CHAPTER -I

Introduction

1.1. Background of Study

In the context of Nepal, history of banking sector is quite short. Even now the banking system is in the evolutionary phase. So far as banking is concerned, we may go back in the Nepalese history, where a merchant namely "Shankkhadhar" is recorded. He was a person who alone paid all debts of the people existing in the country at that time. Since then he introduced a new era called "Nepal Sambat". This record proves the existence of money lending function earlier in Nepal.

During the course of development of borrowing, we further come across the term "Tanka Dhari" at the end of the 14th century, moneylenders. They are one of the 64 castes classified on the basis of occupation. In 1877 AD "Tejarath Adda" was established by the government. The main purpose of the institution was to provide credit facilities to the general public at a minimum interest rate of 5 percent. The establishment of this institution marked beginning of organized financial institution in Nepal.

The Banking business in Nepal began with the establishment of Nepal Bank Limited in 1994 B.S. Nepal Bank Limited used to carry out central banking functions until the establishment of Nepal Rastra Bank (NRB) in 2013 B.S. Realizing that Nepal bank alone was not able to extend adequate banking services in the country, another commercial bank named Ratraiya Banijya Bank (2022 B.S.), followed by Agriculture Development Bank for promoting the agriculture base in the country were established. The cooperative bank, set up in 2020 B.S., was later merged with the agriculture development bank due to similar nature of their functions.

In 2046 B.S., after the success of people's movement, a pluralistic democratic system of governance was reinstated in the country. The democratically elected government initiated the process of economic liberalization which was in line with the winds of change blowing all over the world. The country significantly reduced control over foreign trade and foreign exchange by incorporating free convertibility of current accounts. The government declared its sincere faith and reliance on private led growth and in limiting the role of the government to create a conductive atmosphere for a market regulated economic process. The government also encouraged private sector participation in various sectors of the economy, which until then was controlled by the state. The regulations for establishing banks were significantly eased. This was the time when financial institutions increased its number and banking units throughout the country. They were allowed to determine their own borrowing/lending rates. Insurance company was also opened for private sector participation. Technological developments have equally supported banking business to put the banks on international standard. More and more banks started coming forward with globally recognized customer friendly software offering varieties of facilities like debit and credit cards, SMS banking, and various online services. All these facilities have helped to private service at short period of time and with reasonably good amount of accuracy. Our banks with all these facilities see it to reach another age where it has been able to fulfill the distant dream of its valuable customers. The slogan of "Banking at your finger tips" was on the air throughout the year as every banks feel it has been necessity to adopt technological change of current market.

Capital in a free economy is allocated through the price system. The interest rate is the price paid to borrowed capital while in the case of equity capital investor's return come in the form of dividends and capital gains. This cost is affected by various factors. The most fundamental factors that affect cost of money are production opportunity and time preference for consumption. The return available within an economy from investment in productive assets determines the cost of investment or borrowing. Similarly, the preference of customers for current consumption as opposed to saving for future consumption also determines the cost of borrowing or return on lending.

The collection of deposit and its mobilization are the two sides of the same coin. In the absence of one, another cannot work i.e. no collection of deposit no mobilization. Moreover, interest rate is the main factor in fund activities of commercial banks. Interest rate affects the collection of deposit, its mobilization and profit position.

On August 31, 1989, commercial banks and financial institutions were granted complete autonomy in determining their own deposit and loan rates. The interest rates were completely liberalized. They had been also given complete freedom to make rules and working procedures about the kinds of deposits, time period of deposits, repayment conditions, penal interest and interest capitalization of over due loans. NRB took a flexible approach in making some adjustments in interest rate by putting control on it. However, the impact of economic liberalization in developing countries as a result of financial globalization began to influence Nepal as well. This ultimately brought deregulation on interest rate by leaving the interest rate to be determined by market force. The keen competition between the banks and financial institutions brought interest rate war to such an extent that deregulation should follow, self-regulation otherwise, economic disturbance from rising interest rate is bound to have negative impact on financial sectors.

