

# CHAPTER I

## INTRODUCTION

### 1.1 Background of the Study

The interest rate is the price charged to borrower for the loan of money. In very general term, interest rate is the price paid for credit. So, it is computed dividing the cost of borrowed fund in rupees by the amount of money actually used by the borrower. An interest rate is the cost of borrowing money. Without it, people would not be willing to lend or even save their cash, both of which require a deferment of the opportunity to give up spending in the present. But prevailing interest rates are always changing and different types of loans will offer various interest rates. The interest rate is expressed in an annual percentage basis. As the interest rate provides the price signal in the financial system, thus it is important to all the participants: the borrowers, the lenders, savers, and investors for example, higher interest rate encourages savings in greater volume and increases the lending activities of funds. Lower interest rate, in other hand, discourages the savings and reduces the lending activities as well. Interest is the price that one pays for utilising a certain amount of money for a specific period of time. Interest can thus be considered a cost for one entity and income for another. Interest is the opportunity cost of keeping your money as cash under your mattress as opposed to lending. If you borrow money, then the interest you have to pay is less than the cost of forgoing the opportunity to have the money in the present. It is the rent paid for using money provided by a lender. Essentially, there are three components in the interest rates – risk free rate, risk premium and adjustment for inflationary or deflationary situations.

Risk-free rate is paid as compensation for deferred consumption by the borrower to the lender. As a borrower derives satisfaction well in advance by bringing forward his consumption, he is required to pay some price, which can be considered as risk-free part of the interest rates.

Risk-premium depends on the credit worthiness of the borrower. Higher the perceived risk on part of the lender, more risk premium is added to the risk-free rates and vice-versa. An interest rate also has adjustments for inflationary or deflationary economic situations. When value of money is going to fall in inflationary economy, equivalent amount of premium is added to the interest rates, whereas in deflationary economies, interest rates are discounted to factor increase in the value of the money.

Weston & Brigham (2004), in their book “*Fundamentals of Financial Management*” have identified four fundamental factors affecting the cost of money which are (a) Production opportunities (b) Time preference for consumption (c) risk & (d) inflation. They have added risk and inflation to as fundamental factors of determining interest rate. Risk is the borrower’s ability to repay the loan. In financial market context, risk is the chance that financial assets will not earn the return promised. On the other hand, inflation is the tendency of prices to increase over time.

Thus we see that interest rate paid to savers depends in the following ways.

On the rate of return, producer expects to earn on invested capital

- ) On Saver’s time preference for current versus future consumption
- ) On the risk of the loan and
- ) On the expected rate of inflation

Deposit collection and mobilization is one of the major sources of capital formation. Deposit mobilization is primary and crucial function of any commercial bank. Bank provides facility of saving to general public and provides funds to investors, which help in mobilization of public fund in fruitful purposes, which helps in country’s economic development. The collection of deposit and its mobilisation are the two sides of the same coin, in the absence of one, another cannot work i.e. without the collection of deposit, mobilisation of deposits would be quite impossible and vice versa. They both get along with another under favourable condition, interest rate being the most. Interest is the main factor in fund activities of commercial banks. Interest rate affects on the collection of deposits mobilisation of saving position.

In 1986, financial institutions got freedom in fixing their interest rates in their deposits and loans. In addition, there was also limitation on the interest rate amounts on the different loans provided for productive and priority and full deprived sector. However, there were limitations on certain sectors of lending such as the rate of maximum of 15 percent on the priority sector loan. And for other kinds of loans, financial institutions were given freedom to maintain the interest rate structure. In this way the government has provided freedom as well as limitations on the determination of interest rate.

### **History of Banking Development in Nepal**

In ancient Nepal, historical record shows that Gunna Kama Dev, the king of Kathmandu, borrowed money to rebuild his Kingdom in 723 A.D. some 57 years thereafter, a merchant Shankhadar introduced Nepal Sambat by clearing all the indebtedness of the people in 880 A.D(Nepal Bank Patrika, 2037B.S). After Jayasthiti Malla, the people engaged in money lending business, were called Tanka Dhari. Money lending business became quite popular in Nepal. Thus the role of Tanka Dhari was similar to that of banking agent. Still in the practice of Tanka Dhari was not free from Problem. There were mal practices and frauds associated. Consequently, with the growing consciousness and awareness of this, Ranoddip Sing, a Rana Prime Minister got interested in the problem and took concrete step by establishing a government financial institution known as Tejarath Adda at 1880 A.D. This Tejarath Adda helped the public and government staff by supplying easy and cheap credit at 5% interest on the security of gold and silver ornaments outside the Kathmandu also (*Ojha & Rajabahak, 1965*).

So the role of Tejarath cannot be ignored on enlistment of Nepalese economy and it should be taken as beginning of the banking sector in the banking development. Although, services provided by the Tejarath were extended in other parts of the country, its benefit was not available to the society as a whole. So the monopoly of local moneylenders was still on practices in the rural areas. To eliminate this drawback and monopoly, in 1937 A.D. The Tejarath was replaced by commercial bank called Nepal Bank Limited (NBL) which marked the beginning of new era in history modern banking in Nepal (*Rising Nepal, 1977:4*). Nepal has not experienced long banking system in the

world. So the history of banking development in Nepal very short compared to the banking development of world. Nepal Bank Act 30 karkit, 1994 B.S (1937A.D) allows the commercial bank (CB) to extend loans and advances for a period not more than six months.

Thus the establishment of NBL solved the prevailing financial inconveniences of the people. As a result the numerous activities were increased especially in the field of trade and commerce. Till the establishment of Nepal Rastra Bank (NRB) the major functions of NBL was the function as a central bank also. So it was serving two purposes that are of central and of commercial banks.

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 has been functioning as the government bank and has contributed to the growth of financial sector. Though Nepal Rastra Bank, at present, adopted a deregulatory approach, it requires continuous modification in the view of fast changing world. Integrated and speedy development of the country is possible only when competitive banking services reaches nooks and corners of the country. In order to fulfill this objectives, government set up Rastriya Banijya Bank in 2022 B.S (23 jan, 1966) as a fully government owned commercial bank (*Dahal & Dahal, 2002:11*).

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 is the traditional one to consume more cost and yield less. To get rid of this problem, scientific agriculture is imperative, which requires adequate finance and specialist of the field. To meet these ends, 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 Security Exchange Center to enhance capital market activities. From 2024B.S. onwards, the Government of Nepal established five Rural development banks namely: Eastern, Central, Western, Mid-Western, Far-western Rural Development Bank Respectively.

In order to operate all commercial banks incorporated in Nepal, uniformity of laws of banking acts are essential. So a Commercial Bank act 2031 B.S. was enacted and has been amended many times in accordance with the needs. With the promulgation of the act, Nepal witnessed growth in the number of banks from private sector and the number continues to grow even today. Now the act has 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 classifies commercial banks as category 'A' financial institution, development bank as 'B', finance companies as 'C' and micro-finance as 'D' respectively. The list of commercial banks established till march 2011.

During the last two and half decades the number of financial institutions has grown significantly. At the beginning of the 1980s there were only two commercial bank and development banks in the country. Induction of economic liberalization policy, particularly the financial sector liberalization provided impetus in the establishment of new bank and non bank financial institutions. Consequently, by the end of Mid- March 2011 there are 31 "A" class commercial banks,<sup>78</sup> "B" class Development banks,<sup>79</sup> "C" class finance companies, 18 "D" class micro-credit development banks, 16 saving and credit co-operatives, and 45 NGOS ([nrb.org.np](http://nrb.org.np)).

Banking sector has 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 is 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 can earn higher returns from their saving and borrowers can 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 can be interpreted as an indicator of the efficiency of the banking system.

Banks as an intermediary can influence savers to save and then deposit their money in bank by providing them attractive interest rate. Interest rate is 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 have acquired more deposits, they can lend the funds to the needy businessmen, entrepreneurs and earn interest-based income by charging certain percentage of interest on loan so that money can be used in the productive sector. The rate of interest is the price a borrower must pay to secure loanable fund from a lender for an agreed upon the time period.

### **Profile of the Sample Commercial Banks:**

#### **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. NABIL Bank Limited is the pioneer in introducing much innovative banking service in banking sector of Nepal with 43 branches and counters in all major cities. It is the only bank having its presence at Tribhuvan International Airport, only international airport of this country. Also the number of outlasts in the country is the highest among the joint venture and private banks operating in Nepal. Success of NABIL is 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 has 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 is divided in 5 parts. NB International Ltd. Has taken 50%, Nepalese Public has

taken 30%, Nepal Industrial Development Corporation has taken 6.15%, Rastriya Beema Samsthan has taken 9.67% and the remaining 0.33% of share is taken by Nepal stock Exchange.

### **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 has been providing top management services and banking expertise to Everest Bank Ltd. PNB has helped the bank in laying down sound system and procedures. EBL has been steadily growing in its size and operations ever since its inception and today it has established itself as leading private sector bank of the nation, reckoned as one of the fastest growing commercial bank of the country. It has a main policy to grant a loan at possible rate and through easy procedures, beside many other commercial activities. Bank paid up capital has increased to 1030.47 million (Ordinary shares 830.5 million, 9% Cumulative Non-Redeemable Preference shares on 140 million and 7% Cumulative Convertible Preference Shares on 200 million) against the Authorized Capital of 1250 million (Ordinary shares 1050 million, 9% Cumulative Non-Redeemable Preference shares on 150 million and 7% Cumulative Convertible Preference Shares on 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. The bank is currently operating with 38 branches in total.

### **Bank of Kathmandu (BOK)**

BOK was established in 1993 in collaboration with the Siam Commercial Bank, Thailand under the Company Act and the major objective is to operate commercial banking activities throughout the country with the approval of NRB. The SIAM Commercial Bank diluted its holding to the Nepalese citizens in 1998. Its ownership capital structure is General Public 91.68%, Organized Institution and Nepalese promoters hold 8.32%.

Since its major shares are owned by general public, it is regarded as the Bank of Nepalese promoters.

BOK has become a prominent name in the Nepalese banking sector. This bank has today become a landmark in the Nepalese banking sector by being among the few commercial banks, which is entirely managed by Nepalese professionals and owned by the general public. BOK started its operation in March 1995 with the objective to stimulate the Nepalese economy and take it to newer heights. BOK also aims to facilitate the nation's economy and to become more competitive globally. To achieve these, BOK has been focusing on its set objective right from the beginning.

To highlight its few objectives:

- ) To contribute to the sustainable development of the nation by mobilizing domestic saving and channelizing them to productive areas.
- ) To use the latest banking technology to provide better, reliable and efficient service at a reasonable cost.
- ) To facilitate trade by making financial transaction easier, faster and more reliable through relationship with foreign banks and money transfer agencies.
- ) To contribute to the overall social development of Nepal

With the aim of providing banking services at the customer's fingertips, BOK has started Internet Banking and Alert Service. In Internet Banking, BOK provides Customer e-banking (Core, Retail and Bill payment) as well as corporate e-banking facilities (Trading financing and web based Cash Management). This bank has 39 branches and its head office is located at Kamalpokhari, Kathmandu.

## **1.2 Statement of the Problem**

Banking sector has always been the promising sector giving high return and value to its promoters and shareholders; their down looking financial scenarios has created very less investment alternatives and comparatively lower return. Our country showed several banks within short period of time fighting for small amount of market share, which requires excessive force making high operational cost. Interest rates as a major tool to



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

The change in interest rates certainly has deep impact on the activities of the commercial banks. This study basically deals with such impacts of interest rate on the deposit mobilization. The main attempt of this study has been tried to answer the following questions.

1. What is the impact of interest rate on liquidity position of commercial banks?
2. What are the various methods that commercial banks in Nepal use to calculate the interest rate they charge to borrowers?
3. What are the other major qualitative factors that shape the interest rate in commercial banking sectors?

### **1.3 Objectives of the Study**

The main objective of this study is to identify the structure of the interest rate of commercial banks and its impact on deposit and lending. And in order to achieve primary objective, the sub objectives are highlighted as below:-

- ) To study the interest rate structure on deposits and lending of Nepalese commercial banks

- ) To study and analyze the relationship of interest rate on the volume of deposits of commercial banks
- ) To study and analyze the relationship of interest rate structure on the volume of lending of commercial banks
- ) To provide suggestions on the basis of findings of the study.

#### **1.4 Significance of the Study**

This study will try to help analyze the interest rate structure of commercial banks in Nepal and try to develop some ideas to know whether it influences deposits and lending. This being an important aspect for the economic development of the country has not much been emphasized that means very few number of research work has been found in this topic. Hence, it is hoped that the finding of the study to some extent will help the policy makers to make strong policy regarding interest rate charged on deposits and lending in Nepalese context. Similarly, it can be fruitful resource for teachers, students, researchers and academicians in abstracting some useful information about interest rate, deposits and lending.

#### **1.5 Limitations of the Study**

Every research has more or less limitation. Lack of experiences, time financial resources and up to date information are the main limitation of the study. For the completion of this study, some facts are to be considered as the limitation which are presented as below:

1. This study is based on secondary data. Accuracy depends upon the data collection and provided by the banks.
2. This study covers only 5 fiscal years.
3. As the samples have been drawn at random for convenience there may exist some sampling errors and the sample size may not be sufficient to generalize the finding.
4. The samples are taken only from commercial banks, other financial intermediaries are not included in the study.
5. The deposit amount and lending amount of the commercial banks are influenced by several factors. However, this study mainly focuses on the interest rate.

## **1.6 Organization of the Study**

The thesis has been categorized into five chapters as:

### **Chapter I: Introduction**

The first chapter consists on introduction of the study, background of the study, History of Banking development in Nepal, statement of the problems, significance of the study, objectives of the study, Research hypothesis and limitation of the study.

### **Chapter II: Review of Literature**

This chapter includes review of the literature, which was obtained during the review of books, articles, journals, reports and other relevant materials.

### **Chapter III: Research Methodology**

This chapter deals on research design, population and sample size, source of data, data collection and processing techniques and analysis of tools.

### **Chapter IV: Data Presentation and Analysis**

This chapter attempts to analyze and evaluated data with the help of analytical tools and interpret all the result into the unit of empirical findings and results.

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

This chapter covers on the results and findings and recommend some suggestions

## CHAPTER II

### REVIEW OF LITERATURE

Review of literature is an essential part of research studies. It is a way to discover what other research in the area of our problem has uncovered. A critical review of the literature helps the researcher to develop through understanding and insight into previous research works that relates to the present study. The purpose of reviewing the literature is to develop some expertises in one's area loose what new contribution can be made and to receive some ideas for developing a research deign. In other words, there has to be continuity in research. This continuity in research is ensured by liking the present study with the past research studies. From above it is clear that the purpose of literature review is to be finding out. What research has been conducted is one's chosen find of study and what remarks to be done. The review of literature provides basic foundations to this study. The various concepts employed in the study are, in fact, derived from the different literature surveyed in this part. The review of these literatures has been described in three parts. This first part presents discussion on conceptual frameworks while the other two parts deal with review of literature in the international context, and review of Nepalese studies.

#### 2.1 Conceptual Framework

Different authors have defined interest and deposit in different ways. A review of these definitions is important in order to have a better insight into this subject matter. This part, therefore deals with the concept of interest and deposit, the evolution of these concepts and their different components.

##### 2.1.1 Interest Rate Theories

Shrestha, 2065 in his book "*Financial Institutions & Markets*" has mentioned the following theories about interest rate.

### **a. Classical Theory of Interest Rate**

The classical theory of interest rate is one of the oldest theories to determine the pure or risk-free rate of interest, developed during the eighteenth and nineteenth centuries by British economists and elaborated later by Irving Fisher and others. According to this theory, the interest rate is determined by the interplay of two forces: demand from investment coming from business sectors and supply of saving derived specifically from households. The supply of savings is positively related to the market rate of interest, while the demand for investment is negatively related to the level of interest rates. This theory is a long-term explanation of interest rates because it focuses on the public's thrift and the productivity of capital that need to change slowly.

### **b. The Liquidity Preference Theory**

The Liquidity preference theory was developed by J. M. Keynes in 1936. This theory basically considers the two factors which are more relevant to set the interest rates: policy makers and near-term changes factors. This theory assumes that the equilibrium interest rate is formed in the money market at the point where the quantity of money in supply matches the total demand for money. The total demand for money consists of money demands for transaction, precautionary and speculation motives. Whereas the total supply of money is influenced by the action of government, the central bank.

### **c. The Loanable Fund Theory of Interest Rate**

The loanable fund theory of interest rate assumes that the risk-free rate of interest is determined by the demand for and supply of credit. This theory is based on the assumption of considering the elements of both classical and liquidity preference theories.

### **d. The Rational Expectation Theory**

The rational expectation theory of interest focuses upon the total expected supply of credit relative to the expected demand for credit, which determines the rate of interest. This view of interest rates and asset prices assumes that the money and capital markets are highly

efficient in the use of information in determining the public's expectations regarding future changes in interest rates and asset prices. This expectation theory assumes that business and individuals are rational agents who form expectations about the distribution of future asset prices and interest rates that do not differ significantly from optimal forecasts made from using all the available information that the marketplace provides. The rational agents attempt to make optimal use of the resources at their disposal to maximise their returns.

### **2.1.2 Interest Rates in Financial System**

The acts of saving and lending, and the borrowing and investing activities within the financial system are significantly influence by the interest rate. The interest rate is the price paid for borrowing the scarce loanable funds from a lender for an agreed upon time period. In very general term, interest rate is the price paid for credit. But unlike other prices, in the economy, the interest rate is the ratio of two quantities. So, it is computed dividing the cost of borrowed fund in rupees by the amount of money actually used by the borrower. The interest rate is expressed in an annual percentage basis.

As the interest rate provides the price signal in the financial system, thus it is important to all the participants: the borrowers, the lenders, savers, and investors for example, higher interest rate encourages savings in greater volume and increases the lending activities of funds. Lower interest rate, in the other hand, discourages the savings and reduces the lending activities as well. Higher interest rate also means that it tends to reduce the volume of borrowing and capital investing spending. This force in the financial system, actually, determines a rate that satisfy both savers/ lenders and borrower/investor called equilibrium rate of interest.

### **2.1.3 Functions of Interest Rate in the Economy**

The interest rate performs several important roles in order to function properly the money and capital market in the economy. The major functions cal lists:

- ) To generate adequate volume of savings to fund investment and thus to grow the economy.

- ) To direct the flow of credit in the economy toward those investment projects having greater expected rate of return.
- ) Brings into balance the supply of money with the public's demand for money.
- ) Acts as important tools to adopt government policy.

#### **2.1.4 Determinants of the Interest Rates**

##### **Supply and demand**

Interest rate levels are a factor of the supply and demand of credit: an increase in the demand for credit will raise interest rates, while a decrease in the demand for credit will decrease them. Conversely, an increase in the supply of credit will reduce interest rates while a decrease in the supply of credit will increase them.

The supply of credit is increased by an increase in the amount of money made available to borrowers. For example, when you open a bank account, you are actually lending money to the bank. Depending on the kind of account you open (a certificate of deposit will render a higher interest rate than a checking account, with which you have the ability to access the funds at anytime), the banks can use the money for its business and investment activities. In other words the bank can lend out that money to other customers. The more banks can lend, the more credit there is available to the economy. And as the supply of credit increases, the price of borrowing interest decreases.

Interest rate levels are a factor of the supply and demand of credit: an increase in the demand for credit available to the economy is decreased as lenders decide to defer the repayment of their loans. For instance, when you decide to postpone paying this month's credit card bill until next month or even later, you are not only increasing the amount of interest you will have to pay, but also decreasing the amount of credit available in the market. This in turn will increase the interest rates in the economy.

## **Inflation**

Inflation will also affect interest rate levels. The higher the rate of inflation, the more interest rates are likely to rise. This occurs because lenders will demand higher interest rates as compensation for the increase in the decrease in the purchasing power of the money they will be repaid in the future.

## **Government**

The government has a say in how interest rates are affected. The U.S. Federal Reserve often comes without announcements about how monetary policy will affect interest rates. The federal funds rate, or the rate that institutions charge each other for extremely short-term loans, affects the interest rate that banks set on the money they lend; the rate then eventually trickles down into other short-term lending rates. The Fed influences these rates by the use of “open market transactions”, which is basically the buying or selling of previously issued U.S. securities. When the government buys more securities, banks are injected with more money than they can use for lending, and the interest rates then decrease.

## **2.2 Concept of Deposit**

Deposit is nothing more than the assets of an individual which is given to the bank for safe keeping with an obligation to get something from it. To a bank these deposits are liabilities. Commercial bank act 2031 defines “Deposits” as the amount deposited in a current, savings or fixed accounts of a bank or financial institution. The deposits are subject to withdraw by means of cheque on a short notice by customers. 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 bank plays an important role in influencing the customer to save and open deposit accounts with it, it is ultimately the customer who decides whether s/he should deposits his/her surplus funds in current deposit a/c, saving deposits or fixed /time deposit a/c. Bank deposits arise in two ways. When the banker receives cash, it credits the customer’s account, it is known as a primary or a simple deposit.



### **2.2.1 Types of Deposit**

There are different types of deposits. But for this study, major three types of deposits are taken. They are

#### **Demand Deposit**

It is the type of deposit that can be withdrawn on demand at anytime or any amount up to full amount of deposit. Current account, money orders and traveller's cheque are examples of demand deposit. Customers having high no. of financial transactions use this type of deposit. Characteristics of demand deposits are as follows:

- ) Accountholders can do unlimited no. of transactions any time.
- ) Normally, this type of account doesn't generate or earn any interest except where it is specially permitted by the central bank.
- ) Accountholder are given facility of overdraft if it is required after agreement with the bank.
- ) Accountholders are allowed to send cheques and note for collection from different locations.
- ) If account only holds mini mum balance, the bank can charge balance as handling charge.

It is classified into two categories:

#### **A) Non-Interest Bearing Demand Deposit**

This type of demand deposit provides customer-oriented services, but interest payments are prohibited. Current accounts are created by this kind of deposit, which are also called checking accounts in the United States.

