \times \frac{\sqrt{1 - r^2}}{\sqrt{n}}$$

$$= \frac{872023561.84}{1.458} * \frac{\sqrt{1 - 0.696}}{\sqrt{5}}$$

$$= 598095721.426 \times 0.2466$$

$$= 147490404.9$$

Value of t when b = 20423.86818 and SE = 147490404.9

$$t = \frac{20423.86818}{147490404.9} = 0.00138$$

$$t = 0.00138$$

**Degree of freedom (d.f)** = n - 2 = 5 - 2 = 3

**Critical Value:** - the tabulated value of t at 5% level of significance for 3 d.f is 2.353

## APPENDIX Q

### Survey questionnaire form

#### Questionnaire Form

Dear respondents,

I have been conducting a research work on the subject “Impact of Interest Rates on Deposit Mobilization of Commercial Banks of Nepal”. While in a process to compare commercial banks based on impact of interest rates, please answers to following questions will be used as primary data. Therefore, every single opinion, ideas in this context will be valuable material and genuine help towards building a concrete research work.

I humbly request you to answer at best of your knowledge. Your co-operation in this regard will be of immense value.

It’s really a privilege incorporating your comments and constructive ideas as a part of my research work.

Thanking you,

Yours truly,

**Yubraj Belbase**

M.B.S. Thesis Student

Nepal Commerce Campus

Tribhuvan University

**Name:** \_\_\_\_\_(Optional)

**Address:** \_\_\_\_\_

**Profession:** \_\_\_\_\_

**(Instruction: Please tick ( ) in appropriate alternative and give your valuable opinion in the open-ended question)**

**1. What do you prefer higher interest rate or different services provided by commercial banks?**

- a. Higher interest rate                       b. Service  
 c. Combination of both

**2. Are you happy with interest rates offered by commercial banks?**

- a. Yes     b. No  
 c. Happy with new banks    d. Least bothered  
offering higher interest rates

**3. What would you do if interest rate offered by bank changes quite often?**

- a. Close the account                       b. Don't mind if it is increased  
 c. Watch interest rate of other    d. Least bothered  
banks and act accordingly

**4. Who should determine the interest rate?**

- a. Market forces                               b. Bank itself  
 c. Nepal Rastra Bank                       d. Negotiation with customer

**5. Why people deposit their money in financial institutions?**

- a. To earn interest                               b. For security  
 c. To withdraw money when    d. Other purpose  
needed

**6. Is there any relationship between lending interest rate and lending disbursement?**

- a. There is positive relationship between lending interest rate and lending disbursement
- b. There is inverse relationship between lending interest rate and lending disbursement
- c. No, lending disbursement is affected by other factors.

**7. Do you think commercial banks are enjoying huge interest spread?**

- a. Yes  b. No, spread genuine
- c. Only top bank afford to stretch interest spread  d. Don't know

**8. Interest rate is main factor for deposit collection?**

**In your opinion, what impact can interest rate have on the mobilization of the deposit of commercial banks?**

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**Thank You!**