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 banks and non bank financial institutions. Consequently, by the end of Mid-March 2011 there are 31 “A” class commercial banks, 78 “B” class Development banks, 79 “C” class financial companies, 18 “D” class micro-credit development banks, 16 saving and credit co-operatives and 45 NGOs (www.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 from 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. The suggestions that bank interest spreads can be interpreted as an indicator of the efficiency of 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 saving in banks for long period. "Interest is the payment for the use of Money". Therefore, when savers deposit their savings in bank, the banks pay 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 sued 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.

Nepal Rastra Bank (NRB) and its Interest Rate strategies

NRB, the central bank of Nepal, established in 26 April, 1956 under the Nepal Rastra Bank Act 1955, is the monetary, regulatory and supervisory authority of banks and financial institutions. The new Nepal Rastra Bank Act 2002 which replaces the erstwhile Act has ensured operational autonomy and independence to the Bank. Key objectives of the Bank are to achieve price and balance of payments stability, manage liquidity and ensure financial stability, develop a sound payments system, and promote financial

services. The Board of Directors, chaired by the Governor, is the apex body of policy making and the Governor also discharges his duty as the chief executive of the Bank. In the monetary system of all countries, the central bank is an apex institutions of the monetary system which seeks to regulate the functioning of the financial institutions of the country. Its function was to supervise commercial banks and to guide the basic monetary policy of the nation. Its major aims were to regulate the issue to paper money, secure country wise circulation of Nepalese Currency and achieve stability in its exchange rates, mobilize capita for economic development and for trade and industry growth, develop the banking system in the country, thereby ensuring the existence of banking facilities; and maintain the economic interests of the general public. NRB also was to oversee foreign exchange rates and foreign exchange reserves.

Nepal Rastra Bank is an autonomous and corporate body having perpetual succession. It started its operations with a total number of 23 employees including the Governor and the Chief Accountant. In the initial years of its operation, Bank had to focus its attention on abolishing the dual currency system, regulating the circulation of Nepalese currency throughout the kingdom and maintaining stability of exchange rates of Nepalese Currency. For this purpose, the bank opened its offices and currency exchange counters in various parts of the country. Currently, NRB has 7 main offices all over Nepal. NRB is authorized to determine the interest rate charged and offered by the commercial banks and financial institutions. There was full direction to NRB in determining interest rate structure of banks and financial institutions in the period of 1960 to 1975. The financial system reforms started after liberalization if interest rates in 1984 when commercial banks were given autonomy to fix interest rates over and above the central banks rates by 1.5 percentage points on saving and 1 percent point on term deposits. The financial institutions got freedom in fixing their interest rates in their deposit and loan in 1986. However, there was limitation imposed on certain sectors of lending such as the rates of maximum of 15 percent on priority sectors loan and for the other kinds of loans the financial institutions were given freedom to maintain the interest rate structure.

On December 1993, banks and finance companies were not allowed to have more than 6 percent interest rate spread between deposit and lending rates. Commercial banks were obliged to publish their interest rates and variations were permitted only to the extent of 1 percentage on deposit and 2 percent in the lending rates between borrowers for the same purpose.

The monetary policy for 2012/13 is made public together with the review of current economic and financial situation of the country and implementation status of previous monetary policy. Necessary adjustment has been made in the policy stance, targets and instruments in the current monetary policy on the basis of analysis of the domestic and external economic outlook. With a view to make the activities of this bank more transparent, programs related to financial sector reform; regulation and supervision; foreign exchange and micro finance are also included in this monetary policy document. Provision has been made for periodic review of monetary and financial measures so as to address changes in money and financial market. Current monetary policy incorporates the suggestions from the interaction with different stakeholders: Nepal government, Nepal Bankers' Association, Development Bankers' Association, Nepal Financial Institutions' Association, Nepal Micro Finance Bankers' Association, commerce and industries associations, Credit Consumers' Association, entrepreneurs and businessmen. (www.nrb.org.np).

Interest is both a payment and receipt for the use of money. Interest, therefore, can be considered from the above two points. If the interest is paid, it can be considered as a 'cost'. On the other hand, if interest is received, it can be considered as a 'return'. Since, money can earn a return over a period of time; interest rates are often considered as an expression of the time value of money and are expressed in percentage. All business organizations or individuals are responsive to interest rate of the banks and financial institutions in one way or another. A variety of interest rate risk exists in the financial markets. However, in the context of Nepal, interest rate is regulated by the central bank during the early stage of financial market, development taking the period from 1955 to 1965.