Demand deposit can be withdrawn without any pre-information, so are non-interest funds of banks. But today's bank is providing accounts with interest and nature of current accounts, so customers are attracted towards such deposits.

## **B) Interest Bearing Demand Deposit**

Demand deposit, which provides customer with payment services, safekeeping funds and record keeping for any transactions, carried out by cheques as well as interest. It is also called negotiable order of withdrawal (NOW) account. NOWs are interest bearing demand deposit that gives the bank the right to insist on prior notice before withdrawals by customers but because this notice requirement is rarely exercised. It is behaved as checking account with interest. It is also called money market demand deposit account and interest bearing thrift account.

### **Saving Deposit**

According to commercial Bank Act 2031 (1974) saving account means “An account of amounts deposited in a bank for saving purposes”. The saving deposit bears the features of both of the current and fixed period’s deposits. Saving accounts are mainly meant for non-trading customers who have some potential for saving and who don’t have numerous transactions entering their account. While opening the account the minimum compensating balance differ according to the banks rule. Similarly there is also divergence as to how much amount of money can be withdrawn. But if the customer wants to withdraw more money from the information to the banks, s/he can withdraw more money. The bank fixes the minimum and maximum amount of bank goes into liquidation, priorities given to the saving deposit than current and fixed deposit holders while repaying the liabilities.

### **Fixed Deposit**

Fixed deposits constitute a very important resource for banks as bank need not keep greater reserve in impact of such deposits. Under the commercial bank Act 2031(1974), “Fixed account means as account of amounts deposited in bank for certain period of time”. The customers opening such account deposit their money in the account for a fixed period. Usually, only the person or institution who wants to gain more deposit as compare to saving deposits. The bank and the customer can take benefit from this deposit. The bank invests this money on the productive sector and gains profit and the customer to can

be made his financial transaction stronger by getting more interest from this deposit. The principal amount with interest must be returned to the customer after expiry of fixed time.

### **Call Deposit**

It is the type of deposit between current and saving deposit. This type of deposit earns interest as well as can be withdrawn at call. The profit-oriented organization can't open saving accounts, so this call account can be good alternative. Interest rates are not published for this deposit generally. So it compromised between bank and depositor. Interest is calculated in daily balance.

### **Recurring Deposit**

Recurring deposit is developed to generate saving from public in regular basis. In this deposit, depositor has to deposit fixed amount of instalments for specific period and bank refers total amount of principal and interest at maturity.

### **Margin Deposit**

Bank issue letter of credit, Guarantee and Indemnity on behalf of customer for certain money. These are amount to be paid to the beneficiaries. This action is conditionally liability for bank. Bank demand certain money as deposit to reduce liability. This deposit is called margin deposit. It may vary under mutual understanding.

Interest is not paid under such deposit and these deposits are returned to customer, unless any claims by beneficiaries.

### **2.2.2 Importance of Deposit**

Deposit arises from saving. An individual's income equals consumption plus saving. S/he deposits the saved part of income in the bank gets interest from it. Banks in turn lend this money and earn profit by charging high interest rates. The borrowers from banks invest this fund in 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 new employment the purchasing power of the economy increases and finally GDP

and growth of the economy occurs. It means that the deposit has very important role in the economy. There is a direct relationship between deposit of banks and the investment in the economy. If the volume of deposit is low, the investment in the economy also lags behind due to lack of resources. The deposit of banks is the accumulated capital which can directly be invested. There is a greater need of such deposit in the developing countries.

### **2.2.3 Deposit Mobilization**

Collection scattered amount of capital and investing the deposited fund in productive sector to increase the income of the depositors is meant deposit mobilization. In other word, investing the collection fund in the productive sectors and increasing the income of the depositors, it also supports to increase the saving through the investment of increased extra amount. The main objective of deposit mobilization is to convert idle saving into live saving. In developing countries shortage of capital is the main problem for the developmental activities. Development is needed in the entire sector. It is not to handle and develop all the sectors by the government alone at time. People also cannot undertake large business because the per capita income of the people is very low while their propensity to consume is very high. To the low income their saving is very low and capital formation is also low. So their saving is not sufficient for carrying on development works. To achieve the higher rate of growth and per capital income, economic development should be accelerating. Economic development may be defined in a broad sense as a process of rising income per head through the accumulation capital. But how capital can be accumulating in the developing countries? In context on Nepal, commercial banks are the main financial institution which play very important role in the resource mobilization for the economic development in the country.

Therefore, banks should mobilize its deposit in suitable and profitable banking activities and right sector. Generally bank has mobilized its deposits in the following activities.

**a) Liquid Funds**

A bank has kept a volume of amount in liquid funds. The funds have so many responsibilities in banking activities liquid funds has covered following transactions.

- ) Cash in hand
- ) Balance with NRB
- ) Balance with domestic bank
- ) Call money

**b) Investment**

Bank invests its fund in different banking activities and different fields. Many types of fields are shown in market for investment. But bank invest its funds in profitable and safety activities. Bank invests its funds in the following titles:

- ) Share and debenture
- ) Government securities
- ) Joint-venture

**c) Loan and Advances**

Banks mobilize its funds or deposits by providing different types of loan and advances to customers, by charging fixed interest. Bank manages the different types of loan i.e. providing loan, business loan, and traditional loan to priority area.

**d) Fixed assets**

Land and buildings are essential for the establishment of bank. Bank's funds are used in buying of furniture, vehicle, computer, and other concerned instrument which are related to banking activities. Bank cannot take direct gain from these assets, but bank should buy it. A bank has a need of fund to purchase fixed assets for the new branches of the bank.

### e) **Administrative and Miscellaneous Expenses**

Bank should manage funds for administrative and other miscellaneous expenses. The administrative expenses are:

- ) Salary of employee
- ) Allowances
- ) Pension
- ) Advertisement
- ) Provident fund
- ) Rent
- ) Income tax
- ) Donation
- ) Insurance
- ) Stationery
- ) Commission
- ) Tour expenses

The miscellaneous expenses are

- ) To distribute the dividend to shareholders
- ) To bear the loss on sale and purchase of banking assets
- ) Maintenance expenses
- ) To pay the interest expenses on borrowed amount
- ) Reserve fund

In this way, bank mobilizes its deposits by performing different activities to achieve its desired goals i.e. earning profit. Banks are able to earn sufficient profit by mobilizing its deposits in proper way into the different profitable sector. It can utilize its collected deposits as well as funds in all banking activities by performing effective deposit mobilization procedure.

#### **2.2.4 Need for Deposit Mobilization**

The following are some reasons for why deposit mobilization is needed in developing countries like Nepal. The following points show the need for deposit mobilization.

- ) Capital is needed for the development of any sector of the country. The objective of deposit mobilization is to collect the scattered capital in different form within the country.
- ) The need of deposit mobilization is felt to control unnecessary expenditure. If there is no saving, the extra money that the people have can flow forward buying unnecessary and luxury goods. So, the government also should help to collect more deposit, sleeping legal procedures to control unnecessary expenditures.
- ) Commercial banks are playing a vital role for national development. Deposit mobilization is necessary to increase their activities. Commercial banks are granting loans not only in productive sectors, but also in other sectors like food, grains, gold and silver etc. Though these loans are traditional in nature and are not helpful to increase productivity, but it helps, to some extent, to mobilize bank deposit.

Deposit mobilization plays a vital role for the economic development of an underdeveloped and developing country rather than developed one. It is because a developed country does not feel the need of deposit mobilization for capital formation due to developed capital markets in every sector. But, in an under developed country and developing country, deposit mobilization plays an immense role in such countries. Low national income, low per capita income, lack of technical knowledge, vicious cycle of poverty, lack of irrigation and fertilizer, pressure of population increase, geographical condition etc are the main problems of developing countries like Nepal. Again, instead of the development of a particular sector, the development of every sector on one side and to accumulate the scattered and unproductive sectors deposit on the other is the felt need of an under developed country. We can take this in our country's present context.

### **2.2.5 Factors Affecting Deposit Mobilization**

There are various factors like money supply, inflation, other financial instruments and interest rate and branch expansion which affect deposit collection. These factors should be considered while making the policies regarding deposit mobilization, among all these factors, only interest rate and branch expansion has taken for the study.

#### **a) Interest Rate**

For the commercial banks, interest rate refers the amount paid on deposit. The main objective of the interest rate on deposit is to attract the scattered savings. Therefore, the proper interest rate plays vital role for collecting deposits. According to the neo classical monetary theory interest rate is a factor, which brings demand for investment and willingness to save into equilibrium with each other. Investment represents the demand for resources and saving represents the supply. While interest is the price of resources, at which two are equated. Interest is an important factor to mobilize savings. In this sense, interest is regarded as the reward for saving. Regarding the definition of interest rate, it is interesting to note some conflicting agreements of two groups. The classical idea was that interest rate was the reward for not spending i.e. it is the inducement to refrain from not spending. In opposite contrast, the Keynesian doctrine is that interest is the reward for not hoarding i.e. it is the inducement to part with liquidity.

#### **b) Branch Expansion**

To build up a financial infrastructure geographically and functionally diverse to help in the resource mobilization to meet the expanding and emerging needs of developing economy. It has been also felt that timely and adequate credit support should be made available for the sector, which hitherto be neglected, so that the system reached out to the small town and the rural and semi urban area. For this purpose, the extension of geographical spread of banking was given prime importance. It acted as an instrument of deposit mobilization and was given prime importance. It acted as an instrument of deposit mobilization on the one hand and provision of credit to the rural hinterland of the economy on the other. The larger number of people of that country saves more money.



## **2.3 Reviews from Relevant Studies**

In this part a review of past studies are conducted by other researchers which are relevant to the topic.

### **2.3.1 Review of Some additional Books**

According to Sharma and Ghosal (1965), in their book "*Economic Growth and Commercial Banking in the Development of Economy*" states that insurance of bank deposits, creation of proper atmosphere can increase deposits and the development of capital markets with the help of banks will prove effective in mobilizing the available floating resources in the country.

Keynes (1936), in his book, "*The General Theory of Employment, Interest and Money*", has mentioned the following the viewpoints about the rate of interest. According to him, community's liquidity preferences and quantity of money determine the level and rate of interest. These three things liquidity preferences, quantity of money and rate of interest are negatively correlated. At low rate of interest, the liquidity preference of community is high and it is low at high rate of interest.

According to the modern view, interest rate determination depends upon the investment, saving, liquidity preferences and supply of money. This view is a combination of previous theories. It has expressed both monetary and non-monetary factors. In this opinion, the marginal efficiency of capital to the rate of interest and investment is equal to the desired volume of saving. Thus the Total Investment = Total Saving or  $I = S$ .

Where,

$I$  = Investment and  $S$  = Savings.

Keynes in his argument said, Interest directly form from the supply and demand of money itself rather that the use of money. Liquidity is the unique characteristics of money and calls the demand of money to hold liquidity preferences. It is this, which requires the payment of interest. The marginal efficiency of capital determines the degree of liquidity preference and the rate of investment and interest there on.

The views of some economists on interest rates differ. According to these few, the interest rate is a major determinant, and also traced out the time preference in the determination of interest rate. So, the interest rate must be taken as an important factor of economic policies of developing or less developed countries.

Classical economists have their own say that interest rate depend upon the level of saving and the demand for real investment interest is that point where both the amount of saving and demand of investment are equal.

According to Neo-classical economists, demand and supply, factors are important in the determination of interest rate structure. The supply of loanable fund is composed of real saving and credit money and demand of the loanable found is composed of the demand for the investment funds. The interplay monetary and non-monetary forces determine the rate of interest.

Deveet (2001), in his book, "*Modern Economic Theory*", mentioned Loanable funds theory of interest. The loanable funds theories believed in time preference explanation of how interest arises. According to loanable funds theory, the interest is the price paid for the use of loanable funds. Like the classical and Keynesian Theories of Interest, it is also a demand and supply theory. It asserts that rate of interest is determined by the equilibrium between demand and supply of loanable funds in the credit market. There are several sources of both supply and demand of loanable funds, which we discuss below.

Supply of loanable funds:

The supply of loanable funds is derived from four basic sources, namely:

- a) Saving: Saving by individuals or household constitutes the most important source of loanable funds. Any individual's and household's savings primarily depend upon the size of their income. But, given the level of income, savings vary at various rate of interest. More savings will be forthcoming at higher rate of interest and vice-versa.
- b) Bank credit: Another source of loanable funds is the banking system. Banks can create money and advance them to businessmen as loans. By contracting their

lending, the banks can also reduce their amount of money. The bank's newly created money in a period, greatly adds to the supply of loan funds. The supply curve provided the banks are to some degree interest elastic. It varies with various rate of interest.

- c) Disharding: Labelled as another source of loanable funds, individuals may dishoard money form a hoarded stock, of a previous period. More stock will be dishoarded at higher rate of interest. Cash balances, lying idle in the past period, can become active balances in the present period and are available as loanable funds.
- d) Disinvestments: They are considered to be the opposite of investment. This happens due to structural changes or bad ventures and the existing stock of machines and other equipment is allowed to wear out without being replaced or the inventories are drawn below the level of previous period. When this happens, a part of the revenue from the sale of products, instead of going into capital replacement, flows into the market for loanable funds.

#### Demand for Loanable Funds:

The demands for loanable funds come mainly from three fields:

- a) Investments: this is the most important constituent of the total demand for loanable funds. The interest serves as the price of the loanable funds required to purchase the capital good. The demand for the loanable funds obviously is the rate of interest elastic.
- b) Hoarding: Those people who want to hoard money may make a demand for the loanable funds. It serves to satisfy their liquidity preferences. Hoarding signifies the people's desire to hold their savings as idle cash balances. The demand for hoarding money is "interest elastic." At a higher rate of interest, people will hold less money because much of the money will be lent to take advantage of the higher interest rates.
- c) Consumption: consumption serves the purpose of the second biggest demand for the loanable funds. Individuals or households want to borrow and demand

loanable funds when they wish to make purchases in excess of their current incomes and cash resources.

### **2.3.2 Review of Journals and Articles**

In this subject, effort has been made to examine and review of some of the related articles published in different economic journals, bulletins of World Bank, dissertation papers, newspapers, researchers view and findings towards fund mobilization and other related books.

Pradhan, (2000) in his article "*Deposit Mobilization, its problem and prospectus*" has presented that deposit is the life-blood of every financial institution like commercial bank, finance company, co-operative or non-government organization. He further adds in consideration of most of banks and finance companies, the latest figure does produce a strong feeling that serious review must be made of problems and prospectus of deposit sector.

The writer has highlighted following problems of Deposit Mobilization in Nepalese context:

- ) Most of the Nepalese do not go for saving in institutional manner, due to the lack of good knowledge however; they are very much used of saving be it in the form of cash or ornaments.
- ) No more mobilization and improvement of the employment of deposits and loan sectors.
- ) Unavailability of the institutional services in rural areas.

The writer has also recommended for the prosperity of deposit mobilization which are as follows:

- ) By cultivating the habit of using rural banking unit.
- ) By providing sufficient institutional services in the rural areas.
- ) By spreading sufficient co-operating to the rural areas of development mini branch services.
- ) By adding service hour system to bank.

) Nepal Rastra Bank could also organize training program to develop skilled manpower.

Shrestha (2006), in his article “*Banking deposit touches US \$ 3.67 billion*”, it is stated that cumulative deposits of the Nepali banking has gone up to touch US \$ 3.67 billion by the first quarter of the current Nepali fiscal year (July 16,2005- July 15, 2006) as per NRB.

The deposit mobilization was recorded at a growth rate of 9% as compared to the same period of last year and the cumulative deposit of commercial banks was recorded at US \$ 3.36 billion in the first quarter of last Nepali fiscal year.

Bankers attributed aggressive marketing such as announcement of promotional schemes with higher interest rate return to the rise in deposit mobilization and increased inflow of remittance also contributed in the growth. Likewise, loans and advances of the commercial banks have gone up by 10% to touch US \$2.32 billion during the same period of the current Nepali fiscal year, which was recorded at US \$2.1 billion in the same period of last year.

Sharma (2000), in his article entitled, “*Banking the future on competition*” found that all the commercial banks are establishing and operating in urban area, his achievements are:

- ) Commercial banks are charging the higher rate of interest on lending.
- ) Commercial banks are establishing and providing their services in urban areas only. They have not interested to establish in rural areas. Only Rastriya Banijya Bank and Nepal Bank Ltd. have branches in rural areas.
- ) They do not properly analyse the credit system. The researcher further states that private commercial banks have mushroomed only in urban areas where large volume of banking transaction and activities are possible.

### **2.3.3 Review of Theses**

Before this study, various studies regarding the various aspects of commercial banks such as deposit mobilizing policy, financial performance, and investment policy, lending

policy, interest rate structure, resource mobilization and capital structure have conducted several thesis works. Some of them, which are relevant for this study, are presented below:

Dangol (2003), a study made on the topics “*Impact of Interest Rate on Financial Performance of Commercial Bank*” concludes:

- ) Most of the commercial banks contradict the general financial theories.
- ) The relation between amount of deposit and interest rate on deposit, in general concept, must be positive. But deposits are increasing despite the clearest in the general level of interest. The result of such phenomenon is that there are fewer investment opportunities for the banking sectors as well as general investors.
- ) The correlation between total amount of loan and the lending rate is negative and significant. However the change in the amount of loan flow is not proportionate with the change in the lending rate.
- ) Correlation between interest rate and inflation is not significant.

Tandulkar (2003), in her thesis titled “*The Role of NRB in Deposit Mobilization of Commercial Bank*” has tried to find out the relation between Nepal Rastra Bank and commercial banks of Nepal. The directives issued by NRB have both positive and negative impact on these commercial banks. A sound investment policy containing a portfolio will guarantee long term survival of a commercial bank. More she focuses on importance of bank in country’s economy. It is source of capital formation she has drawn the conclusion that all new directives of NRB on commercial banks are effective and it is good for both nation and the future of the banks but the loan classification and provisioning seems to be little bit uncomfortable to the commercial banks. She had recommended the banks to minimise the bad loans ratio, creating the conducive environment for the revival of sick investment, formulate future strategies to solve problems.

Karmacharya (2005), in his thesis paper “*A Study on the Deposit Mobilization by the Joint Venture Banks*” has mentioned its liquid asset position but could not mobilize its resources efficiently. He has concluded that Nepal Bank’s utilization side is weak as compare to the collection of resources. He suggested for extending its branches, so

NBL's deposit collection and also long-term as well as short-term credit may increase. He has recommended not to consider security factor only but to provide loan to genuine projects without securing.

Khatri (2005), in his thesis entitled "*Impacts of Interest Rates on Deposit Mobilization of Commercial Banks of Nepal*" with the main objective of:

- ) To present the impacts of interest rate on deposit mobilization of commercial banks.
- ) To see the impact of interest rates of deposit on the deposit collected by the commercial banks.
- ) To see the deposit –credit margin ratio throughout the changed incurred in the interest rate by which one can see that how far the deposits have efficiently utilized.

This study concern only a period of five years from the year ended 1997 to 2001. Only secondary data has analysed. Simple analytical statistical tools such as graph, percentage, Karl Pearson's coefficient of correlation and the method of least square methods are adopted in this study. Similarly some strong accounting tools such as ratio analysis have also been used for financial analysis.

The writer found that the overall performances of commercial banks are satisfactory and Nepal Rastra Bank has to play more active role to enhance the operation. Liquidity position of the commercial banks has satisfactory. The interest rate has played important role in deposit mobilization of the bank. So the structure of interest rate should be changed according to the need to nation.

Pokharel (2006), a study made on the topics "*Determinants of Interest in Nepalese Financial Markets*" also give some ideas about the interest rates in Nepalese Markets. Though, this thesis tried to identify the factors that shape the interest rates in Nepalese markets, it also tried to explore the relationship between the interest rate, deposits, credit rates and inflation. Among different objectives, some objectives that match to this study are:

- ) To show the relationship the liquidity position and interest rate on deposit and lending.
- ) To identify the effect of inflation on interest rate charged and offered by various Nepalese financial institutions.
- ) To identify the different methods used by Nepalese financial institutions to calculate interest on lending.

Shrestha (2006), in the research called “*A Study on deposit mobilisation and utilization of commercial banks with special reference to Nepal Bank Limited*” has specified, Nepal Bank Limited has been much efficient in the collection of resources from the people in both urban and rural area of the country. But in the progress of its utilization, they are still behind. There is a decrease in the ratio loans and investment deposits and a wide gap has existed between them.

The interest rate has played an important role in mobilizing and utilizing the resources of the bank. So, the structure of interest rate should be changed according to the need of the nation. Even though the function of commercial banks is to offer short –term loans for working capital but they collect fixed deposits. Thus they have capacity to offer medium and long-term credit and are found keeping deposits idle. Thus it can be said that the Nepal bank Limited is not playing active role to utilize the collected savings according to the borrowers and national requirement of long term and medium term investments.

Another study conducted by Pokhrel (2009), on the “*Interest rate structure and its relation with deposit, lending and inflation in Nepal*” concludes:

- ) The interest rate on both deposit and lending of all sample banks are in decreasing trend.
- ) The saving deposit amount and saving interest rate have negative relationship.
- ) Fixed deposit amount and fixed interest rate shows negative relationship.
- ) One of the variables that affect the demand of fund (lending activity) is lending interest rate.
- ) The relationship between interest rate on deposit and inflation rate is positive.
- ) The interest rate on lending and inflation rate has low degree of positive correlation coefficient.

Karki (2010), on his thesis entitled “*Deposit mobilization of commercial banks in Nepal*” with the main objectives of:

- ) To examine how far the rate of interest influence the credit and deposit of RBB Janakpur branch.
- ) To examine how far the bank branch is successful to accumulate the deposits with special reference to RBA Janakpur Branch.
- ) To examine how far the deposit of RBB Janakpur Branch is efficiently utilised.