But gradually dramatic change had been made in the regulation on the interest rate by the central bank i.e. Nepal Rastra Bank according to the compatibility of the banks and financial institutions through liberalization.

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The era of interest rate liberalization started in 16 November, 1984 when NRB granted autonomy to commercial banks to fix the rates of interest over and above the NRB rates by 1.5 and 1.0 percentage points respectively on saving and term(fixed) deposit. NRB directed commercial banks to reduce the interest rates by 2 percent points than the normal credit for agricultural and cottage industries in 18 remote districts.

Interest rate policy in Nepal was characterized by an elaborate system of mandatory deposit and lending rates for commercial banks and other financial institutions before the deregulatory moves of May 1996. The interest rates were further liberalized in 29 May, 1986 when commercial banks were allowed to fix rates higher than the minimum deposit rates fixed by the NRB. Commercial banks were also set free to fix lending rates except certain item in the priority sector. The minimum interest rates were 8.5 percentage on saving deposit and 12.5% for one year fixed deposit. The interest rates on fixed deposit with a maturity period or less than one year were left to the discretion of the banks themselves. Regarding lending rates, the interest rate was at 15 percent maximum. On 22 August, 1992, NRB issued some directives to commercial banks and other financial institutions to clearly spell out the interest rate on deposits. NRB also suggested to commercial banks and other financial institutions to limit the spread of interest rate at 6 percent within Mid- December 1993. A further instruction to banks and financial institutions was issued in 2002 and now the interest rate spread required to be maintained by commercial banks and financial institutions has also been removed.

1.1.1 Concept of Commercials Banks

Commercial banks are those, which pool together the saving of the community and arrange them for the productive use. They accept deposits from the public and provide same deposits to the public as loan and advances. In fact, they circulate the money and create credit. The concept of the commercial banks made the economy strong. And now it's playing important role to make country economically strong. According to the Black's law Dictionary "Commercial Bank" means a bank authorized to receive both demand and time deposits, to engage in trust services, to issue letter of credit, to rent time-deposit boxes, and to provide similar services. Likewise, section 2(a) of the Commercial Bank Act 2031 has defined that "Commercial Bank" means a bank which operates currency, exchanges transactions, accepts deposits, provides loan, perform, dealings, relating to commerce except the banks which have been specified for the co-operative, agricultural, industry of similar other specific object (Bhandari, 2003).

1.1.2 History of Banking in Nepal

Similar to other countries goldsmith and landlords were the ancient bankers in Nepal. "Tejarath Adda" established during the tenure of the then Prime Minister Rannodip Singh was the first step towards the institutional development of banking in Nepal though all the banking activities were carried out by it. "Tejarath Adda" did not collect deposits from the public but provided loans, government employees and public against billions.

Table no: 1.1: List of Commercial Banks & their Date of Operation in B.S.

S.N.	Name of the Commercial Banks	Date of Operation in B.S.
1.	Nepal Bank Limited	1994/07/30
2.	Rastriya Banijya Bank	2022/10/10
3.	Agriculture Development Bank	2024/11/07
4.	Nabil Bank Ltd.	2041/03/29
5.	Nepal Investment Bank	2042/11/26
6.	Standard Chartered Bank	2043/10/16
7.	Himalayan Bank Ltd.	2049/10/05
8.	Nepal SBI Bank Ltd.	2050/03/23
9.	Nepal Bangladesh Bank Ltd.	2050/02/23
10.	Everest Bank Ltd.	2051/07/01
11.	Bank of Kathmandu Ltd.	2051/11/28
12.	Nepal credit and Commercial Bank Ltd.	2053/06/28
13.	Nepal Industrial and Commercial Bank Ltd.	2055/04/05
14.	Lumbini Bank Ltd.	2055/04/01
15.	Macchapuchhre Bank Ltd.	2057/06/17
16.	Kumari Bank Ltd.	2057/12/21
17.	Laxmi Bank Ltd.	2058/12/21
18.	Siddhartha Bank Ltd.	2059/09/09
19.	Citizen Bank International Ltd.	2064/03/07
20.	Prime Bank Ltd.	2064/06/07
21.	Sunrise Bank Ltd.	2064/06/25
22.	Bank of Asia Nepal Ltd.	2064/06/25
23.	Development Credit Bank Ltd.	2057/10/10
24.	NMB Bank Ltd.	2053/08/11
25.	Kist Bank Ltd.	2066/01/24
26.	Janta Bank	2066/12/23
27.	Mega Bank	2067/04/07
28.	Civil Bank	2067/08/10
29.	Commerz and trust bank	2067/06/04
30.	Century Bank	2067/11/26
31.	Sanima Bank	2068/11/03
32.	Global IME Bank Ltd.	2069/03/25