This study is based on secondary data. In his thesis Karl Pearson’s formula of coefficient of correlation has been used to compare various variables. In this thesis the writer found



that the deposit collection of Janakpur Branch is not satisfactory. He also found that the activities of RBB Janakpur Branch for mobilizing deposits seem to be idle. The bank has not tried to find out the new sectors of investment. The central office has not given authority to the branch to the branch manager to advance or to invest govt-securities. The writer further found that the bank provides short term credit and the lending process is also lengthy.

## **2.4 Research Gap**

Research gap focuses that the researcher how much trying to give new things from his/her study with compare to previous studies held by different researcher. Above relevant reviews contribute to enhance the fundamental understanding and knowledge which require to make study meaningful and purposive a research. Most of the previous research studies were based on interest rate on deposit mobilization. Most of them have indicated the association between deposit and lending. There are a few researches in the topic impact of interest rate on deposit and lending of money. In the past financial institution were depended only the interest margin in present economic dynamism, only the interest margin is not sufficient to improve profitability so researcher has tried to analyze the extraordinary items of income generation in financial instruction.

Previous researchers covered all the commercial banks and some were either on case study between two commercial banks or some were on the particular bank branch. But this study focused on some particular sample banks. This study covers the recent and an updated data of all the sample banks. Moreover this study has not been done by previous researcher as separately. Thus, to fill the gap, this study had been conducted. However, no one has done study on "Interest rate of commercial banks and its impact on deposit and lending of money" with reference to NABIL, EBL and BOK. Therefore, the researcher attempts to study in this area.

## **CHAPTER III**

### **RESEARCH METHODOLOGY**

Research methodology is the procedure by which researcher go about their work of describing, explaining and predicting phenomenon. In other words, research methodology describes methods and process applied in the entire aspect of the study. In this chapter, efforts have been made to present and explain the specific research design for the sake of attaining the research objective. This chapter has been organised into five sections. Section one presents the research design, while section two describes the Population and sample. Section three describes the data collection procedure. Section four explains the methods of analysis employed in this study. Similarly, the definitions of key terms are described in the last sections.

#### **3.1 Research Design**

“Research design is a purposeful scheme of action proposed to be carried out in a sequence during the process of research focusing on the management problem to be tackled”. It explains the methods, procedure and entire process necessary for complete a research work. Descriptive approaches have been adopted mainly for describing the situation and conduct a survey of opinions. Analytical approach has been followed to analyse the related data and the relationship among variables.

#### **3.2 Source of Data and Collection Procedure**

As per nature of the study, the study is solely base on secondary data. For the study purpose, annual reports of Sample banks and NRB are used as the major sources of data. In addition to this, Published annual report, balance sheet, prospectus, annual general meeting and unpublished office records, journals, magazines, articles, government and university publications, NRB as well as the web site of various banks have been used as the sources of secondary information. Personal observation and some informal interview methods have been conducted for more information and authenticity about the various published data as the primary data.

### **3.3 Population and Sample**

A small portion chosen from the population for studying its properties is called a sample and the number of units in the sample is known as the sample size. The method of selecting a small portion of the population for the study and to draw conclusion about the characteristics of the population is known as sampling. The population of the study comprises of all 31 commercial banks that are operating within the kingdom of Nepal. As the study of whole population makes the study cumbersome and also collecting and analyzing the information and data of all the commercial banks is not practical due to time constraint and unavailability of resources, only 3 commercial banks are chosen as samples from the population. The following are the banks that are considered as the sample banks for the study are as follows:-

1. NABIL Bank Ltd.
2. Everest Bank Ltd.
3. Bank of Kathmandu Ltd.

This study will try to explore the objectives set in the previous section and it is also expected that this study will help in analyzing the interest rate structure regarding deposit and lending.

### **Justification**

These commercial banks are very popular in the market and are performing vital role for the growth and economic development of the country. NABIL bank won bank of the year award as well as other banks have also received such and alike awards in different periods of time. So, these all banks are competitors. Therefore, I am selecting these banks for study in interest rate structure and its impact on lending and deposit of commercial banks in Nepal.

### **3.4 Tools for Data Analysis**

The thesis will cover and include the financial and statistical tools to analyze the data in order to reach to the conclusion of the research. In order to get the concrete results from this research, data are analyzed, by using different types of tools. As per the topic

requirement, emphasis is given on statistical tools, I am planning to use following for the study:

### 3.4.1 Arithmetic Mean

The most popular and widely used measure of representing the entire data by one value is called arithmetic mean. It is the sum of the entire observations divided by the number of observation. In such a case, all the items are equally important. In this study, arithmetic mean is used as per the necessity for analysis. It is computed by using following formula:

$$\text{Mean } (\bar{X}) = \frac{\sum X}{n}$$

Where,  $\bar{X}$  = Means

$\sum X$  = Sum of all variable X

$n$  = Variables involved

### 3.4.2 Standard Deviation

The standard deviation is a statistic used as a measure of the dispersion or variation in a distribution, equal to the square root of the arithmetic mean of the squares of the deviations from the arithmetic mean. It is the best tools to study fluctuation in any data. It is usually denoted by the letter sigma ( $\sigma$ ). It is also known as “Root Mean-Square Deviation” and is computed by using following formula:

$$\text{S.D. } (\sigma) = \sqrt{\frac{\sum (X - \bar{X})^2}{n}}$$

Greater the magnitude of standard deviation higher will be the fluctuation and vice versa.

### 3.4.3 Correlation of Coefficient

Correlation is an analysis of the covariance between two or more variable and correlation analysis deals with the degree of relationship between variables. The correlation analysis refers the classes of the relationship between the variables. In other words, this tool is used to describe the degree to which one variable is linearly related to the other variables. Two variables are said to be correlated if the change in the value of one variable (independent) affects the change in the other variables (dependent). Correlation analysis

enables us in determining the degree and direction of relationship between two variables. However, it does not tell us anything about the cause and effect relationship. Correlation may be positive or negative and range from -1 to +1. Simple correlation between interest rate and deposit amount, interest rate and credit or lending amount and interest rate (both deposit rate and lending rate) is computed in this thesis. Let's take an example that the correlation between interest rate and deposit is positive which indicates that when interest rate increases, deposit also increases in the same direction and vice versa.

The simple correlation coefficient (r) is calculated by using following formula:

Simple Correlation Coefficient/Karl person's Correlation Coefficient (r)

$$= \frac{\text{Covariance}(X_1, X_2)}{\sqrt{\sum (X_1 - \bar{X}_1) \sum (X_2 - \bar{X}_2)}}$$

Where, Covariance (X<sub>1</sub>X<sub>2</sub>) = 1/n { (X<sub>1</sub> -  $\bar{X}_1$ ) (X<sub>2</sub> -  $\bar{X}_2$ ) }

Or,

$$\begin{aligned} \text{Actual Mean Method} &= \frac{\sum x_1 x_2}{\sqrt{\sum x_1} \sqrt{\sum x_2}} \\ &= \frac{\sum X_1 Z \bar{X}_1 \sum X_2 Z \bar{X}_2}{\sqrt{\sum X_1 Z \bar{X}_1} \sqrt{\sum X_2 Z \bar{X}_2}} \end{aligned}$$

n= Total number of observation

X<sub>1</sub> and X<sub>2</sub> = two variables, correlation between them are calculated

### 3.4.4 Coefficient of Determination

The square of the simple correlation coefficient is called coefficient of determination and it is very useful in interpreting the value of simple correlation coefficient. The main significance of the coefficient of determination is to represent the portion of total variations due to independent variable. It measures the percentage of total variation in dependent variable explained by independent variable.

Coefficient of determination (r<sub>12</sub>)<sup>2</sup> = (r<sub>12</sub>)<sup>2</sup>

### 3.4.5 t-test for significance for Correlation Coefficient

If 'r' is the observed sample correlation coefficient of 'n' pairs of observations from bivariate normal population, the test statistics for significance of correlation under null hypothesis is given by

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

I.e. t follows t-distribution with n-2 degree of freedom (d.f.), 'n' being the sample size.

## **CHAPTER IV**

### **DATA PRESENTATION AND ANALYSIS**

In this section, all the collected data are presented in the filtered form and are analysed thoroughly. This is the one of the major chapter of this study because it includes detail analysis and interpretation of data from which concrete result of Nepalese market can be obtained. In this chapter the relevant data and information necessary for the study are presented and analysed keeping the objectives set in mind. This chapter consists of various calculations made for the analysis of interest rate and its effects on deposit of sample bank. This chapter consists of detail analysis and interpretation of data relating to interest rate on deposit, deposit collection amount of each selected organization from Nepalese financial system. This chapter is categorized in three parts presentation, analysis and interpretation. The analysis is based on secondary data. In presentation section data are presented in terms of table, graph chart of figures, according to need. The presented data are then analysed using different statistical tools which are mentioned in chapter three. At last the results of analysis are interpreted. For our simplicity, in this thesis, presentation, analysis and interpretation of data are made according to the nature. After then, the relationship between interest rate and deposit amount is made.

#### **4.1 Analysis of Deposit and Interest Rates**

Deposit is that amount which is deposited by savers in commercial banks of other financial institutions for safe keeping as well as for earning the interest from it. Deposits are the main sources of resources to meet growing demands of financial existence. The existence of commercial banks basically depends upon the mobilization of deposits. The commercial banks may function when they have adequate deposits. Higher the volume of deposit, higher will be the volume of profit. So, a commercial bank first of all tries to mobilize as much deposit as possible. One of the main objectives of commercial bank is to safeguard the amount deposited by the general deposits on its mobilization in an effective manner. The following tables and figures show the situation of commercial banks in relation to deposit collection and its utilization in the recent years.

#### 4.1.1 NABIL Bank Limited

**Table 4.1: Interest rate structure of NABIL on deposits (Mid-July 2006 to 2010)**

<b>Deposits\ Year</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
Saving	2.00	2.00	2.00	2.00	3.00
<b>Fixed</b>					
7 Days					
14 Days	2.50	1.75	3.00		
1 Month	3.00	2.00	3.50	3.50	7.50
2 Months					
3 Months	3.25	2.75	6.75	4.50	8.50
6 Months	3.50	3.00	6.75	4.50	8.50
1 Year	4.00	4.00	6.75	5.50	9.50
2 Years/ Above	4.125	4.00	6.75	8.25	11.50
<b>Fixed Deposit Mean</b>	<b>3.40</b>	<b>2.83</b>	<b>5.29</b>	<b>5.85</b>	<b>9.40</b>
<b>Whole Mean</b>	<b>3.20</b>	<b>2.71</b>	<b>4.82</b>	<b>5.20</b>	<b>8.33</b>
<b>S.D.(† )</b>	<b>1.9767</b>				

*Source: Statistics, Interest Rate Structure, NRB*

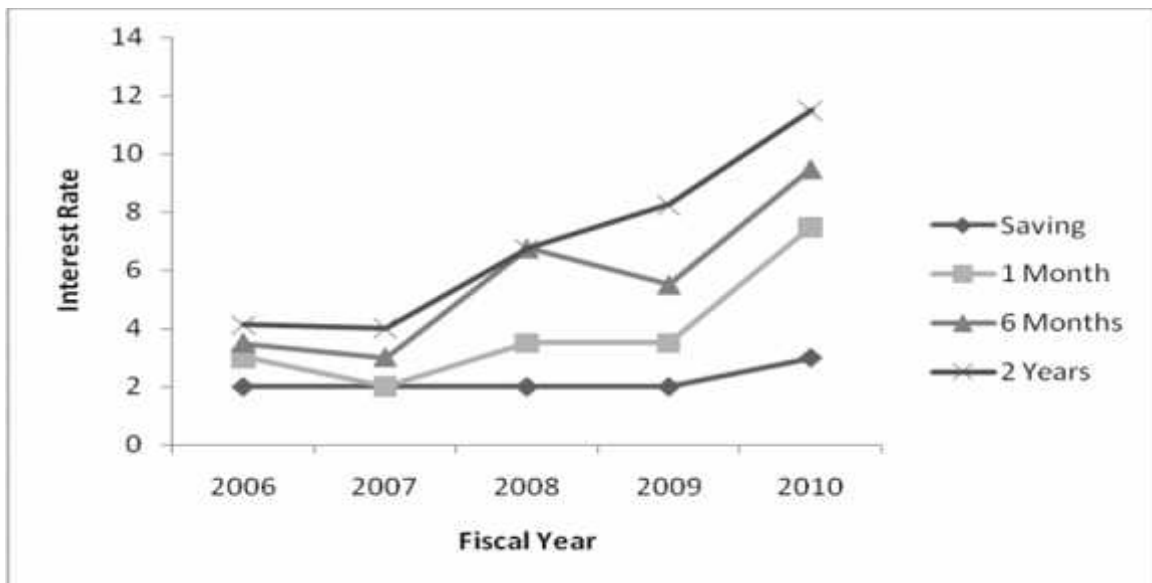
*(Note: Calculation of Whole Mean, Standard Deviation is shown in appendix I)*

Table 4.1 shows the interest rate structure on deposit of NABIL Bank during the last five fiscal years. For this study 2006 is taken as initial year and 2010 as final year. The Table shows interest rates which prevailed in the Nepalese financial markets during last past five years. Data shows the decrease of interest rate in year 2007 that of 2006 and then it shows the increasing tendency till the year 2010 and the year 2010 witnessed the highest rise in interest rate of all the five years. The interest rate on saving was 2.00% in the year 2006 and remained constant till the year 2009 and it increase to 3.00% in the year 2010. Hence, saving deposit rate shows constant trend till 2009 and then increase in 2010. In the same way, bank used to quote the interest rate of fixed deposit in different short term period like 7 days, 14 days, 1 month, 2 months, 3 months and so on. The interest rate on fixed deposit is in increasing trend during the five fiscal years except for the 2007 and witnessed highest increase in the year 2010. Table shows that average interest rate on fixed deposit were 3.40% for the year 2006, 2.83% for the year 2007, 5.29% for the year



2008, 5.85% for the year 2009 and 9.40% for the year 2010. Similarly, average interest rate for deposit was 3.20%, 2.71%, 4.82%, 5.20% and 8.33% for the year 2006, 2007, 2008, 2009 and 2010 respectively. The average figures also show the increasing tendency in interest rate expect the year 2007.

**Figure 4.1: Interest Rate on Saving and Fixed Deposits of NABIL**



The above figure 4.1 shows the trends of interest rate on saving and fixed deposits. Deposit rate on saving as well as fixed is in increasing trend. The saving interest rate has remained more or less constant. Similarly, fixed deposit rate has increased every year except the year 2007. The graph in this study shows the average of 1month, 6 months and 2 years is taken in fixed deposit to make the figure clear.

**Calculation of Correlation Coefficient, Coefficient of Determination and t-statistics**

**Table 4.2: Relationship between Interest Rate on Deposit and Deposit amount of NABIL**

(Rs. in million)

<b>Year (1)</b>	<b>Saving Deposit Interest Rate (2)</b>	<b>Saving Deposit Amount (3)</b>	<b>Fixed Deposit Interest Rate (4)</b>	<b>Fixed Deposit Amount (5)</b>
2006	2.00	8770.80	3.40	3450.20
2007	2.00	10187.40	2.83	5435.20
2008	2.00	12159.97	5.29	8464.09
2009	2.00	14620.40	5.85	8310.70
2010	3.00	13783.60	9.4	14711.07
<b>Correlation</b>	<b><math>r_{23} = 0.4311929</math></b>		<b><math>r_{45} = 0.990260</math></b>	
<b>Coefficient of Determination</b>	<b><math>r_{23}^2 = 0.1859273</math></b>		<b><math>r_{45}^2 = 0.980615</math></b>	
<b>t- statistics</b>	<b>t-cal = 0.827752</b> <b>t-tab = 3.182</b>	<b>Insignificant</b>	<b>t-cal = 12.31</b> <b>t- tab = 3.182</b>	<b>Significant</b>

*Source: Statistics, Interest Rate Structure, Sources and Uses of Funds, NRB*

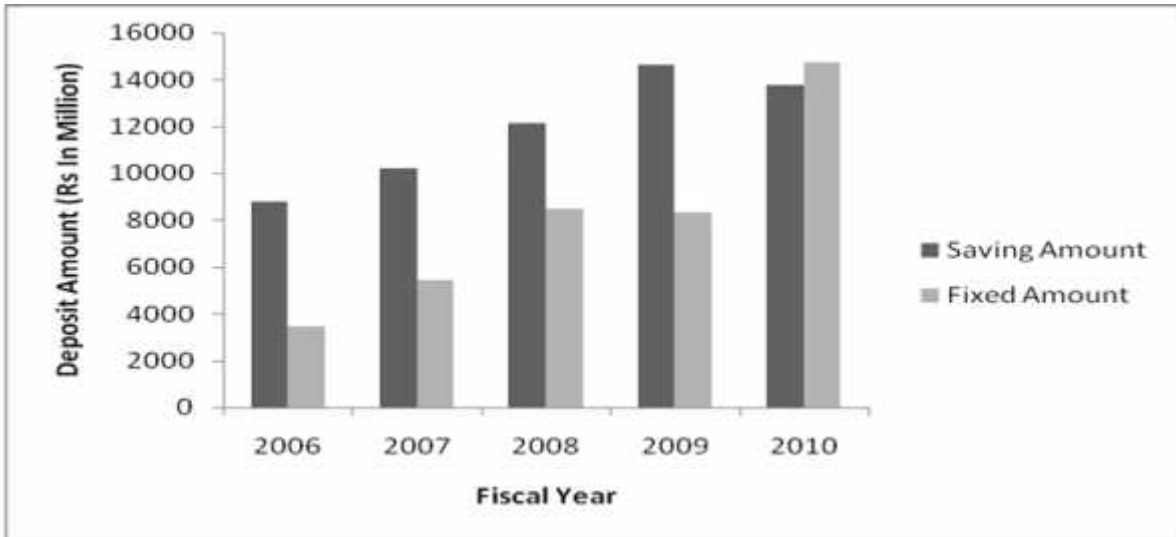
*(Note: Interest rate on deposit is taken from the rate calculated in table 4.1 and calculation of Correlation Coefficient, Coefficient of Determination and t-statistics is calculated as shown in appendix I)*

Table 4.2 shows that the total amount of fixed deposit and saving deposit and the interest rate offered on such deposits of NABIL during last five fiscal years starting from 2006 to 2010. Table shows that the interest rate of saving deposit remains constant except the year 2010 while the interest rate of fixed deposit is increasing continuously except for the year 2007. On the other hand, total saving deposit amount is in increasing pattern except the year 2010 and fixed deposit in the year 2009. Hence, in case of saving there is negative relation between interest rate and deposit. This shows people do not stop to save despite the constant in interest rate. With the increase in income, saving deposit increases

without any incentive in interest rate. However, in case of fixed deposit, there is positive relation between interest rate and deposit. Since fixed deposit offers very less liquidity as compared to saving deposit, depositors seek high interest rate to forego the current liquidity as envisaged by Keynes Liquidity Preference Theory.

It could be quantified by calculating correlation coefficient between them. This relationship can also be shown in figure 4.2 and 4.3.

**Figure 4.2: Deposit Amount of NABIL during different Fiscal Years**



**Figure 4.3: Deposit Rate of NABIL during different Fiscal Years**

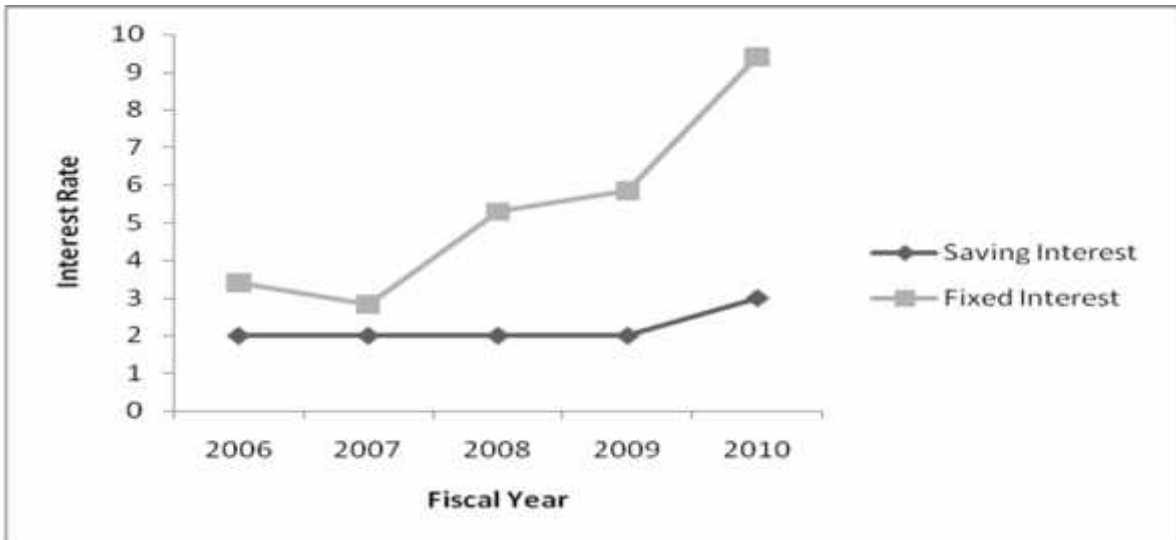


Table 4.2 shows that the interest rate on saving deposit has increased from 2.00% to 3.00% during five fiscal years. In the period, the deposit amount has increased from Rs 8770.80 to Rs 14620.40 and decreases in the year 2010 to Rs 13783.60 millions. This shows that in spite of constant in the interest rate on saving deposit, the saving amount increased within the period except of fifth year. Similarly, table shows that the fixed interest rate has increased from 3.40% to 9.4% in year 2006 to 2010. On effect of this increase, the amount of fixed deposit has also increased from Rs 3450.20 million to Rs 14711.07 million.