(Source: Banking and Financial Statistic NRB 2068/ NRB website)

1.1.3 Focus of the Study

The establishment of the Joint Venture (Commercial) banks has given a new horizon to the financial sector of Nepal. The study is mainly focused on the interest rate structure and its impact on lending and deposit of commercial banks in Nepal namely Everest Bank Ltd., Nepal SBI Bank Ltd., NABIL bank Ltd and Bank of Kathmandu in the Five year period form 62/63 to 67/68. Interest analysis involves determining the investor's objectives and the amount of his or her investable wealth. Investor's objectives should be stated in terms of both risk and return. We must know how to quantify risk. Merely saying "risky" or "no risky" does not give any concrete idea to compare various financial assets and to reach to ideal decision.

Profiles of the sample Banks in study

i. Everest Bank Limited (EBL):

Everest Bank Limited was established in 1992 (2049 B.S.), under the company Act. It started its operation from 18th October 1994 with a view and objectives of extending professional and efficient banking service to various segments of the society and thereby contributing to the economic development of the country. It is also foreign joint venture bank and the partner was United Bank of India and managed from very beginning till November 1996. Later on (in 1997), it handed over the management to the Punjab National Bank Ltd, India that holds 20% equity on the banks share capital. 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 though easy procedure, beside many other commercial activities. Altogether 48 branches of Everest bank are in operation in Nepal. Authorized capital and paid-up capital of Everest Bank Limited are Rs.10 00,000,000 and Rs.831, 400,000 respectively. Its market value per share Rs.3132 and book value is Rs.15812. EPS is Rs.91.82 (Annual Report 2068).

The local Nepalese promoters hold 50% share in Bank's equity, while 20% of the equity contributed by joint venture partner PNB whereas remaining 30% is held by public.

Awards

- The bank has been conferred with "Bank of the Year 2006, Nepal" by the Banker, a publication of financial times, London.
- The bank was bestowed with the "NICCI Excellence award" by Nepal India chamber of commerce for its spectacular performance under finance sector

Pioneering achievements

- Recognizing the value of offerings a complete range of services, we have pioneered in extending various customer friendly products such as Home Loan, Education Loan, EBL Flexi Loan, EBL Property Plus (Future Lease Rental), Home Equity Loan, Vehicle Loan, Loan Against Share, Loan Against Life Insurance Policy and Loan for Professionals.
- EBL was one of the first banks to introduce Any Branch Banking System (ABBS) in Nepal.
- EBL has introduced Mobile Vehicle Banking system to serve the segment deprived of proper banking facilities through its Birtamod Branch, which is the first of its kind.
- EBL has introduced branchless banking system first time in Nepal to cover unbanked sector of Nepalese society.
- EBL is first bank that has launched e-ticketing system in Nepal. EBL customer can buy yeti airlines ticket through internet.

ii. NABIL Bank Limited (NABIL):

NABIL Bank Limited 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 acquire 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 introduction 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 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 if 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 Sansthan has taken 9.67% and the remaining 0.33% of share is taken by Nepal stock Exchange.