To verify the above trend, it is necessary to calculate the correlation coefficient and t-statistics. The calculation of correlation coefficient between saving deposit interest and saving deposit amount ( $r_{23}$ ) = 0.4311929. This positive correlation coefficient indicates that they have positive relationship with each other. Constant in interest rate is followed by an increase in saving deposit amount and vice versa. The coefficient of determination between these two variables is  $r_{23}^2 = 0.1859273$  which means 18.59% total variation in dependent variable (saving deposit amount) has been explained by independent variable (interest rate) and remaining percentage of 81.41% is the effect of other factors. The t-value for testing the significance of the correlation coefficient between variable is t-cal = 0.827752. Since the tabulated t-value at 5% level of significance for two tails at (5-2) degree of freedom (t-tab= 3.182) is more than the calculated value (t-cal = 0.827752), the correlation coefficient is insignificant. This means the variables mentioned (interest rate on saving deposit and amount of saving deposit) for NABIL are not correlated and alternative hypothesis (H1) is accepted which means there is positive relationship between interest rate on deposit and saving deposit amount of NABIL.

In the same manner, the correlation coefficient for fixed deposit interest rate and fixed deposit amount  $r_{45} = 0.990260$ . This shows that these two variables are positively correlated i.e. when interest rate on fixed deposit increase, the deposit amount also increases and vice versa. The coefficient of determination between these two variables is  $r_{45}^2 = 0.980615$  which mean 98.06% of total variable (fixed deposit) is explained by independent variable (fixed deposit rate) and remaining 1.94% is the effect of other variables. The t-value for testing the significance of the correlation coefficient between

variables  $t\text{-cal} = 12.31$  which is more than the tabulated  $t\text{-value}$  ( $t\text{-tab} = 3.182$ ) at 5% level of significance for two tail at (5-2) degree of freedom. The conclusion can be drawn that correlation coefficient between these two variables is significant. This means null hypothesis ( $H_0$ ) is accepted i.e. there is negative relationship between fixed deposit interest rate and fixed deposit amount of NABIL.

#### 4.2.2 Everest Bank Ltd (EBL)

**Table 4.3: Interest rate structure of EBL on deposits (Mid-July 2006 to 2010)**

<b>Deposit\ Year</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
Saving	3.25	3.00	3.00	3.00	3.00
<b>Fixed</b>					
7 Days					
14 Days					
1 Month		2.75			
2 Months		2.75			
3 Months	3.00	3.00	3.00	3.00	3.00
6 Months	3.50	3.50	3.50	3.50	3.50
1 Years	4.00	4.00	5.00	5.00	5.00
2 Years/ Above	4.50	4.50	5.375	5.375	5.375
<b>Fixed Deposit Mean</b>	<b>3.75</b>	<b>3.42</b>	<b>4.22</b>	<b>4.22</b>	<b>4.22</b>
<b>Whole Mean</b>	<b>3.65</b>	<b>3.36</b>	<b>3.98</b>	<b>3.98</b>	<b>3.98</b>
<b>S.D.(†)</b>	<b>0.2501</b>				

*Source: Statistics, Interest Rate Structure, NRB*

*(Note: Calculation of whole mean standard deviation is shown in appendix I)*

Table 4.3 shows the interest rate structure on deposit of Everest Bank during the last five fiscal years. For this study 2006 is taken as initial year and 2010 as final year. Table shows those interest rates were prevailed in the Nepalese financial markets during last past five years. The data shows very fluctuating tendency of interest rate. The interest rate on saving deposit is 3.25% in the year 2006 and it decreased by 0.25% in the year 2007 and remains constant till the year 2010. However, the interest rate on fixed deposit has a fluctuating trend during the five fiscal years. The table shows that average interest rate on fixed deposit is 3.75% for the year 2006, it steeply declines to 3.42% for the year 2007, and it rises to 4.22% for the year 2008 and then remains constant till the year 2010. Similarly, average interest rate for deposit were 3.65% for the year 2006, 3.36% for the year 2007 and 3.98% for the year 2008, 2009 and 2010 respectively. The average figures also show the fluctuating tendency in interest rate.

**Figure 4.4: Interest Rate on Saving and Fixed Deposits of EBL**

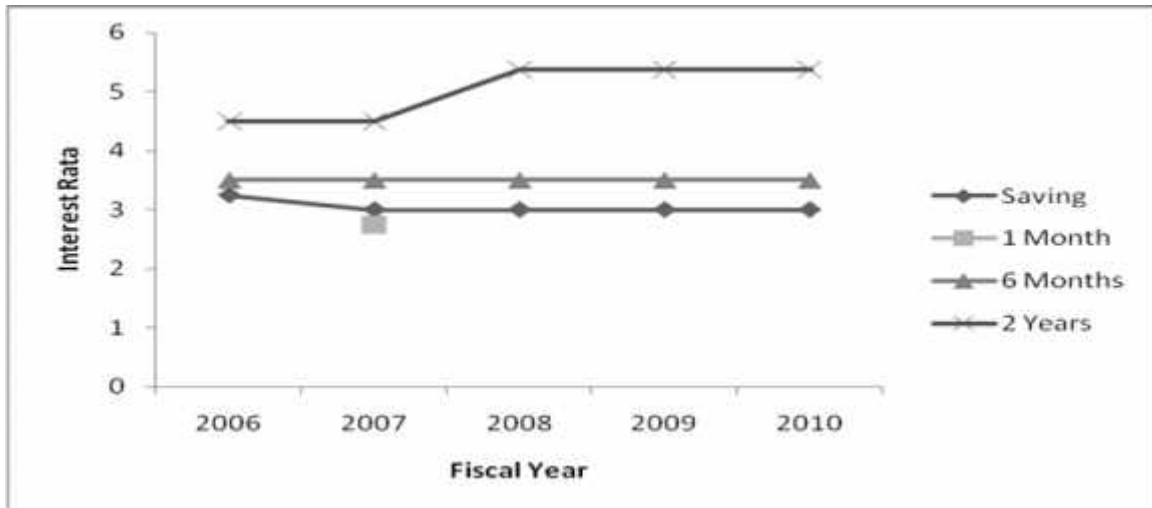


Figure 4.4 clearly shows the fluctuating tendency of EBL during the five fiscal years. In the second year there was a decrease in the interest rate. The interest rate moderately increased in the third year, then remains constant up to the fifth year. This overall figure shows that the interest rate is in fluctuating trend.

**Calculation of Correlation Coefficient, Coefficient of Determination and t-statistics**

**Table 4.4 Relationship between Interest Rate on Deposit and Deposit amount of EBL**

(Rs in million)

Year (1)	Saving Deposit Interest Rate (2)	Saving Deposit Amount (3)	Fixed Deposit Interest Rate (4)	Fixed Deposit Amount (5)
2006	3.25	6929.20	3.75	4298.20
2007	3.00	9018.00	3.42	5658.70
2008	3.00	11883.86	4.22	6598.01
2009	3.00	14782.33	4.22	7094.68
2010	3.00	13360.00	4.22	10440.28
<b>Correlation</b>	<b><math>r_{23} = -0.745084</math></b>		<b><math>r_{45} = 0.628976</math></b>	
<b>Coefficient Of Determination</b>	<b><math>r_{23}^2 = 0.555150</math></b>		<b><math>r_{45}^2 = 0.395611</math></b>	
<b>t- statistics</b>	<b>t- cal = -2.59689</b>	<b>Insignificant</b>	<b>t- cal = 1.40131</b>	<b>Insignificant</b>
	<b>t- tab = 3.182</b>		<b>t- tab = 3.182</b>	

Source: Statistics, Interest Rate Structure, Sources and Uses of Funds, NRB

(Note: Interest rate on deposit is taken from the rate calculated in table 4.3 and calculation of Correlation Coefficient, Coefficient of Determination and t-statistics is calculated as shown in appendix I)

Table 4.4 shows that the total amount of fixed deposit and saving deposit and the interest rate offered on such deposits of EBL during last five fiscal years starting from 2006 to 2010. The Table shows that the interest rate of saving deposit is decreased and then constant and that of fixed deposit is fluctuating continuously. On the other hand, saving deposit amount is increasing in every fiscal year except the year 2010 has decreased and fixed deposit amount is increasing in every fiscal year. Therefore, there is a negative or no relationship between saving deposit and interest rate of EBL

It could be quantified by calculating correlation coefficient between them. This relationship can also be shown in figure 4.5.

**Figure 4.5: Deposit Amount of EBL during different FY**

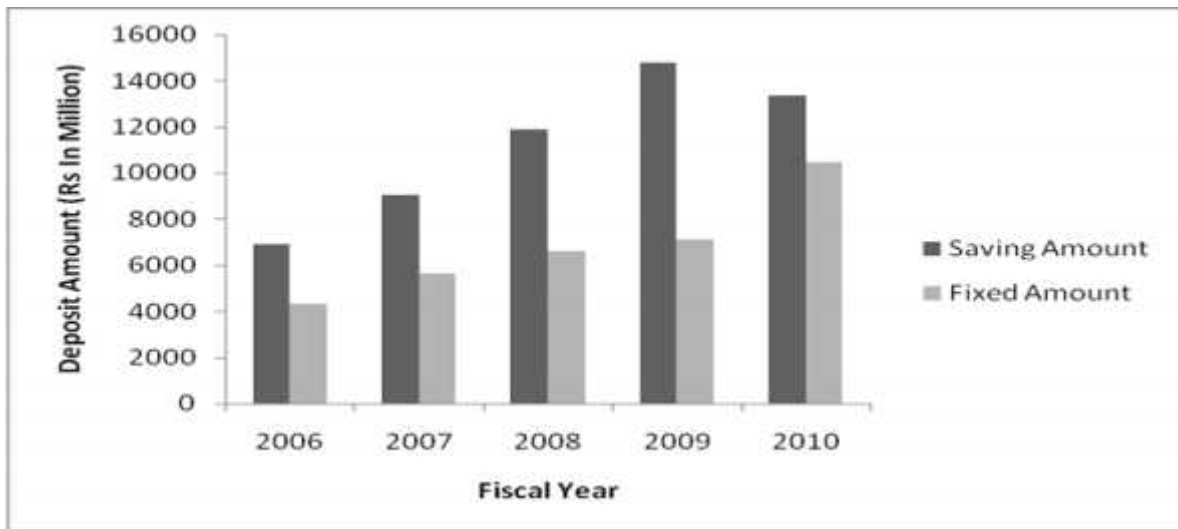


Figure 4.5 shows deposit amount is continuously rising each fiscal year except saving deposit in the year 2010. Similarly, the interest rate of fixed deposit and saving deposit can also be shown on figure 4.6 as:

**Figure 4.6: Deposit Rates of EBL during different FYs**

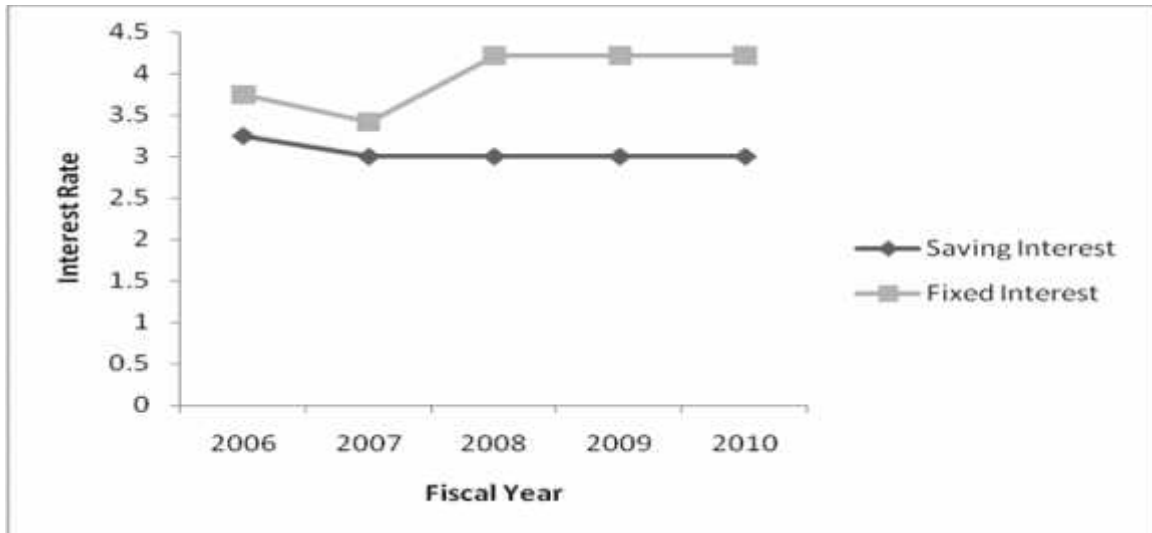


Table 4.4 shows the decrease of interest rates in saving deposit and then remains constant and fluctuating trend in fixed deposit. To verify the above trend, it is necessary to calculate the correlation coefficient and t-statistics. The calculation of correlation coefficient between saving deposit interest and saving deposit amount ( $r_{23}$ ) = -0.745084. This negative correlation coefficient indicates that they have inverse relationship with each other. Decrease in interest rate is followed by an increase in saving deposit amount and vice versa. This shows that the substitution effect in case of EBL for saving account is not applicable. The coefficient of determination between these two variables is  $r_{23}^2 = 0.555150$  which means 55.51% of total variation in dependent variable (saving deposit amount) is explained by independent variable (interest rate) and remaining 44.49% is the effect of other factors. The t-value for testing the significance of the correlation coefficient between variable is  $t\text{-cal} = -2.59689$  ( $|t| = 2.59689$ ). Since the tabulated t-value at 5% level of significance for two tails at (5-2) degree of freedom ( $t\text{-tab} = 3.182$ ) is greater than the calculated value ( $t\text{-cal} = 2.59689$ ), the correlation coefficient is insignificant. This means the variables mentioned (interest rate on saving deposit and amount of saving deposit) for EBL are not correlated and null hypothesis ( $H_0$ ) is accepted which means there is no relationship between interest rate on saving deposit and the amount of saving deposit of EBL.



In the same manner, the correlation coefficient for fixed deposit interest rate and fixed deposit amount is  $r_{45} = 0.628976$ . The figure indicates that these two variables are directly correlated but the magnitude of correlation is very low. In other words, change in one variable cause the change in other variable in the same direction. The coefficient of determination between these two variables is  $r_{45}^2 = 0.395611$  which mean 39.56% of total variable (fixed deposit) is explained by independent variable (fixed deposit rate) and remaining 60.44% is the effect of other variables. The t-value for testing the significance of the correlation coefficient between variables is  $t\text{-cal} = 1.40131$  which is less than the tabulated t-value ( $t\text{-tab} = 3.182$ ) at 5% level of significance for two tail at (5-2) degree of freedom. The conclusion can be drawn that correlation coefficient between these two variables is insignificant. This means null hypothesis ( $H_0$ ) is accepted i.e. there is no relationship between deposit interest rate and deposit amount of EBL.

#### 4.2.3 Bank of Kathmandu (BOK)

**Table 4.5: Interest rate structure of BOK on deposits (Mid-July 2006 to 2010)**

<b>Deposit\ Year</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
Saving	2.50	2.25	2.25	2.25	2.25
<b>Fixed</b>					
7 Days	1.50	1.50	2.00	2.00	3.00
14 Days	2.00	2.00	2.50	2.50	3.50
1 Month	2.50	2.50	3.00	3.00	4.00
2 Months					
3 Months	3.00	3.00	3.50	3.50	4.50
6 Months	3.50	3.25	4.00	4.00	6.00
1 Year	4.25	3.63	5.00	5.00	8.50
2 Years/ Above	5.13	3.63	5.50	5.50	8.83
<b>Fixed Deposit Mean</b>	<b>3.13</b>	<b>2.79</b>	<b>3.64</b>	<b>3.64</b>	<b>5.47</b>
<b>Whole Mean</b>	<b>3.05</b>	<b>2.72</b>	<b>3.469</b>	<b>3.469</b>	<b>5.47</b>
<b>S.D.(†)</b>	<b>0.807765</b>				

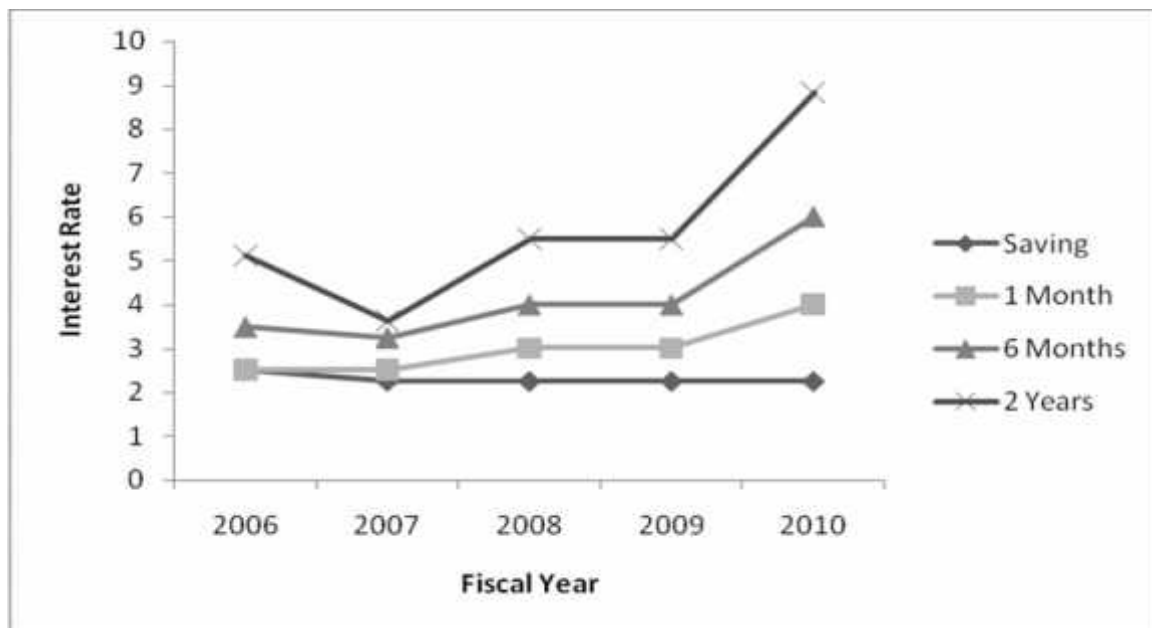
*Source: Statistics, Interest Rate Structure, NRB*

*(Note: Calculation of whole mean standard deviation is shown in appendix I)*

Table 4.5 shows the interest rate structure on deposit of BOK during the last five fiscal years. For this study 2006 is taken as initial year and 2010 as final year. The data shows the decreasing and constant tendency of interest rate. The interest rate on saving deposit is 2.50% in the year 2006 which decreases to 2.25% in the year 2007 and remains constant till the year 2010.

The interest rate on fixed deposit, on the other hand, does not show any specific trend, it is fluctuating every year during the five fiscal years. The table shows that average interest rate on fixed deposit is 3.13% in the year 2006 which decreases to 2.79% in the year 2007, rapidly increase to 3.64% in year 2008 and remains constant till the year 2010. Hence, there is no any identifiable trend in fixed deposit interest rate. Similarly, average interest rate on deposit is 3.05% in the year 2006 which reaches to 5.07% in the year 2010 with some fluctuations in between but falling sharply in the year 2007. The average figures also show the fluctuating tendency in interest rate.

**Figure 4.7: Interest Rate on Saving and Fixed Deposits of BOK**



The above figure 4.7 clearly shows the fluctuating tendency of interest rate of BOK during the five fiscal years. The entire figure shows that the saving interest rate is on constant trend where fixed interest rate is on fluctuating trend.

**Calculation of Correlation Coefficient, Coefficient of Determination and t-statistics**

**Table 4.6: Relationship between Interest Rate on Deposit and Deposit amount of BOK**

(Rs in million)

<b>Year (1)</b>	<b>Saving Deposit Interest Rate (2)</b>	<b>Saving Deposit Amount (3)</b>	<b>Fixed Deposit Interest Rate (4)</b>	<b>Fixed Deposit Amount (5)</b>
2006	2.50	4582.00	3.13	2709.80
2007	2.25	5526.80	2.79	3037.20
2008	2.25	6595.20	3.64	3703.10
2009	2.25	7260.30	3.64	4474.60
2010	2.25	6723.20	5.47	6383.60
<b>Correlation</b>	<b><math>r_{23} = 0.810354</math></b>		<b><math>r_{45} = 0.660947</math></b>	
<b>Coefficient of Determination</b>	<b><math>r_{23}^2 = 0.656673</math></b>		<b><math>r_{45}^2 = 0.436852</math></b>	
<b>t- statistics</b>	<b>t- cal = -2.3954</b> <b>t- tab = 3.182</b>	<b>Insignificant</b>	<b>t- cal = 1.5255</b> <b>t- tab = 3.182</b>	<b>Insignificant</b>

*Source: Statistics, Interest Rate Structure, Sources and Uses of Funds, NRB*

*(Note: Interest rate on deposit is taken from the rate calculated in table 4.9 and calculation of Correlation Coefficient, Coefficient of Determination and t-statistics is calculated as shown in appendix I)*

Table 4.6 shows that the total amount of fixed deposit and saving deposit and the interest rate offered on such deposits of BOK during last five fiscal years starting from 2006 to 2010. Table shows that the interest rate of saving deposit is in decreased and remains constant but that of fixed deposit is fluctuating continuously. On the other hand saving deposit amount is increasing in every fiscal year except the year 2010. Fixed deposit amount is also increasing in every fiscal year. Therefore, there is a negative relationship between deposit interest rate and deposit amount of BOK.

It could be quantified by calculating correlation coefficient between them. This relationship can also be shown in figure 4.8.

**Figure 4.8: Deposit Amount of BOK during different FY**

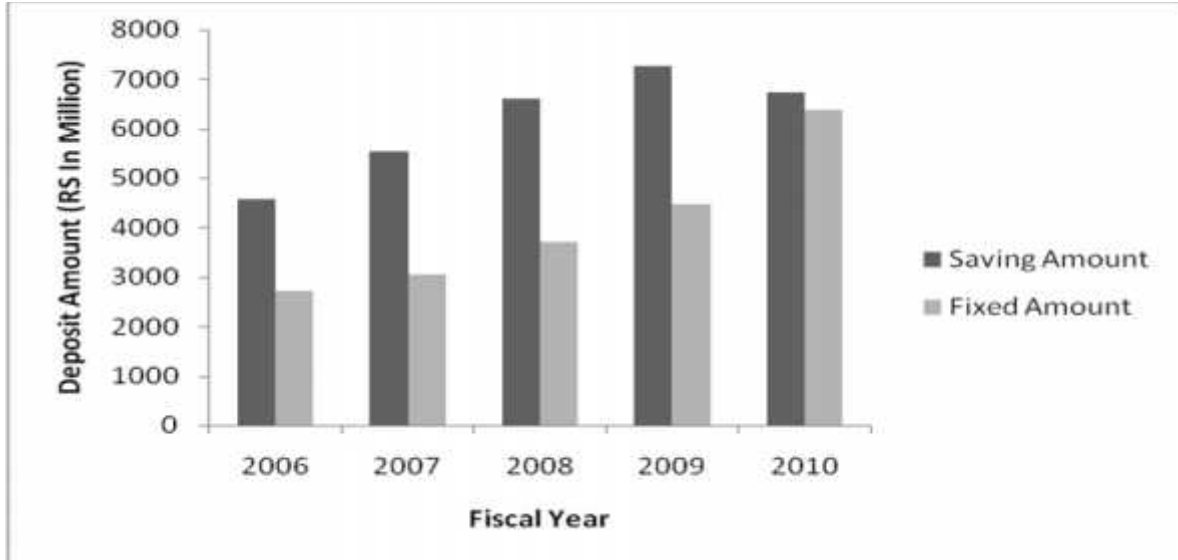


Figure 4.8 shows saving deposit amount is continuously rising each fiscal year except the year 2010 but fixed deposit amount seems to grow each year without any fluctuation. It means that there is rise in fixed deposit amount. Similarly, the interest rate of fixed deposit and saving deposit can also be shown on figure 4.9 as:

**Figure 4.9: Deposit Rates of BOK during different FYs**

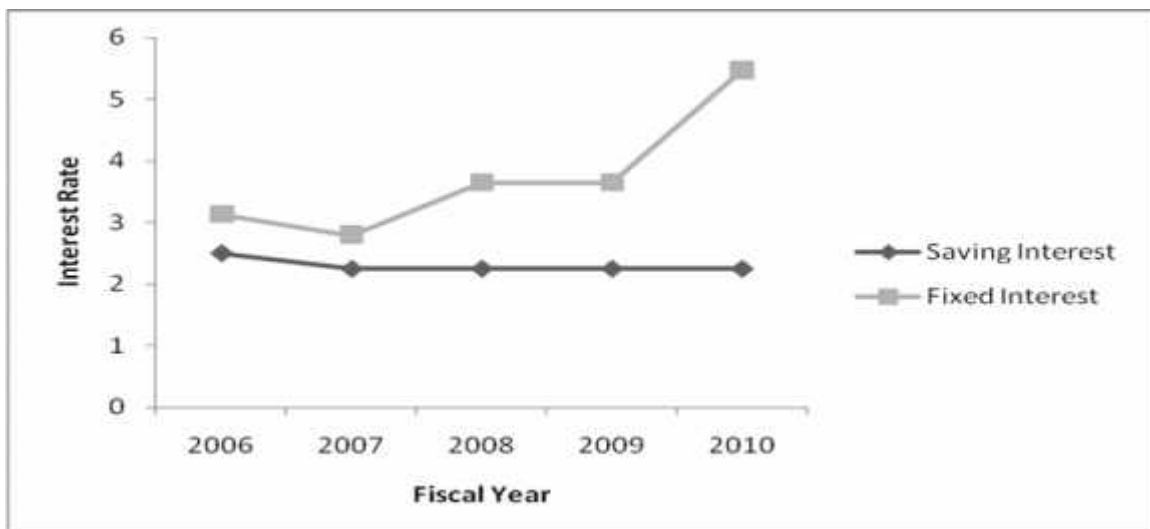


Table 4.9 shows the constant and fluctuating trend of interest rates both in saving and fixed deposit respectively. The saving deposit rate is in decrease and then remains constant. On the other hand, the fixed deposit interest rate is also in fluctuation trend except the year 2008 and 2009 where it remains constant. To verify the above trend, it is necessary to calculate the correlation coefficient and t-statistics. The calculation of correlation coefficient between saving deposit interest and saving deposit amount ( $r_{23}$ ) = -0.810354. This high negative correlation coefficient indicates that they have inverse relationship with each other. Decrease and constant in interest rate is followed by an increase in saving deposit amount and vice versa. This shows that the substitution effect in case of BOK for saving account is not applicable. The coefficient of determination between these two variables is  $r_{23}^2 = 0.656673$  which means 65.66% total variation in dependent variable (saving deposit amount) has been explained by independent variable (interest rate) and remaining 34.34% is the effect of other factors. The t-value for testing the significance of the correlation coefficient between variable is  $t\text{-cal} = -2.3954$  ( $|t| = 2.3954$ ). Since the tabulated t-value at 5% level of significance for two tails at (5-2) degree of freedom ( $t\text{-tab} = 3.182$ ) is greater than the calculated value ( $t\text{-cal} = 2.3954$ ), the correlation coefficient is insignificant. This means the variables mentioned (interest rate on saving deposit and amount of saving deposit) for BOK are insignificantly correlated and null hypothesis ( $H_0$ ) is accepted which means there is no relationship between interest rate on saving deposit and saving deposit amount of BOK.

In the same manner, the correlation coefficient for fixed deposit interest rate and fixed deposit amount  $r_{45} = 0.660947$ . The positive sign indicates that these two variables are positively correlated. In other words, change in one variable cause the change in other variable in the same direction. This case is in favor of the substitution effect. The coefficient of determination between these two variables is  $r_{45}^2 = 0.436850$  which mean 43.68% of total variable (fixed deposit) is explained by independent variable (fixed deposit rate) and remaining 56.32% is the effect of other variables. The t-value for testing the significance of the correlation coefficient between variables is  $t\text{-cal} = 1.5255$  which is less than the tabulated t-value ( $t\text{-tab} = 3.182$ ) at 5% level of significance for two tail at (5-2) degree of freedom. The conclusion can be drawn that correlation coefficient between

these two variables is not significant. This means null hypothesis ( $H_0$ ) is accepted i.e. there is no relationship between deposit interest rate and deposit amount of BOK.

### **4.3 Analysis of Fluctuation in Lending Interest Rate and Its Relation with Lending Amount**

In this section, the relationship between lending interest rate and lending amount is presented and analysis. Generally, when there is higher interest rate (especially lending or credit rate) in the economy, people normally borrow lesser amount than the period when lending interest rate is low. Theoretically, there is inverse relationship between lending interest rate and lending amount i.e. when there is low lending rate, then there should be higher amount of borrowing by the user of fund and vice versa. Higher amount of borrowing indicates higher investment in the country or higher transaction in trade. This is necessary for the growth of the economy. So, this study tries to explore the relationship between lending rate and lending amount in Nepalese economy.

#### **4.3.1 NABIL Bank Ltd.**

NABIL bank ltd grants credit on different sectors like export credit, import L/C, priority sectors, Term Loan, Against Govt. Bond, working capital, hire purchase and so on. The lending rates on different sectors differ during different fiscal years.

Table 4.7 shows the lending interest rate, average lending interest rate, and correlation coefficient, coefficient of determination, t-value and standard deviation of NABIL during last five FY.

**Table 4.7: Lending rate of NABIL on different sectors during last five FYs**

(Rs in million)

Sectors\Years	2006	2007	2008	2009	2010
Overdraft					
Export Credit	9.5	8.75	8.75	11.00	12.50
Import L/C	9.75	8.75	8.75	11.00	12.50
Against FDR	7.00	7.00	7.00	9.50	12.00
Against Govt. Bond	7.25	7.25	7.25	10.00	14.00
Against BG/CG	9.00	7.50	7.50	10.50	15.00
Against other Guarantee	10.00	8.50	8.50		
Industrial Loan					
Commercial Loan					
Priority Sector	11.50	10.25	10.25		
Deprived Sector	7.50	6.75	7.00	8.00	10.00
Term Loan	12.00	10.50	10.50	11.50	14.50
Working Capital Loan	11.00	9.75	9.75	11.00	13.50
Hire Purchase	9.50	9.25	9.75		
Others	10.00	9.25	9.50	11.25	15.50
<b>Average Lending Rate (1)</b>	<b>9.50</b>	<b>8.62</b>	<b>8.71</b>	<b>10.41</b>	<b>13.28</b>
<b>Loan Amount (2)</b>	<b>13021.00</b>	<b>15657.10</b>	<b>21514.63</b>	<b>27816.56</b>	<b>32902.83</b>
<b>Correlation Coefficient (r<sub>12</sub>)</b>	<b>-0.818898</b>				
<b>Coefficient Of Determination (r<sub>12</sub><sup>2</sup>)</b>	<b>0.670595</b>				
<b>t- statistics</b>	<b>t- cal = -2.47129</b>			<b>Insignificant</b>	
	<b>t- tab = 3.182</b>				
<b>S.D.(†)</b>	<b>1.714113</b>				

Source: Statistics, Interest Rate Structure, Sources and Uses of Funds, NRB

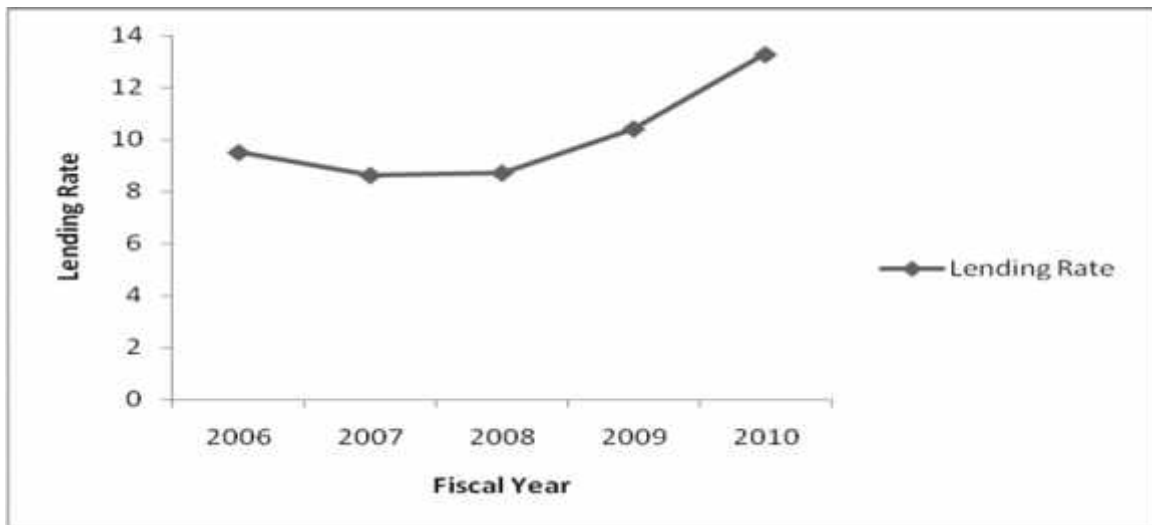
(Note: Calculation of Correlation Coefficient, Coefficient of Determination, t-statistics and standard deviation is shown in appendix II)

Table 4.7 shows the lending interest rate on different area is in increasing trend. Table shows that the maximum interest rate is 15.50% and 12.50% in FY2010 and minimum rate is 6.75% in FY 2007. This shows the interest rate increased drastically during the five FYs period. Generally the productive sector loan rate like commercial loan, industrial loan are not given and priority sector loan, working capital loan and so on rises less in magnitude than non productive sector loan (like overdraft, loan against

government bond, BG/CG rate and so on). For example during the last five FYs rises of import L/C rate was by 3.75%. In the same manner, the rises magnitudes were 0%, 0%, 4.25% for against other guarantee, hire purchase and others loan. The rises percentage were 0%, 3%, 4%, 23.75% in priority sector, deprived sector, term loan and working capita loan rate respectively. According to theory, in order to induce the investment in the country or expansion of trade, the productive sector loan should be available at cheaper rate. But the figure shows that these sectors loan were some what costlier than other non productive loan.

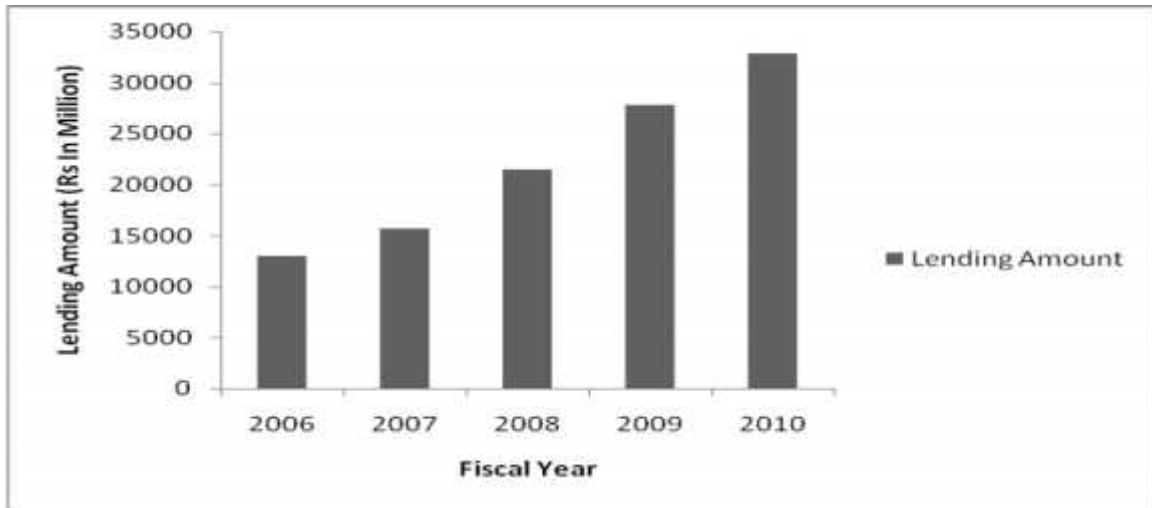
If the average of each fiscal year is taken, then it shows that average lending interest rate is in increasing trends from the year 2007 i.e. 9.5%, 8.62%, 8.71%,10.41%, 13.28% in FYs 2006, 2007, 2008, 2009 and 2010 respectively. The standard deviation for average interest rate is 1.71% which shows the deviation from mean return. With harmony to interest rate, the lending amount of NABIL is also seen to be in increasing tendency. The fluctuation in lending interest rate and lending amount can be seen in the following figures.

**Figure 4.10: Average Lending Rate of NABIL during different FYs.**





**Figure 4.11: Lending Amount of NABIL during different FYs.**



The above figure no. 4.10 and 4.11 show the trends of lending interest rate and lending amount of NABIL during different fiscal years. The interest rate has slightly increased during the five fiscal years. Similarly, the lending amount is also in increasing trend during the five fiscal years.

#### **Correlation Coefficient, Coefficient of Determination and t-statistics of NABIL**

From table 4.7 the correlation coefficient between lending rate and lending amount ( $r_{12}$ ) is -0.818898. According to our classification, this negative correlation is of “moderate degree” and there is positive relationship between lending interest rate and lending amount. It means that increase in lending interest rate result increase in total lending amount. According to the theoretical concept of lending rate and lending amount, people prefer or use money when the market interest rate is low in the market. Similarly, the coefficient of determination is  $(r_{12}^2) = 0.670595$ . When total lending amount is taken as dependent variable and lending rate as independent variable, then 67.05% of total variation in dependent variable is explained by lending rate and remaining percentage of 32.95% is due to the effect of other variable in the economy. The test of significance of correlation coefficient between lending rate and lending amount also verify the fact. The calculated value of t-statistics is -2.47129 which is lower than the tabulated t-value at 5% level of significance for two tails at (5-2) degree of freedom ( $t_{\text{tab}} = 3.182$ ). In this condition,  $H_0$  is acceptable. It means that there is not correlation between two variables.

In other words, the relation is insignificant. In conclusion, the positive relationship between lending rate and lending amount is applicable for NABIL.

#### 4.3.2 Everest Bank Limited (EBL)

**Table 4.8: Lending rate of EBL on different sectors during last five FYs**

(Rs in million)

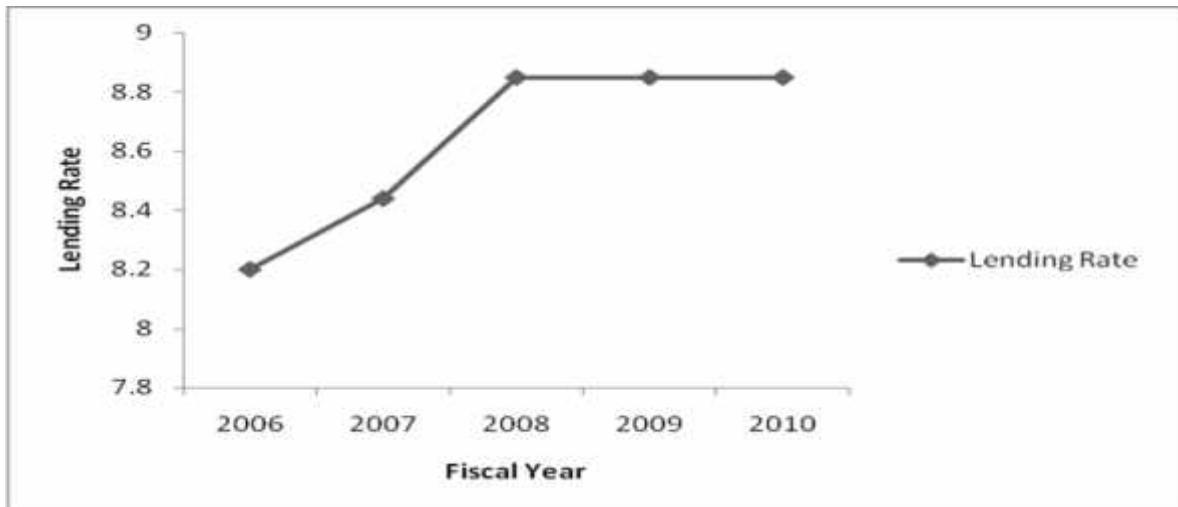
Sectors\Years	2006	2007	2008	2009	2010
Overdraft	9.50	9.50	9.75	9.75	9.75
Export Credit	7.50	7.50	8.75	8.75	8.75
Import L/C	8.38	8.38	8.50	8.50	8.50
Against FDR					
Against Govt. Bond	5.50	5.50	7.50	7.50	7.50
Against BG/CG	8.00	8.00	8.00	8.00	8.00
Against other Guarantee					
Industrial Loan	9.50	9.50	9.50	9.50	9.50
Commercial Loan	9.50	9.50	9.50	9.50	9.50
Priority Sector					
Deprived Sector	7.25	7.25	7.50	7.50	7.50
Term Loan	9.50	9.50	9.75	9.75	9.75
Working Capital Loan	9.50	9.50	9.75	9.75	9.75
Hire Purchase	6.50	9.50	9.75	9.75	9.75
Others	7.75	7.75	8.00	8.00	8.00
<b>Average Lending Rate (1)</b>	<b>8.20</b>	<b>8.44</b>	<b>8.85</b>	<b>8.85</b>	<b>8.85</b>
<b>Loan Amount (2)</b>	<b>10124.00</b>	<b>14059.20</b>	<b>18814.29</b>	<b>24366.20</b>	<b>28129.69</b>
<b>Correlation Coefficient (<math>r_{12}</math>)</b>	<b>0.8900049</b>				
<b>Coefficient Of Determination (<math>r_{12}^2</math>)</b>	<b>0.792108</b>				
<b>t- statistics</b>	<b>t- cal = 3.3809</b> <b>t- tab = 3.182</b>			<b>Significant</b>	
<b>S.D.(† )</b>	<b>0.270510</b>				

Source: Statistics, Interest Rate Structure, Sources and Uses of Funds, NRB

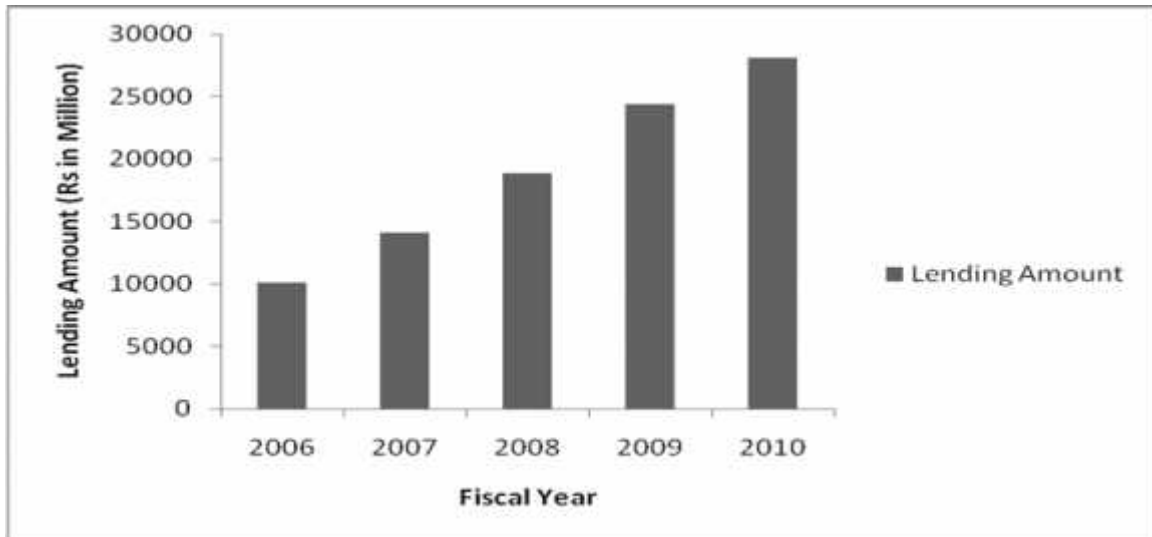
(Note: Calculation of Correlation Coefficient, Coefficient of Determination, t-statistics and standard deviation is shown in appendix II)

Table 4.8 shows the lending interest rate, average lending interest rate, correlation coefficient, coefficient of determination, t-value and standard deviation of EBL during different FYs. The interest rate of EBL is in increasing trend and remains constant from the year 2008. The table shows that the maximum interest rate is 9.75% in FY2008, 2009, 2010 and minimum rate is 5.5% in FY 2007. This table shows the interest rate rises slowly during the five FYs period. In the FY 2006, the average interest rate is 8.20%. But in later year, the interest rate increased by 0.24% in the year 2007, 0.41% in the year 2008 and remains constant till the year 2010. The table shows that average lending interest rate is in increasing trends except 2008, 2009 and 2010 remains constant i.e.8.20% in 2006, 8.44% in 2007, 8.85% in 2008 till 2010 respectively. The standard deviation for average interest rate is 0.2705 which shows the deviation from mean return. With harmony to interest rate, the lending amount of EBL is also seen to be in increasing tendency where as the lending rate is also increasing. This table shows that there is the positive relation between interest rate and interest amount. But to get the exact numerical result of relationship, correlation coefficient is necessary to be calculated. The figure for changing trend of interest rate and lending amount is given on figure no. 4.12 and 4.13.