The bank commenced with a team of about 50 staff members and Rs. 28 million as capital. Today, it already entered the 25th year of operation has proved that it has through its past progressions and through different phases in the banking industry achieved two things: first it has a large clientele base and supportive stakeholders, secondly, it has succeeded in positioning itself robustly in the market for which the credit goes to Team of NABIL. Today, the bank has established itself as the Bank of first choice. It is largest bank in terms of the network and number of branches amongst the commercial banks with a wide network of ATMs and offerings including a range of diversified service products.

iii. Bank of Kathmandu Limited (BOK):

Bank of Kathmandu Limited was established in 1993 (2050 B.S.) in collaboration with the Siam Commercial Bank, Thailand under the Company Act and the major objectives is to operate commercial banking activities throughout the country with the approval of NRB. The Siam Commercial Bank has diluted and reduced its equity to 25% by selling 25% to Nepalese citizen in 1998 of its initial holding. 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 regarded as the bank of Nepalese promoters. The bank has 22 branches in operation. Authorized capital and paid-up capital of Bank of Kathmandu Limited are Rs.1000, 000,000 and Rs.603, 141,300 respectively. Its market value per share Rs.2350 and book value is Rs.222.51. EPS is Rs.59.94 (Annual Report 2068).

Bank of Kathmandu Limited has become a prominent name in the Nepalese banking sector. Bank of Kathmandu Limited (BOK) 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. The BOK was able to get banker award "Bank of the year 2011". 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 objectives right from the beginning. To highlight a few:

- To contribute to the sustainable development of the nation by mobilizing domestic savings and channeling them to productive areas.
- To use the latest banking technology to provide better, reliable and efficient services at a reasonable cost
- To facilitate trade by making financial transactions easier, faster and more reliable through relationships 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.

iv. Nepal SBI Bank Limited (NSBI)

Nepal SBI Bank Ltd. (NSBL) is the first Nepal - Indo joint venture bank in the country. It is sponsored by three institutional promoters, namely, State Bank of India, Karmachari Sanchaya Kosh (Employees provident fund) and Agricultural Development Bank (ADB) of Nepal. Nepal SBI Bank Limited became operational on the 8th July 1993. The bank was registered on 2050/01/16 (28.04.1993) in the department of Industry, HMG/N under the company Act 2021 and commercial Bank Act 2031. The equity composition of the bank is state bank of India 50%, employ provident 15%, ADB 5%, General public 30%.

It has been providing services through its 10 Branches and 3 Extension counters. The services provided by Nepal SBI Bank Limited Include deposits, remittances, various type of loan facilities, letter of credit, bank guarantees, retail financing (house loans, vehicle loans and education loans) etc. it has recently launched 365 days banking and ATM facility from its new road branch.

1.2 Statement of the Problem

Capital formulation and its proper utilization are highly essential for economic development of the country. As the banks and financial institutions have a significant role to play in the economic development of a country, more emphasis should be placed in enhancing deposit from savers and lending to those potential investors/borrowers which require financing from the banks by providing interest to the depositors and charging interest to the borrowers. Generally, when interest provided to deposits is very les, people keep their surplus find idle. In the same way when interest charge on lending is very high the possible investors will also be unable to borrow fund for investment.

Nepal has 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 won 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 in the activities of the commercial banks. This study basically deals with such impacts of interest rate on the deposit mobilization. This study has tried to answer the following research questions:

1. What is the impact of liquidity position of organization in interest rate charged and offered by commercial banks?
2. Whether interest rate structure affects the investment of commercial banks?
3. What are the various methods that commercial banks in Nepal use to calculate the interest rate they charged to borrowers?
4. What are the other major qualitative factors that shape the interest rate in commercial banking sectors?

1.3 Objectives of the Study

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

1. To study the interest rate structure on deposits and lending of Nepalese Commercial banks.
2. To study and analyze the relationship of interest rate on the volume of deposits of commercial banks.
3. To study and analyze the relationship of interest rate structure on the volume of lending of commercial banks.