**Figure 4.12: Average lending rate of EBL during different FYs**



**Figure 4.13: Lending Amount of EBL during different FYs**



The above figure 4.12 and 4.13 show the trends of lending interest rate and lending amount of EBL during different fiscal years. The interest rate has slightly increased during the five fiscal years. It rises from 8.20% to 8.85%. Similarly, the lending amount is in increasing trend during the five fiscal years despite the rise or constant in interest rate. We can conclude that there is significant relationship between lending rate and lending amount of EBL.

#### **Correlation Coefficient, Coefficient of Determination and t-statistics of EBL**

From table 4.12, the correlation coefficient between lending rate and lending amount ( $r_{12}$ ) is 0.8900049. According to our classification, this positive correlation is of “moderate degree” which indicates that there is positive relationship between lending interest rate and lending amount. It means that increase in lending interest rate result increase in total lending amount. According to the theoretical concept of lending rate and lending amount, people prefer or use money when the market interest rate is low in the market. Similarly, the coefficient of determination is ( $r_{12}^2$ ) 0.792108. When total lending amount is taken as dependent variable and lending rate as explained by lending rate as independent variable, then 79.21% of total variation in dependent variable is explained by lending rate and remaining percentage of 20.79% is due to the effect of other variable in the economy. The test of significance of correlation coefficient between lending rate and lending amount also verify the fact. The calculated value of t-statistics is 3.3809 which is more

than the tabulated t-value at 5% level of significance for two tails at (5-2) degree of freedom ( $t_{tab} = 3.182$ ). In this condition,  $H_0$  is rejected and  $H_1$  is acceptable. It means that there is correlation between two variables. In other words, the relation is insignificant. In conclusion, the relationship between lending rate and lending amount is applicable for EBL.

### 4.3.3 Bank of Kathmandu (BOK)

**Table 4.9: Lending rate of BOK on different sectors during last five FYs**

(Rs in million)

Sectors\Years	2006	2007	2008	2009	2010
Overdraft	11.75	11.75	11.75	11.75	14.50
Export Credit	7.75	7.75	7.75	11.00	13.00
Import L/C	10.25	10.25	10.25	11.00	12.50
Against FDR	7.50	7.50	7.50	9.25	13.50
Against Govt. Bond	7.25	7.25	7.25	9.50	12.50
Against BG/CG	9.25	9.25	9.25	9.75	12.50
Against Other Guarantee	7.50	7.50	7.50		
Industrial Loan	11.75	11.75	11.75		
Commercial Loan	12.25	12.25	12.25		
Priority Sectors					
Deprived Sectors	8.75	8.75	8.75	8.75	13.00
Term Loan	11.75	11.75	11.75	12.00	14.00
Working Capital Loan	11.75	11.75	11.75	11.75	14.00
Hire Purchase	9.25	9.25	9.25	10.50	13.25
Others	9.25	9.25	9.25	10.75	11.00
<b>Average Lending Rate (1)</b>	<b>9.71</b>	<b>9.71</b>	<b>9.71</b>	<b>10.52</b>	<b>13.06</b>
<b>Loan Amount (2)</b>	<b>7525.00</b>	<b>9663.60</b>	<b>12692.90</b>	<b>14894.70</b>	<b>16847.10</b>
<b>Correlation Coefficient (<math>r_{12}</math>)</b>	<b>0.784553</b>				
<b>Coefficient of Determination (<math>r_{12}^2</math>)</b>	<b>0.615524</b>				
<b>t- statistics</b>	<b>t- cal = 2.1915</b>			<b>Insignificant</b>	
	<b>t- tab = 3.182</b>				
<b>S.D.(†)</b>	<b>1.297416</b>				

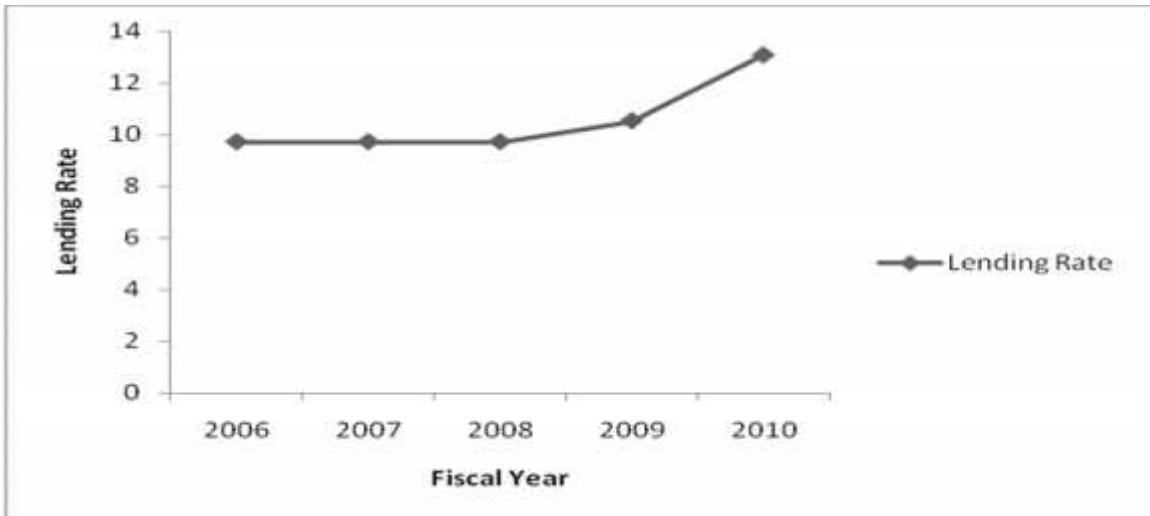
Source: Statistics, Interest Rate Structure, Sources and Uses of Funds, NRB

*(Note: Calculation of Correlation Coefficient, Coefficient of Determination, t-statistics and standard deviation is shown in appendix II)*

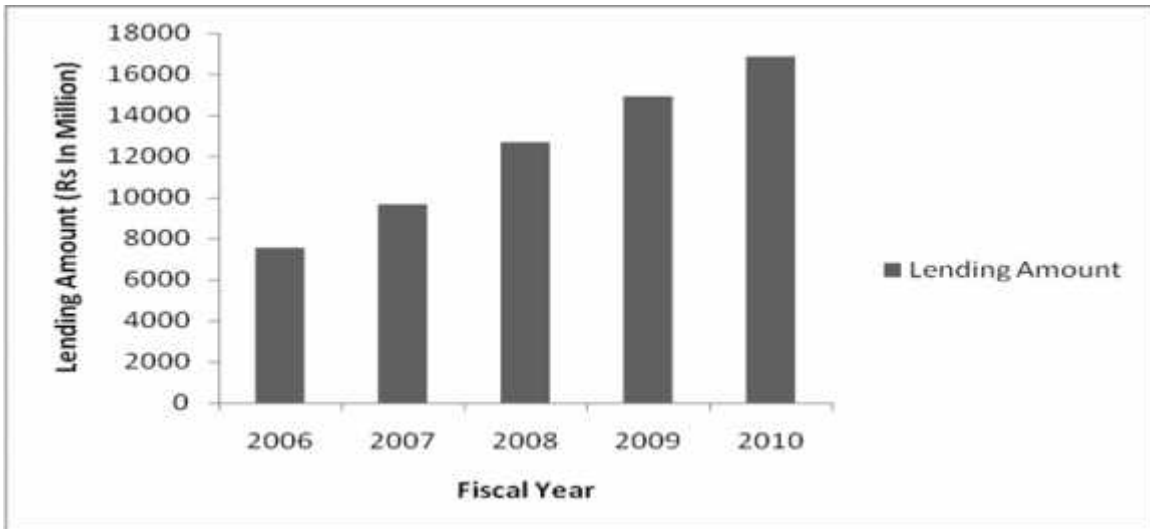
Table 4.9 shows the lending interest rate, average lending interest rate, correlation coefficient, coefficient of determination, t-value and standard deviation of BOK during different FYs. The interest rate of BOK is also in increasing trend. The table shows that the maximum interest rate is 14.50% in FY2010 and minimum rate is 7.25% in FY 2008. Generally the productive sector loan rate (like commercial loan, industrial loan, priority sector loan, working capital rate and so on) declines (except working capital rises in 2010). On other hand non productive sector loan (like overdraft, loan against government bond, BG/CG rate and so on) rises in year 2009 and 2010. For example during the last five FYs rises of hire purchase rate was by 4% during 2006 to 2010. In the same manner, the rising magnitude for export credit was by 5.25% during different fiscal years. Overdraft remains constant during different fiscal years except rises by 2.75% in the year 2010. Loan against Govt bond rises to 5.25%. Industrial loan and commercial loan is 0% from the year 2009. Thus, we can say that there is the fluctuation of interest rate in these non productive sectors. But there is rise of interest rate for the productive deprive sectors and others. According to theory, in order to induce the investment in the country or expansion of trade, the productive sector loan should be available at cheaper rate. But the figure shows that these sectors loan were some what costlier than other non productive loan.

The standard deviation for average interest rate is 1.2974 % which shows the deviation from mean return. With harmony to interest rate, the lending amount of BOK is also seen to be in increasing tendency. This table shows that there is the positive relation between interest rate and interest amount. But to get the exact numerical result of relationship, correlation coefficient is should be necessary to calculate. The figure for changing trend of interest rate and lending amount is given on figure no. 4.14 and 4.15.

**Figure 4.14: Average lending rate of BOK during different FYs**



**Figure 4.15: Lending Amount of BOK during different FYs**



The above figure 4.14 and 4.15 show the increasing trends of lending interest rate and lending amount of BOK during different fiscal years. The interest rate has slightly increased in during the five fiscal years. It falls from 9.71% to 13.06%. Similarly, the lending amount is in increasing trend during the five fiscal years. We can conclude that there is positive relationship between lending rate and lending amount of BOK.

#### **Correlation Coefficient, Coefficient of Determination and t-statistics of BOK**

From table 4.9, the correlation coefficient between lending rate and lending amount ( $r_{12}$ ) is 0.784553. This positive correlation indicates that there is positive relationship between

lending interest rate and lending amount. It means that increase in lending interest rate result increase in total lending amount. According to the theoretical concept of lending rate and lending amount, people prefer or use money when the market interest rate is low in the market. Similarly, the coefficient of determination ( $r_{12}^2$ ) is 0.615524. When total lending amount is taken as dependent variable and lending rate as independent variable, then 61.55% of total variation in dependent variable is explained by lending rate and remaining percentage of 38.45% is due to the effect of other variable in the economy. The test of significance of correlation coefficient between lending rate and lending amount also verify the fact. The calculated value of t-statistics is 2.1915 which is less than the tabulated t-value at 5% level of significance for two tails at (5-2) degree of freedom ( $t_{\text{tab}} = 3.182$ ). In this condition,  $H_0$  is acceptable. It means that there is no correlation between two variables. In other words, the relation is insignificant. In conclusion, there is no relationship between lending rate and lending amount of BOK.

#### 4.4 Analysis of relation between Deposit Rate and Lending Rate

Generally, there is positive relation between interest rate on deposit and interest on lending. On this ground, different theory has been propounded like Fisher effect, Harrod-Keynes effect and so on. This all phenomenon have been already explained in the chapter two. To measure the actual relationship between interest rate on deposit and lending, the prevailing situation of each bank is analyzed.

##### 4.4.1 NABIL Bank Limited

**Table 4.10: Relationship between Interest Rate on Deposit and Lending of NABIL**

<b>Years</b>	<b>Deposit Rate</b>	<b>Lending Rate</b>
2006	3.20	9.50
2007	2.71	8.62
2008	4.82	8.71
2009	5.20	10.41
2010	8.33	13.28
<b>Correlation Coefficient (<math>r_{12}</math>)</b>	<b>0.907484</b>	
<b>Coefficient of Determination (<math>r_{12}^2</math>)</b>	<b>0.823527</b>	
<b>t- statistics</b>	<b>t- cal = 3.7416</b> <b>t- tab = 3.182</b>	<b>Significant</b>



(Note: The average interest rate of deposit and lending is taken from “Whole Mean” and “Average Lending Rate” respectively. For this case, values are taken from table 4.1 and 4.7. Calculation of Correlation Coefficient, Coefficient of Determination and t-statistic is shown in appendix III)

**Figure 4.16: Relationship between Deposit Rate and Lending Rate of NABIL**

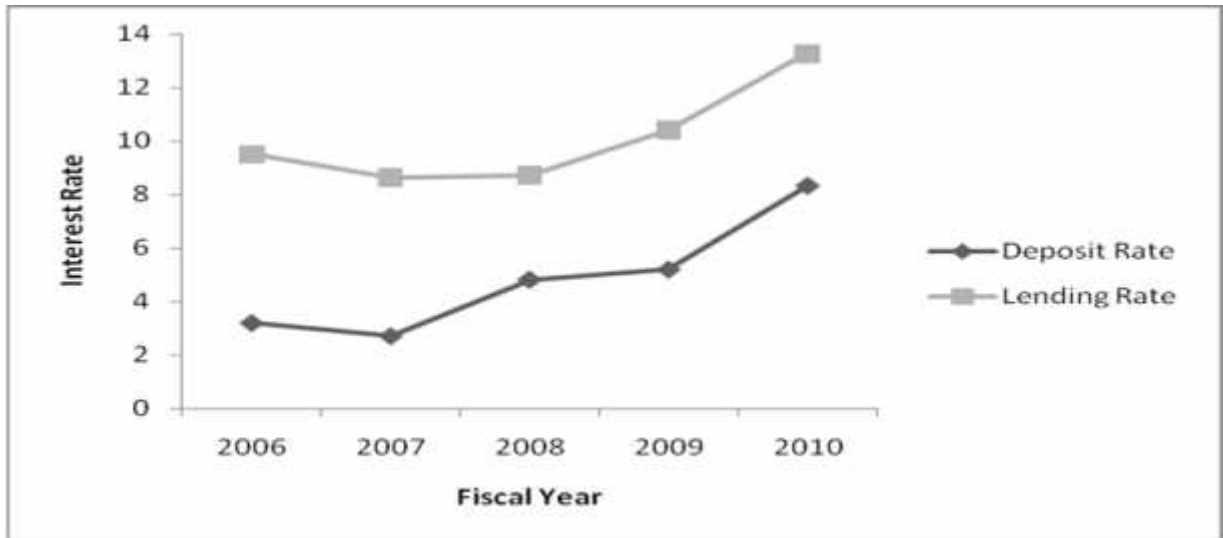


Table no. 4.10 shows the trend of interest rate on both deposit and lending of NABIL. The lending interest rate and deposit interest rate shows decreasing and then increasing trend during five fiscal years. The correlation coefficient between two variables ( $r_{12}$ ) = is 0.907484. The positive sign indicates that there is positive relationship between deposit interest rate and lending interest rate. The coefficient of determination ( $r_{12}^2$ ) is 0.823527 which indicates that the variation in dependent variable is explained up to 82.35% by independent variable and remaining 17.65% is due to the effect of other variables in the economy. Similarly, the calculated t-value between the two variables is 3.74162 which is more than the tabulated t-value at 5% level of significance for two tails at (5-2) degree of freedom ( $t_{\text{tab}} = 3.182$ ). Hence, it is significant and null hypothesis ( $H_0$ ) is rejected i.e. ( $H_1$ ) is accepted which means there is positive relationship between deposit interest rate and lending interest rate of NABIL.

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

**Table 4.11: Relationship between Interest Rate on Deposit and Lending of EBL**

Years	Deposit Rate	Lending Rate
2006	3.65	8.20
2007	3.36	8.44
2008	3.98	8.85
2009	3.98	8.85
2010	3.98	8.85
<b>Correlation Coefficient (<math>r_{12}</math>)</b>	<b>0.688258</b>	
<b>Coefficient of Determination (<math>r_{12}^2</math>)</b>	<b>0.473699</b>	
<b>t- statistics</b>	<b>t- cal = 1.6432</b> <b>t- tab = 3.182</b>	<b>Insignificant</b>

*(Note: The average interest rate of deposit and lending is taken from “Whole Mean” and “Average Lending Rate” respectively. For this case, values are taken from table 4.3 and 4.8. Calculation of Correlation Coefficient, Coefficient of Determination and t-statistic is shown in appendix III)*

**Figure 4.17: Relationship between Interest Rate on Deposit and Lending of EBL**

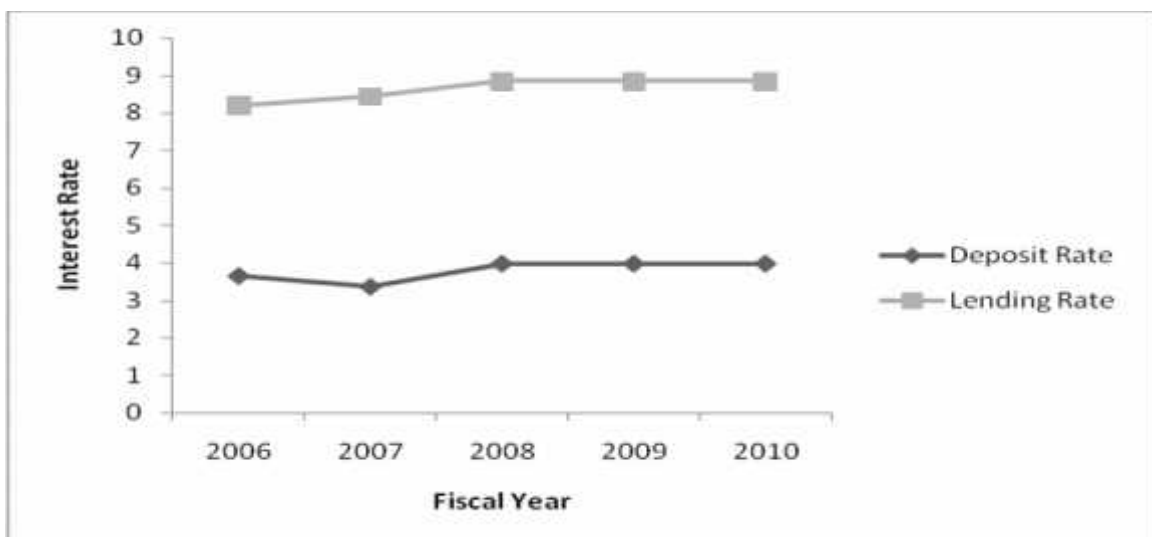


Table 4.11 shows the trend of interest rate on both deposit and lending of EBL. The trend of deposit interest rate is fluctuation during five fiscal years and lending rate is in increasing trend. Lending rate steeply rises in the second and third year and remains constant up to fifth year. The deposit rate is decrease in the second year and increase in third year and then remains constant up to fifth year. The correlation coefficient between two variables ( $r_{12}$ ) is 0.688258. The positive sign indicates that there is positive relationship between deposit interest rate and lending interest rate. Both the deposit interest rate and lending interest rate are in increasing trend. The coefficient of determination ( $r_{12}^2$ ) is 0.473699 which indicates that the variation in dependent variable is explained by 47.36% by independent variable and remaining 52.64% is due to the effect of other variables in the economy. But, the calculated t-value between the two variables is 1.6432 which is less than the tabulated t-value at 5% level of significance for two tails at (5-2) degree of freedom ( $t_{\text{tab}} = 3.182$ ). Hence, it is insignificant and null hypothesis ( $H_0$ ) is accepted which means there is a no relationship between deposit interest rate and lending interest rate of EBL.