1.4 Significance of the Study:

There is a need of the study to explore the existing situation as well as future prospectus of interest rate and financial returns of various institutions. Since the different parties, shareholders, general public and government are directly affected by the interest rates structures analysis of the financial institutions, the researcher feels the need to study it.
Banks are major part of the economy as their policies and movements are always under financial scrutiny. Established banks have obvious advantages over new coming in terms of operational cost and expertise gained through past experience. However, new banks have obvious advantages provided by the updated software and technology, which is definitely goes to pay back in the long run. Interest rates offered by new banks are naturally competitive, making the interest spread much narrower. For this, they don't have any other alternative in the short run. This stiff competition among banks have benefited all people relating to financial sector in terms of higher dependable interest on deposit, easy availability of modified lower rated loan and advances and wider range of products to accommodate all needy people. After the banks got autonomy to maintain their own interest rate it has to shoulder huge responsibility as they are under scrutiny on various aspects of effect of change in the interest level.

This study will try to help to analyze the impact of interest rate structure of commercial banks in Nepal and try to develop some ideas to know whether it influences to deposits and lending. This being an important aspect for the economic development to the county 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 resources for teachers, students, researchers and academicians in abstracting some useful information about interest rate, deposit 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 limitations which are presented as below:

- This study is done for partial fulfillment for masters of Business studies (MBS).
- This study has focused for the 5 years data. The data are taken from annual reports of the concerned banks and reports bulletins of Nepal Rastra Bank.
- This study is confined to 4 commercial banks. These banks are of average in nature. They are expected to depict the true picture of banking in Nepal.
- This study is mainly based on secondary data available and NRB and concerned banks.
- Validity of secondary data relies upon the source. The samples are taken only from commercial banks; other financial intermediaries are not included in the study.
- As the sample 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.

1.6 Organization of the Study

Keeping the objective in mind, the whole study has been divided into five chapters.

Chapter I:- Introduction

This chapter has been dealt with introduction of the study. This includes background, statement of problem, objectives of the study, significance of the study, limitation of the study and organization of the study.

Chapter II:- Review of Literature

This chapter deals with the review of available literature. It includes review of books, journals, reports, previous thesis and web sides, other relevant materials.

Chapter III:- Research Methodology

This chapter explains the research methodology used in the study, which includes research design, source of data, population and samples, method of data collection and analysis etc.

Chapter IV:- Data Presentation and Analysis

The fourth, which is the important chapter of the study, has included presentation and analysis of data. 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

The fifth chapter summarizes the main conclusion of the study and offers suggestions, recommendation and other supportive document has also been incorporated for further improvement and conclusion of the study.

At the end of the chapters, Bibliography and Appendices has been incorporated.

CHAPTER -II
REVIEW OF LITERATURE

This chapter highlights upon the existing literature. In this chapter, attempts have been to review briefly about some of related books, websites, the earlier published articles and studies conducted on interest rate structure and its impact on lending and deposit of commercial banks in Nepal and submitted thesis to Tribhuban University in contest of Nepal on the topic. Both the theoretical aspect as well as findings of the previous studies has been included here so as to indentify the broad aspects interest rates structure and its impact on lending and deposit of commercial banks in Nepal. The purpose of reviewing the literature is to develop some expertise in one's area, to see what new contributions can be made, and to receive some ideas for developing research design. The review of literature helps to the study to fulfill issues. The review of literature includes the reviews of previous writing and studies relevant to the problem being explored and with the framework of theory structure.

2.1 The Conceptual Framework

A rate which is charged or paid for the use of money is known as interest rate. Interest is the amount paid by a borrower to a lender above the amount (the principle) that has been borrowed. An interest rate is often expressed as an annual percentage of the principle. It is calculated by dividing the amount of interest by the amount of principle. Consequently, interest is both a payment and receipt for the use of money.

Interest, therefore can be considered from the above two points. If interest is paid, it can be considered as a "cost". On the other hand if interest is received it can be considered as a "return". Since, money can be return over a period of time, interest rates are often considered as an expression of the time value of money.

It is price of credit but unlike other price in the economy the rate of interest is really a ratio of two quantities-the money cost of borrowing divided by the amount of money actually borrowed, usually expressed on an annual percentage basis. For example, if a lender (such as bank) charges a customer Rs 100 in a year on a loan of Rs 1000, then the interest rate would be 100/1000*100%=10%.