#### 4.4.3 Bank of Kathmandu (BOK)

**Table 4.12: Relationship between Interest Rate on Deposit and Lending of BOK**

<b>Years</b>	<b>Deposit Rate</b>	<b>Lending Rate</b>
2006	3.05	9.71
2007	2.72	9.71
2008	3.47	9.71
2009	3.47	10.52
2010	5.07	13.06
<b>Correlation Coefficient (<math>r_{12}</math>)</b>	<b>0.954633</b>	
<b>Coefficient of Determination (<math>r_{12}^2</math>)</b>	<b>0.911324</b>	
<b>t- statistics</b>	<b>t- cal = 5.5525</b> <b>t- tab = 3.182</b>	<b>Significant</b>

*(Note: The average interest rate of deposit and lending is taken from “Whole Mean” and “Average Lending Rate” respectively. For this case, values are taken from table 4.5 and*

4.9. Calculation of Correlation Coefficient, Coefficient of Determination and t-statistic is shown in appendix III)

**Figure 4.18: Relationship between Interest Rate on Deposit and Lending of BOK**

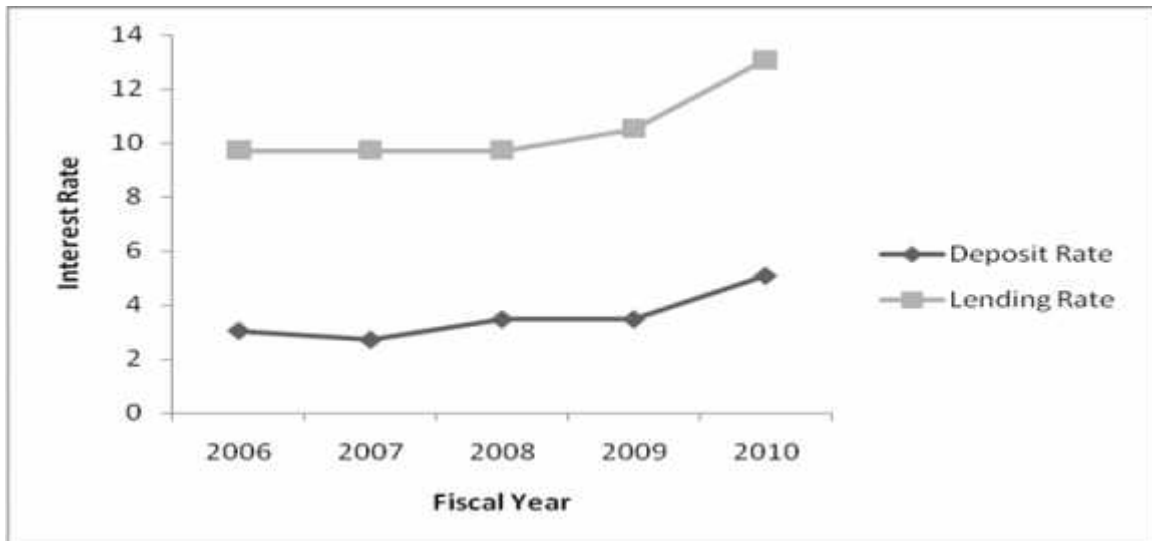


Table 4.11 shows the trend of interest rate on both deposit and lending of BOK. The interest rate on lending is in increasing trend during five fiscal years where as the interest rate on deposit is fluctuating every year decreasing in the second year, increasing again in the third year and remains constant in fourth year and finally increasing in fifth year. The correlation coefficient between two variables ( $r_{12}$ ) is 0.954633. The positive sign indicates that there is positive relationship between deposit interest rate and lending interest rate. The coefficient of determination ( $r_{12}^2$ ) is 0.911324 which indicates that the variation in dependent variable is explained by 91.13% by independent variable and remaining 8.07% is due to the effect of other variables in the economy. Similarly, the calculated t-value between the two variables is 5.5525 which is more than the tabulated t-value at 5% level of significance for two tails at (5-2) degree of freedom ( $t_{tab} = 3.182$ ). Hence, it is significant and null hypothesis ( $H_0$ ) is rejected and Alternative hypothesis ( $H_1$ ) is accepted which means there is a relationship between deposit interest rate and lending interest rate of BOK.

#### 4.5 Major Findings

On the basis of above entire presentation and analysis of relevant data of sample banks using various analytical tools, the major findings have been followed:

- ) The interest rate on both deposit and lending of all sample banks are found to be in fluctuating (generally decreasing) trend. But, on the contrary to this, deposit amount and lending amount is increasing every year.
- ) The saving deposit amount and saving interest rate have inverse relationship of all sample banks (except NABIL). The value of correlation coefficient between saving deposit rate and saving deposit amount of sample banks under study is found as 0.431192, -0.745084, -0.810354 for NABIL, EBL and BOK respectively. These values show that there is high degree of inverse relationship except NABIL. That means if one variable increases, other variable decrease and vice versa. This case is against the theory of substitution effect.
- ) From the analysis of coefficient of determination for deposit amount ranging from 0.18592 to 0.65667, it is found that the 18.59% to 65.66% of total variation in deposit amount of sample banks is explained by the deposit rate (independent variable) and remaining percentage are due to the effect of other factors in the economy.
- ) The t-statistic between saving deposit amount and saving deposit rate is insignificant which also clarify that the above two variables have strong positive correlation expect NABIL. Hence, the result is totally against the theory as the research shows that people deposit more money in saving deposit when the interest rate decreases or remains constant.
- ) Analysis of fixed deposit amount and fixed interest rate shows positive relationship for NABIL, EBL and BOK. The correlation coefficient is found as 0.99026, 0.628976, 0.660947, for NABIL, EBL and BOK. According to correlation coefficient, there is substitution effect. This shows that the people depositing more money in fixed deposit are affected by yield rate on fixed deposit.

- ) From the analysis of coefficient of determination for fixed deposit ranging from 0.395611 to 0.980615, it is found that the 39.56% to 98.06% of total variable in fixed deposit amount of sample banks is explained by the deposit rate (independent variable) and remaining percentage are due to the effect of other factors in the economy.
- ) The t-test clarify that the relationship is not strong. The calculated value of t is less than the tabulated value of t in case of all the banks (except NABIL), so t-test indicates that there is no significant relationship between those two variables (except NABIL).
- ) The above data shows that there is positive relationship between lending rate and lending amount. It means that change in one of the variable doesn't affect demand of funds. By using correlation tools, it can be inferred that EBL and BOK have less degree of correlation where as NABIL has highly negative relationship.
- ) Though EBL and BOK have less degree of correlation between lending rate and lending amount, the t-statistic is insignificant for NABIL, EBL and BOK which means that there is no relationship between lending rate and lending amount. So, increase in lending amount is not due to the decrease in lending interest rate but due to the other reason.
- ) The correlation coefficient between deposit rate and lending rate is 0.907484, 0.688258, and 0.954633 for NABIL, EBL and BOK respectively. This indicates that there is positive relationship between deposit rate and lending rate. So, the increase in one variable causes increase in another variable.
- ) The t-value of the sample NABIL and BOK is significant where as EBL is insignificant. It means that NABIL, BOK has positive relationship between deposit rate and lending rate. So, the changes in one variable cause change in another variable in same direction. But, in the case of EBL which is insignificant, it is not due to the change in one variable cause change in other variable in same direction but due to other reason.

## **CHAPTER V**

### **SUMMARY, CONCLUSION AND RECOMMENDATION**

This chapter is a last part of the research study which includes all the briefing of the whole study and extracts of all the previously discussed chapters. This chapter mainly consists of three parts summary, conclusion and recommendation.

#### **5.1 Summary**

Many commercial bank, development banks and financial institutions are operating in the economy to assist in the process of economic development of the country. Due to high competition between the financial institutions, the collected high amount of deposit from public is not properly invested. It is due to lack of demand for fund. So, it raised the problems of investment. Proper mobilization of deposit plays a vital role in the development of economy of the nation. Accepting deposit from savers and transferring the collecting deposit to the investment sector in one of the major functions of banking business. To collect deposit bank provide certain percentage of interest and when amount is loaned outside certain percentage of interest is charged to them. Even though these are various factors in the economy that affects deposit amount and lending amount of the banks with the curiosity to be clear about interest rate structure of commercial banks and to be clear about whether interest rate influence deposit amount this study is made.

Economic development implies the development of all sectors of Nation. In order to gear up development process, high and sustainable economic growth is necessary. Banking development helps to develop the whole sector of the country. Commercial banks are one of the vital aspects of this sector, which deals in the process of channelizing 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 31 commercial banks, 78 development banks, 18 micro credit development banks, 79 financial companies, 16 saving and co-operatives and 45 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. 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. It pools the fund scattered in the economy and mobilizes them to the productive sector. As focus on the above explanation the study has covered on the study of interest rates regarding its impact on deposit and lending 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

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 i.e. substitution effect, 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, and significance of the study, objectives of the study, research hypothesis 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, theories of interest, types of interest, factors affecting interest rate and so on are reviewed. Of the theories of interest, the main four theories - The Classical Theory, Liquidity Preference Theory, Loanable Fund Theory and Rational Expectation Theory 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. Similarly, the term structure of interest rate are:- Pure Expectation Theory, The Liquidity Premium View of the Yield Curve, The Segmented-Markets or Hedging-Pressure Argument, Preferred Habitat Theory explains in this chapter.

Research design used is mainly analytical. Out of the total financial system 3 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 from 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, coefficient of determination and t-statistics.

## **5.2 Conclusion**

Based on the above analysis following conclusions have been drawn:

- ) According to the theory, there is positive relationship between deposits rate and deposit amount. But the analysis of substitution effect for both fixed and saving deposit shows that substitution effect do no exist for all sample banks. It may be due to the increase in liquidity position of people as well as commercial banks. As people have less investment opportunity, they put their money in banks and other financial institution rather than to hold. This may be due to the fact that, in the last five FYs, people accumulated most of their funds on saving and fixed accounts though they don't get appropriate interest on it. As well as banks are providing high interest on fixed deposit due to the crises of liquidity from last 3 years in banks. It may be just because of unavailability of other reliable place of investment, political instability and feeling of insecurity among people.
- ) The depositors place interest rate's role as secondary in their decision for keeping deposit in the banks. Absence of better investment opportunities, expectation of

inflationary pressures and the associated safety, liquidity and profitability, what ever are their respective roles, must have been the factors responsible for increase in volume of deposit despite downscaling introduced in interest rates during the review period. This might have produced negatives relationship between interest rates and deposits.

- ) From the study, it is found that the interest rate of saving deposit is decreasing and remains constant whereas on other hand saving deposit amount is increasing in every fiscal year. Therefore, there is a no relationship between deposit interest rate and deposit amount of all sample banks as proved by negative correlation coefficient of all banks except NABIL.
- ) In case of fixed deposit, all the sample banks have positive correlation coefficient between interest rate and deposit indicating positive relation between fixed deposit interest rate and deposit amount. But as per t-test the relation is significant in case of NABIL and insignificant in case of EBL and HBL. Hence, there is no relation between fixed deposit interest rate and fixed deposit amount. Thus the decrease or increase in deposit is not due to change in interest rate but due to other factors. Therefore, it is concluded that for fixed deposit also, there is no substitution effect at all. Hence, in case of fixed deposit also, the conclusion is not in line with the theory. Fixed depositors are not motivated by interest rate but by the safety of investment, guarantee of return, easy liquidity offered by the banks. Interest rate is not the key factor in mobilizing fixed deposit.
- ) According to theory, there is negative relationship between lending rate and lending amount. The study found that all the sample banks have positive relationship between lending rate and lending amount. But among them, NABIL has strong relationship as required by theory. The increment in loanable fund for NABIL is due to not increase in lending rate because of other factor as this relationship is proved statistically insignificant. As well as EBL and BOK increase in lending amount is not due to the increase in lending rate but may be due to other factor, as it lowers t-calculated value than tabulated value for BOK and highest t- calculated value than tabulated value for EBL which indicated insignificant relationship between variables under study. So it can be concluded

that the lending interest rate is also an important factor for expansion or contraction of lending amount.

- ) It is found that deposit rate and lending rate of sample banks are moved into same direction. There is high degree of positive correlation between deposit rate and lending rate which indicates that change in one variable causes to change in other variable in same direction. Banks want to maintain the interest rate spread (i.e. difference of lending rate and deposit rate) to achieve uniform profitability due to which the positive relation between the rates is witnessed. Lending rate of same banks is highly affected by deposit rate.

### **5.3 Recommendation**

Based on the above conclusion following suggestions can be recommended to the related banks and concerned parties.

- ) The financial institutions like Commercial banks are suggested to quote higher interest rate on deposit because it helps to generate more capital from depositors which are needed for the development of the country. Money gets invested in unproductive sector like gold, land and real estate business due to low interest rate in bank. Hence, banks in Nepal had to face huge liquidity crisis in the recent past years due to the investment in unproductive sector as well as black money marketing. In consequence of which, we could see hopping rise in interest rate of banks for deposit collections.
- ) NRB has suggested in providing clear cut policies related to interest rates on both deposit and lending rate.
- ) 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 as well as help to grow the financial and economical sectors. 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.

- ) Commercial banks should emphasize on the repayment on loan and provide incentive to borrowers to encourage paying loan. Good repayment of loans is the strength of commercial banks.
- ) The financial institutions are suggested to include the inflation premium as far as possible while fixing the interest rates. If the inflation rate is not considered and real rate come out to be negative then depositors may withdraw their money and utilize it on non-productive sectors.
- ) Investment should be higher yield oriented. For this they have to invest their fund in sector with higher return as well as introduce competitive customer oriented schemes. It will increase the profit position of commercial banks.
- ) 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.
- ) It is advisable to lower interest on government securities enjoying tax advantage so that there will be better effect on deposit and lending rates

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## APPENDIX

### APPENDIX – I

#### Calculation of Mean and Standard Deviation of Nabil Bank

Whole Mean $fX^A$	$fX Z \bar{X}^A$	$fX Z \bar{X}^A$
3.20	-1.65	2.7225
2.71	-2.14	4.5796
4.82	-0.03	0.0009
5.20	0.35	0.1225
8.33	3.48	12.1104
$X = 24.26$		$fX Z \bar{X}^A = 19.5359$

Where,

Fixed Deposit Mean = Total Fixed Deposit / n

Whole Mean (X) = Total Deposit / n

$$\text{Mean } (\bar{X}) X \frac{X}{n} = \frac{24.26}{5} = 4.85 \%$$

The average interest rate on deposit of Nabil Bank is 4.85 %.

$$\text{Standard Deviation } (\sigma) = \sqrt{fX Z \bar{X}^A / n} = \sqrt{19.59/5} = 1.9767\%$$

Standard Deviation of interest rate on deposit of Nabil Bank is 1.9767%.

#### Calculation of Correlation Coefficient, Coefficient of Determination and t-Statistics of Nabil Bank.

**For Saving Deposit:**

Years	Rate (x <sub>1</sub> )	Deposit(x <sub>2</sub> )	$fX_1 Z \bar{X}_1^A$	$fX_2 Z \bar{X}_2^A$	$fX_1 Z \bar{X}_1^A$ $fX_2 Z \bar{X}_2^A$	$fX_1 Z \bar{X}_1^A$	$fX_2 Z \bar{X}_2^A$
2006	2.00	8770.80	-0.2	-3133.634	626.7268	0.04	9819662.046
2007	2.00	10187.40	-0.2	-1717.034	343.4068	0.04	2948205.757
2008	2.00	12159.97	-0.2	255.536	-51.1072	0.04	65298.6473
2009	2.00	14620.40	-0.2	2715.966	-543.1932	0.04	7376471.31
2010	3.00	13783.60	0.8	1879.166	1503.332	0.64	3531264.85
	$X_1 =$ 11	$X_2 =$ 59522.17			= 1879.166	= 0.8	= 23740902.6

$$\text{Mean } (\bar{X}_1) X \frac{X_1}{n} = \frac{11}{5} = 2.2 \%$$

$$\text{Mean } (\bar{X}_2) X \frac{X_2}{n} = \frac{59522.17}{5} = 11904.434\%$$

$$\text{Karl Person's Correlation Coefficient } (r_{23}) = \frac{\sum x_1 x_2}{\sqrt{\sum x_1^2} \sqrt{\sum x_2^2}}$$

$$= \frac{\sum f_{X_1 Z \bar{X}_1} \sum f_{X_2 Z \bar{X}_2} A}{\sqrt{\sum f_{X_1 Z \bar{X}_1} A} \sqrt{\sum f_{X_2 Z \bar{X}_2} A}} = \frac{1879.166}{\sqrt{0.8} \sqrt{237409.62}} = 0.431192$$

Therefore Correlation coefficient between Saving interest rate and Saving deposit amount of Nabil Bank is 0.431192.

$$\text{Coefficient of Determination } (r_{23})^2 = 0.1859273$$

$$\text{t- Statistics } (t) = r \frac{\sqrt{n Z^2}}{\sqrt{1 - Z^2}} = 0.4311929 \frac{\sqrt{5 Z^2}}{\sqrt{1 - 0.1859273}} = 0.827752$$

#### For Fixed Deposit:

Years	Rate (x <sub>1</sub> )	Deposit(x <sub>2</sub> )	$f_{X_1 Z \bar{X}_1} A$	$f_{X_1 Z \bar{X}_1} A$	$f_{X_2 Z \bar{X}_2} A$	$f_{X_2 Z \bar{X}_2} A$	$\frac{f_{X_1 Z \bar{X}_1} A}{f_{X_2 Z \bar{X}_2} A}$
2006	3.40	5450.20	-1.954	3.8181	-3024.052	9144890.50	5908.99760
2007	2.83	5435.20	-2.524	6.3706	-3039.052	9235837.06	7670.56724
2008	5.29	8464.09	-0.064	0.004096	-10.162	103.26624	0.650368
2009	5.85	8310.70	0.496	0.246016	-163.552	26749.2567	-81.121792
2010	9.4	14711.07	04.046	16.370	6236.818	388897898.77	25234.1656
	$\bar{X}_1$ =5.35	$\bar{X}_2$ =42371.26		= 26.808812		= 57305478.85	= 38814.3808

$$\text{Again, Mean } (\bar{X}_1) X = \frac{\sum X_1}{n} = \frac{26.77}{5} = 5.354 \%$$

$$\text{Mean } (\bar{X}_2) X = \frac{\sum X_2}{n} = \frac{42371.26}{5} = 8474.252\%$$

$$\text{Karl Person's Correlation Coefficient } (r_{45}) = \frac{\sum x_1 x_2}{\sqrt{\sum x_1^2} \sqrt{\sum x_2^2}}$$

$$= \frac{\sum f_{X_1 Z \bar{X}_1} \sum f_{X_2 Z \bar{X}_2} A}{\sqrt{\sum f_{X_1 Z \bar{X}_1} A} \sqrt{\sum f_{X_2 Z \bar{X}_2} A}} = \frac{38814.3808}{\sqrt{26.808812} \sqrt{57305478.85}} = 0.990260$$

Therefore Correlation coefficient between Fixed interest rate and Fixed deposit amount is of Nabil bank is 0.990260.

$$\text{Coefficient of Determination } (r_{45})^2 = 0.980615$$

$$\text{t- Statistics } (t) = 0.990260 \frac{\sqrt{5 Z^2}}{\sqrt{1 - 0.980615}} = 12.31$$

**Calculation of Mean and Standard Deviation of EBL.**

Whole Mean $\sum fX^A$	$\sum fX Z\bar{X}^A$	$\sum fX Z\bar{X}^A$
3.65	-0.14	0.0196
3.36	-0.43	0.1849
3.98	0.19	0.0361
3.98	0.19	0.0361
3.98	0.19	0.0361
$X = 18.95$		$\sum fX Z\bar{X}^A = 0.3128$

Where,

Fixed Deposit Mean = Total Fixed Deposit / n

Whole Mean (X) = Total Deposit / n

$$\text{Mean } (\bar{X}) X = \frac{\sum X}{n} = \frac{18.95}{5} = 3.79 \%$$

The average interest rate on deposit of EBL is 3.79 %.

$$\text{Standard Deviation } (\sigma) = \sqrt{\sum fX Z\bar{X}^A / n} = \sqrt{0.3128/5} =$$

0.25011%

Standard Deviation of interest rate on deposit of EBL is 0.25011%.

**Calculation of Correlation Coefficient, Coefficient of Determination and t-Statistics of EBL.**

**For Saving Deposit:**

Years	Rate (x <sub>1</sub> )	Deposit(x <sub>2</sub> )	$\sum fX_1 Z\bar{X}_1^A$	$\sum fX_1 Z\bar{X}_1^A$	$\sum fX_2 Z\bar{X}_2^A$	$\sum fX_2 Z\bar{X}_2^A$	$\frac{\sum fX_1 Z\bar{X}_1^A}{\sum fX_2 Z\bar{X}_2^A}$
2006	3.25	6929.20	0.2	0.04	-4265.478	18194302.57	-853.0956
2007	3.00	9018.00	-0.05	0.0025	-2176.678	4737927.116	108.8339
2008	3.00	11883.86	-0.05	0.0025	689.182	474971.8291	-34.4591
2009	3.00	14782.33	-0.05	0.0025	3587.652	12871246.87	-179.3826
2010	3.00	13360.00	-0.05	0.0025	2165.322	4688619.364	-108.2661
	$X_1$ =15.25	$X_2$ =55973.39		= 0.05		= 40967067.75	= -1066.3695

$$\text{Mean } (\bar{X}_1) X = \frac{\sum X_1}{n} = \frac{15.25}{5} = 3.05 \%$$

$$\text{Mean } (\bar{X}_2) X = \frac{\sum X_2}{n} = \frac{55973.39}{5} = 11194.678 \%$$

$$\text{Karl Person's Correlation Coefficient } (r_{23}) = \frac{\sum fX_1 Z\bar{X}_1^A \sum fX_2 Z\bar{X}_2^A}{\sqrt{\sum fX_1 Z\bar{X}_1^A \sum fX_2 Z\bar{X}_2^A}}$$

$$\frac{Z1066.3695}{\sqrt{0.05}\sqrt{40967067.75}} \quad -0.745084$$

Therefore Correlation coefficient between Saving interest rate and Saving deposit amount of EBL is -0.745084.

**Coefficient of Determination**  $(r_{23})^2 = 0.5551502$

$$\mathbf{t\text{-Statistics}} (t) = r \frac{\sqrt{n Z^2}}{\sqrt{1 Z r^2}} \quad -0.745084 \frac{\sqrt{5 Z^2}}{\sqrt{1 Z 0.555150}} \quad -2.59689$$

**For Fixed Deposit:**

Years	Rate (x <sub>1</sub> )	Deposit (x <sub>2</sub> )	$f_{X_1} Z \bar{X}_1 \overset{\frown}{\frown}$	$f_{X_1} Z \bar{X}_1 \overset{\frown}{\frown}$	$f_{X_2} Z \bar{X}_2 \overset{\frown}{\frown}$	$f_{X_2} Z \bar{X}_2 \overset{\frown}{\frown}$	$f_{X_1} Z \bar{X}_1 \overset{\frown}{\frown}$ $f_{X_2} Z \bar{X}_2 \overset{\frown}{\frown}$
2006	3.75	4298.20	-0.216	0.046656	-2519.774	6349261.011	544.271184
2007	3.42	5658.70	-0.546	0.298116	-1159.274	1343916.207	632.963604
2008	4.22	6598.01	0.254	0.064516	-219.964	48384.1613	-55.870856
2009	4.22	7094.68	0.254	0.064516	276.706	76566.21044	70.283324
2010	4.22	10440.28	0.254	0.064516	3622.306	13121100.76	920.065724
	$X_1$ =19.83	$X_2$ =34089.87		= 0.53832		= 20939228.35	= 2111.71298

Again, Mean ( $\bar{X}_1$ )  $X \frac{X_1}{n} = \frac{19.83}{5} = 3.966 \%$

Mean ( $\bar{X}_2$ )  $X \frac{X_2}{n} = \frac{34089.87}{5} = 6817.974\%$

$$\mathbf{Karl Person's Correlation Coefficient} (r_{45}) = \frac{\frac{f_{X_1} Z \bar{X}_1 \overset{\frown}{\frown} f_{X_2} Z \bar{X}_2 \overset{\frown}{\frown}}{2111.71298}}{\sqrt{0.53832} \sqrt{20939228.35}} = 0.628976$$

Therefore Correlation coefficient between Fixed interest rate and Fixed deposit amount of EBL is 0.628976.

**Coefficient of Determination**  $(r_{45})^2 = 0.395611$

$$\mathbf{t\text{-Statistics}} (t) = 0.990260 \frac{\sqrt{5 Z^2}}{\sqrt{1 Z 0.395611}} = 1.401318$$

**Calculation of Mean and Standard Deviation of BOK.**

Whole Mean $fX \overset{\frown}{\frown}$	$fX Z \bar{X} \overset{\frown}{\frown}$	$fX Z \bar{X} \overset{\frown}{\frown}$
3.05	-0.5	0.25
2.72	-0.83	0.6889
3.469	-0.081	0.006561
3.469	-0.081	0.006561
3.469	-0.081	02.3104

$X = 17.778$	$fX Z \bar{X} \bar{A} = 03.262422$
--------------	------------------------------------

Where,

Fixed Deposit Mean = Total Fixed Deposit / n

Whole Mean (X) = Total Deposit / n

$$\text{Mean } (\bar{X}) X = \frac{X}{n} = \frac{17.778}{5} = 3.55 \%$$

The average interest rate on deposit of BOK is 3.55 %.

$$\text{Standard Deviation } (\sigma) = \sqrt{fX Z \bar{X} \bar{A} / n} = \sqrt{3.262422/5} =$$

0.8077650%

Standard Deviation of interest rate on deposit of BOK is 0.807765 %.

### Calculation of Correlation Coefficient, Coefficient of Determination and t-Statistics of BOK.

#### For Saving Deposit:

Years	Rate (x <sub>1</sub> )	Deposit(x <sub>2</sub> )	$f_{X_1} Z \bar{X}_1 \bar{A}$	$f_{X_1} Z \bar{X}_1 \bar{A}$	$f_{X_2} Z \bar{X}_2 \bar{A}$	$f_{X_2} Z \bar{X}_2 \bar{A}$	$\frac{f_{X_1} Z \bar{X}_1 \bar{A}}{f_{X_2} Z \bar{X}_2 \bar{A}}$
2006	2.50	4582.00	0.2	0.04	-1555.5	2419580.25	-311.1
2007	2.50	5526.80	-0.05	0.0025	-610.7	372954.49	30.535
2008	2.25	6595.20	-0.05	0.0025	457.7	209489.29	-22.885
2009	2.25	7260.30	-0.05	0.0025	1122.8	1260679.84	-56.14
2010	2.25	6723.20	-0.05	0.0025	586	343396	-29.3
	$X_1$ =11.5	$X_2$ =30687.5		= 0.05		= 4606099.87	= -388.89

$$\text{Mean } (\bar{X}_1) X = \frac{X_1}{n} = \frac{11.5}{5} = 2.3 \%$$

$$\text{Mean } (\bar{X}_2) X = \frac{X_2}{n} = \frac{30687.5}{5} = 6137.5\%$$

$$\text{Karl Person's Correlation Coefficient } (r_{23}) = \frac{f_{X_1} Z \bar{X}_1 \bar{A} f_{X_2} Z \bar{X}_2 \bar{A}}{\sqrt{f_{X_1} Z \bar{X}_1 \bar{A} f_{X_2} Z \bar{X}_2 \bar{A}}}$$

$$\frac{Z388.89}{\sqrt{0.05} \sqrt{4606099.87}} = -0.810354$$

Therefore Correlation coefficient between Saving interest rate and Saving deposit amount of BOK is -0.810354.

**Coefficient of Determination**  $(r_{23})^2 = 0.656673$

$$\text{t- Statistics } (t) = r \frac{\sqrt{n Z^2}}{\sqrt{1 - Zr^2}} = -0.810354 \frac{\sqrt{5 Z^2}}{\sqrt{1 - Z(0.656673)}} = -2.3954$$

**For Fixed Deposit:**

Years	Rate (x <sub>1</sub> )	Deposit(x <sub>2</sub> )	$f_{X_1} Z_{\bar{X}_1} A$	$f_{X_1} Z_{\bar{X}_1} A$	$f_{X_2} Z_{\bar{X}_2} A$	$f_{X_2} Z_{\bar{X}_2} A$	$f_{X_1} Z_{\bar{X}_1} A$ $f_{X_2} Z_{\bar{X}_2} A$
2006	3.13	2709.80	-0.604	0.364816	-1351.86	1827525.46	816.52344
2007	2.79	3037.20	-0.944	0.891136	-1024.46	1049518.292	967.09024
2008	3.64	3703.10	-0.094	0.008836	-358.56	128565.2736	33.70464
2009	3.64	4474.60	-0.094	0.008836	412.94	170519.4436	-38.81636
2010	3.64	6383.60	1.736	3.013696	2321.94	5391405.364	4030.88784
	$\bar{X}_1$ =18.67	$\bar{X}_2$ =20308.3		= 4.28732		= 18013203.83	= 5809.3898

Again, Mean ( $\bar{X}_1$ )  $X = \frac{X_1}{n} = \frac{18.67}{5} = 3.734 \%$

Mean ( $\bar{X}_2$ )  $X = \frac{X_2}{n} = \frac{20308.3}{5} = 4061.66 \%$

$$\text{Karl Person's Correlation Coefficient } (r_{45}) = \frac{f_{X_1} Z_{\bar{X}_1} A f_{X_2} Z_{\bar{X}_2} A}{\sqrt{f_{X_1} Z_{\bar{X}_1} A} \sqrt{f_{X_2} Z_{\bar{X}_2} A}} = \frac{5809.3898}{\sqrt{4.28732} \sqrt{18013203.83}} = 0.660947$$

Therefore Correlation coefficient between Fixed interest rate and Fixed deposit amount of BOK is 0.660947.

**Coefficient of Determination**  $(r_{45})^2 = 0.436850$

**t- Statistics**  $(t) = 0.990260 \frac{\sqrt{5 Z 2}}{\sqrt{1 Z 0.436850}} = 1.5255$

## APPENDIX – II

### Calculation of Correlation Coefficient, Coefficient of Determination t-Statistics and Standard Deviation of Nabil Bank.

Years	Rate (x <sub>1</sub> )	Deposit(x <sub>2</sub> )	$f_{X_1} Z_{\bar{X}_1} \bar{A}$	$f_{X_1} Z_{\bar{X}_1} \bar{A}$	$f_{X_2} Z_{\bar{X}_2} \bar{A}$	$f_{X_2} Z_{\bar{X}_2} \bar{A}$	$\frac{f_{X_1} Z_{\bar{X}_1} \bar{A}}{f_{X_2} Z_{\bar{X}_2} \bar{A}}$
2006	9.5	13021.00	-0.604	0.364816	-9161.424	83931689.71	5533.500
2007	8.62	15657.10	-1.484	2.202256	-6525.324	42579853.3	9683.5808
2008	8.71	21514.63	-1.394	1.943236	-667.794	445948.8264	930.904836
2009	10.41	27816.56	0.306	0.093636	5634.136	31743488.47	1724.0456
2010	13.28	32902.83	3.176	10.086976	10720.406	114927104.8	34048.0094
	$\bar{X}_1$ =50.52	$\bar{X}_2$ =110912.12		= 14.69092		= 273628085.1	= 51920.04064

Where,

**Average lending rate** = Total lending rate / n

$$\text{Mean } (\bar{X}_1) X = \frac{X_1}{n} = \frac{50.52}{5} = 10.104 \%$$

$$\text{Mean } (\bar{X}_2) X = \frac{X_2}{n} = \frac{110912.12}{5} = 22182.424\%$$

$$\text{Karl Person's Correlation Coefficient } (r_{12}) = \frac{\frac{f_{X_1} Z_{\bar{X}_1} \bar{A} \cdot f_{X_2} Z_{\bar{X}_2} \bar{A}}{f_{X_1} Z_{\bar{X}_1} \bar{A} \cdot f_{X_2} Z_{\bar{X}_2} \bar{A}}}{\sqrt{\frac{f_{X_1} Z_{\bar{X}_1} \bar{A}}{f_{X_1} Z_{\bar{X}_1} \bar{A}} \cdot \frac{f_{X_2} Z_{\bar{X}_2} \bar{A}}{f_{X_2} Z_{\bar{X}_2} \bar{A}}}}$$

$$\frac{51920.04064}{\sqrt{14.69092} \sqrt{273628085.1}} = 0.8188984$$

Therefore Correlation coefficient between lending rate and loan(lending) amount is of Nabil bank is 0.8188984.

**Coefficient of Determination**  $(r_{23})^2 = 0.670595$

$$\text{t- Statistics } (t) = r \frac{\sqrt{n Z^2}}{\sqrt{1 - r^2}} = 0.8188984 \frac{\sqrt{5 Z^2}}{\sqrt{1 - 0.670595}} = -2.47129$$

**Standard Deviation**  $(\dagger) = \sqrt{f_{X_1} Z_{\bar{X}_1} \bar{A} / n}$

$$= \text{i.e., } \sqrt{f_{X_1} Z_{\bar{X}_1} \bar{A} / n} = \sqrt{14.69092 / 5} = 1.714113\%$$

**Calculation of Correlation Coefficient, Coefficient of Determination t-Statistics and Standard Deviation of EBL.**

Years	Rate (x <sub>1</sub> )	Deposit(x <sub>2</sub> )	$f_{X_1} Z_{\bar{X}_1} A$	$f_{X_1} Z_{\bar{X}_1} A$	$f_{X_2} Z_{\bar{X}_2} A$	$f_{X_2} Z_{\bar{X}_2} A$	$f_{X_1} Z_{\bar{X}_1} A$ $f_{X_2} Z_{\bar{X}_2} A$
2006	8.20	10124.00	-0.438	0.191844	-8974.676	80544809.3	3930.908088
2007	8.44	14059.20	-0.198	0.039204	-5039.476	25396318.35	997.81624
2008	8.85	18814.29	0.212	0.044944	-284.386	80875.397	-60.289832
2009	8.85	24366.20	0.212	0.044944	5267.524	27746809.09	1116.715088
2010	8.85	28129.69	0.212	0.044944	9031.014	81559213.87	1914.574968
	$X_1$ =43.19	$X_2$ =95493.38		= 0.36588		= 215328026	= 7899.724552

**Average lending rate** = Total lending rate / n

$$\text{Mean } (\bar{X}_1) X = \frac{X_1}{n} = \frac{43.19}{5} = 8.638 \%$$

$$\text{Mean } (\bar{X}_2) X = \frac{X_2}{n} = \frac{95493.38}{5} = 19098.676\%$$

$$\text{Karl Person's Correlation Coefficient } (r_{12}) = \frac{f_{X_1} Z_{\bar{X}_1} A f_{X_2} Z_{\bar{X}_2} A}{\sqrt{f_{X_1} Z_{\bar{X}_1} A} \sqrt{f_{X_2} Z_{\bar{X}_2} A}}$$

$$\frac{7899.724552}{\sqrt{0.36588} \sqrt{215328026}} = 0.8900049$$

Therefore Correlation coefficient between lending rate and loan (lending) amount of EBL is 0.8900049.

**Coefficient of Determination**  $(r_{23})^2 = 0.792108$

$$\text{t- Statistics } (t) = r \frac{\sqrt{n Z^2}}{\sqrt{1 Z r^2}} = 0.8900049 \frac{\sqrt{5 Z^2}}{\sqrt{1 Z 0.792108}} = 3.3809$$

$$\text{Standard Deviation } (\sigma) = \sqrt{f_{X_1} Z_{\bar{X}_1} A / n} = \text{i.e., } \sqrt{f_{X_1} Z_{\bar{X}_1} A / n} = \sqrt{0.36588/5} = 0.270510\%$$

**Calculation of Correlation Coefficient, Coefficient of Determination t-Statistics and Standard Deviation of BOK.**

Years	Rate (x <sub>1</sub> )	Deposit(x <sub>2</sub> )	$f_{X_1} Z_{\bar{X}_1} A$	$f_{X_1} Z_{\bar{X}_1} A$	$f_{X_2} Z_{\bar{X}_2} A$	$f_{X_2} Z_{\bar{X}_2} A$	$f_{X_1} Z_{\bar{X}_1} A$ $f_{X_2} Z_{\bar{X}_2} A$
2006	9.71	7525.00	-0.832	0.692224	-4799.66	23036736.12	3993.31712
2007	9.71	9663.60	-0.832	0.692224	-2661.06	7081240.324	2214.00192
2008	9.71	12692.90	-0.832	0.692224	368.24	135600.6976	-306.37568



2009	10.52	14894.70	-0.022	0.000484	2570.04	6605105.602	-56.54088
2010	13.06	16847.10	2.518	6.340324	4522.44	20452463.55	11387.50392
	$X_1$ =52.71	$X_2$ =61623.3		= 8.41748		= 57311146.29	= 17231.9064

**Average lending rate** = Total lending rate / n

$$\text{Mean } (\bar{X}_1) X = \frac{X_1}{n} = \frac{52.71}{5} = 10.542 \%$$

$$\text{Mean } (\bar{X}_2) X = \frac{X_2}{n} = \frac{61623.3}{5} = 12324.66\%$$

$$\text{Karl Person's Correlation Coefficient } (r_{12}) = \frac{f_{X_1 Z \bar{X}_1} f_{X_2 Z \bar{X}_2}}{\sqrt{f_{X_1 Z \bar{X}_1} f_{X_2 Z \bar{X}_2}}} = \frac{17231.9064}{\sqrt{841748} \sqrt{57311146.29}} = 0.7845539$$

Therefore Correlation coefficient between lending rate and loan (lending) amount of BOK is 0.7845539.

**Coefficient of Determination**  $(r_{23})^2 = 0.615524$

$$\text{t- Statistics } (t) = r \frac{\sqrt{n Z^2}}{\sqrt{1 - Z^2}} = 0.784553 \frac{\sqrt{5 Z^2}}{\sqrt{1 - 0.615524}} = 2.1915$$

$$\text{Standard Deviation } (\sigma) = \sqrt{f_{X Z \bar{X}} / n} = \text{i.e., } \sqrt{f_{X_1 Z \bar{X}_1} / n} = \sqrt{8.41748/5} = 1.29749$$

%

### APPENDIX – III

**Calculation of Correlation Coefficient, Coefficient of Determination t-Statistics of Nabil Bank.**

Years	Rate (x <sub>1</sub> )	Deposit(x <sub>2</sub> )	$f_{X_1 Z \bar{X}_1}$	$f_{X_1 Z \bar{X}_1}$	$f_{X_2 Z \bar{X}_2}$	$f_{X_2 Z \bar{X}_2}$	$f_{X_1 Z \bar{X}_1} f_{X_2 Z \bar{X}_2}$
2006	3.20	9.5	-1.652	2.729104	-0.604	0.364816	0.997808
2007	2.71	8.62	-2.142	4.588164	-1.484	2.202256	3.178728
2008	4.82	8.71	-0.032	0.001024	-1.394	1.943236	0.044608
2009	5.20	10.41	0.348	0.121104	0.306	0.093636	0.106488
2010	8.33	13.28	3.478	12.096484	3.176	10.086976	11.046128
	$X_1$ =24.26	$X_2$ =50.52		= 19.53588		= 14.69092	= 15.37376

$$\text{Mean } (\bar{X}_1) X = \frac{X_1}{n} = \frac{24.26}{5} = 4.852 \%$$

$$\text{Mean } (\bar{X}_2) = \frac{\sum X_2}{n} = \frac{50.52}{5} = 10.104\%$$

$$\text{Karl Person's Correlation Coefficient } (r_{12}) = \frac{\sum f_{X_1 Z_{X_1}} \sum f_{X_2 Z_{X_2}}}{\sqrt{\sum f_{X_1 Z_{X_1}} \sum f_{X_2 Z_{X_2}}}}$$

$$\frac{15.37376}{\sqrt{19.53588} \sqrt{14.69092}} = 0.907484$$

Therefore Correlation coefficient between deposit rate and lending rate of Nabil bank is 0.907484.

$$\text{Coefficient of Determination } (r_{23})^2 = 0.823527$$

$$\text{t- Statistics } (t) = r \frac{\sqrt{n Z^2}}{\sqrt{1 - r^2}} = 0.907484 \frac{\sqrt{5 Z^2}}{\sqrt{1 - 0.823527}} = 3.74162$$

### Calculation of Correlation Coefficient, Coefficient of Determination t-Statistics of EBL.

Years	Rate (x <sub>1</sub> )	Deposit(x <sub>2</sub> )	$f_{X_1 Z_{X_1}}$	$f_{X_1 Z_{X_1}}$	$f_{X_2 Z_{X_2}}$	$f_{X_2 Z_{X_2}}$	$\frac{f_{X_1 Z_{X_1}}}{f_{X_2 Z_{X_2}}}$
2006	3.65	8.20	-0.14	0.0196	-0.438	0.191844	0.026858
2007	3.36	8.44	-0.43	0.1849	-0.198	0.0392014	0.08514
2008	3.98	8.85	0.19	0.0361	0.212	0.044944	0.04028
2009	3.98	8.85	0.19	0.0361	0.212	0.044944	0.04028
2010	3.98	8.85	0.19	0.0361	0.212	0.044944	0.04028
	$\bar{X}_1$ =3.79	$\bar{X}_2$ =43.19		= 0.3128		= 0.36588	= 0.232838

$$\text{Mean } (\bar{X}_1) = \frac{\sum X_1}{n} = \frac{18.95}{5} = 3.79 \%$$

$$\text{Mean } (\bar{X}_2) = \frac{\sum X_2}{n} = \frac{43.19}{5} = 8.638\%$$

$$\text{Karl Person's Correlation Coefficient } (r_{12}) = \frac{\sum f_{X_1 Z_{X_1}} \sum f_{X_2 Z_{X_2}}}{\sqrt{\sum f_{X_1 Z_{X_1}} \sum f_{X_2 Z_{X_2}}}}$$

$$\frac{0.232838}{\sqrt{0.3128} \sqrt{0.36588}} = 0.688258$$

Therefore Correlation coefficient between deposit rate and lending rate of EBL is 0.688258.

**Coefficient of Determination**  $(r_{23})^2 = 0.473699$

$$\mathbf{t- Statistics (t)} = r \frac{\sqrt{n Z_2}}{\sqrt{1 Z r^2}} = 0.688258 \frac{\sqrt{5 Z_2}}{\sqrt{1 Z 0.473699}} = 1.6432$$

**Calculation of Correlation Coefficient, Coefficient of Determination t-Statistics of BOK**

Years	Rate (x <sub>1</sub> )	Deposit(x <sub>2</sub> )	$f_{X_1} Z \bar{X}_1 \bar{A}$	$f_{X_1} Z \bar{X}_1 \bar{A}$	$f_{X_2} Z \bar{X}_2 \bar{A}$	$f_{X_2} Z \bar{X}_2 \bar{A}$	$f_{X_1} Z \bar{X}_1 \bar{A}$ $f_{X_2} Z \bar{X}_2 \bar{A}$
2006	3.05	9.71	-0.506	0.256036	-0.832	0.692224	0.420992
2007	2.72	9.71	-0.836	0.698896	-0.832	0.692224	0.695552
2008	3.47	9.71	-0.086	0.007396	-0.832	0.692224	0.071552
2009	3.47	10.52	-0.086	0.007396	-0.022	0.000484	0.001892
2010	3.47	13.06	1.514	2.292196	2.518	6.340324	3.812252
	$X_1$ =3.556	$X_2$ =10.542		= 3.26192		= 8.41748	= 5.00224

$$\text{Mean } (\bar{X}_1) X = \frac{X_1}{n} = \frac{17.78}{5} = 3.556 \%$$

$$\text{Mean } (\bar{X}_2) X = \frac{X_2}{n} = \frac{52.71}{5} = 10.542\%$$

$$\mathbf{Karl Person's Correlation Coefficient (r_{12})} = \frac{f_{X_1} Z \bar{X}_1 \bar{A} f_{X_2} Z \bar{X}_2 \bar{A}}{\sqrt{f_{X_1} Z \bar{X}_1 \bar{A} f_{X_2} Z \bar{X}_2 \bar{A}}}$$

$$\frac{5.00224}{\sqrt{3.26192} \sqrt{8.41748}} = 0.954633$$

Therefore Correlation coefficient between deposit rate and lending rate of BOK is 0.954633.

**Coefficient of Determination**  $(r_{23})^2 = 0.911324$

$$\mathbf{t- Statistics (t)} = r \frac{\sqrt{n Z_2}}{\sqrt{1 Z r^2}} = 0.954633 \frac{\sqrt{5 Z_2}}{\sqrt{1 Z 0.911324}} = 5.552$$