The neo-classical economist however defined the interest as the price for the use of loanable funds. But the modern economist, in their effort to avoid these divergent and controversial views about the nature of interest, have explained it in terms of productivity preference, saving, liquidity preference and money. In other words, interest it is the rewards for the pure yield of capital of saving of forgoing of liquidity and surplus of money. The rate of interest, according to Keynes, is a purely monetary phenomenon and in his theory, he has presented "a proposition that he rate of interest influences the level of economic activity by first influencing the rate of real investment in the economy". According to him, the real investment is in fixed capital or durable machines. Schulz has also expressed his view that," an important aspects of interest rate policy is the setting of an appropriate margin between the lending and deposit rate. If the margin is too high, bank will make excessive profits and this leads to waste of save resources. If it is low, it will discourage intermediation and devitalize financial institutions. At the same time, the demand for credit goes on increasing being affected by the cheap loan rates.
Hence, it can be concluded that changes in interest rate structure produce either positive or negative impact upon the growth of a developing economy such as ours"(Rose, 2003:113).

A more through definition of an interest rate can be found in The Economist's Dictionary of Economics. In part they defined the "rate of interest as:-

The proportion of sum of money that is paid over a specified period of time payment for it's loan. It is a price a borrower has to pay to enjoy the use of cash which he does not won, and the return a lender enjoys for differing his consumption or parting with liquidity. The rate of interest is a price that can be analyzed in the normal framework of demand and supply.

The interest entry by Paul Heyne at The Library of Economic and Liberty expands on this idea of interest rate as a price which is determined by market forces.

The interest rate is determined by demand and supply: the demand for present control of resources by those who do no have it, and supply from those who do have control and are willing to surrender it for a price. The question of exactly why demand and supply yield a positive rate of interest is one of the most fiercely disputed questions in the history of economic theory. It is enough to point out that when an individual acquires present command of resources; his or her set of available opportunities expands. In shut run, the present command of resources is some thing that people want. Therefore those who get it are willing to pay for it, and those who give it insist that they be compensated for doing so.

According to carver "Interest is the income which goes to the owner of capital

According to mill's "Interest is the remuneration for more abstinence"

Interest is the amount paid to the creditor in return to a debt borrowed by a debtor for a fixed period of time. As the reward of their factors of production this market is also a reward of other factor of production this interest is also a reward paid to the capitalist for the use of capital. **(Joshi 2058: 384)**

Prof. Wicksell – "Interest is payment made by the borrower of capital b virtue of its productivity as a remain for his (capitalist's) abstinence"

Prof Meyer- "Interest is the price paid for the use of lovable funds".

Prof Seliqman – "Interest is the Return for the fund of capital".

Prof. Lord J.M Keynes in his book "The General Theory of Employment, Interest and Money" brought forward his new about the rate of interest. Community liquidity's liquidity references and quantity of money determine the level of rate of interest. These three things liquidity preferences, quantity of money and rate of interest are negatively correlated. At low rated interest the liquidity preferences of community is high and it is low at big rate of interest –"Interest is the reward for parting with liquidity '' (Keynes, 1936)

In this way there is different definition of interest. Even then the some conclusion may be drawn from all these definition and the conclusion is that the interest is the amount of return paid for the use of capital.

According to modern view interest rate determination depends up on the investment, the marginal efficiency of capital is the rate of interest and investment is equal to the desire volume of saving. Thus, the total investment= Total Saving or I=S.

Interest is the amount paid to the creditor in return to a debt borrowed by a debtor for a fixed period of time. As the reward of other factors of production this interest is also a reward paid to the capitalist for the use of capital. The system of borrowing loan and of paying the interest is very old. The economics of different times had hated the system of interest. Even then the poor people were compelled to take loans and pay interests due to various reasons. Those days the loans were taken mostly for consumption purpose. But in the modern days, there are differences in the nature of loans. These days the loans are taken mostly by the businessmen and the industrialists and these loans are used for the purpose of production. The amount of loan is received from the fund of capital.

The capital fund has a productive capacity. Therefore, the interest is paid for the use of capital. Various economists have defined interest differently. According to Prof. Wicksell, "Interest is payment made by the borrowers of capital by virtue of its productivity as a reward for his (capitalist's) abstinence." According to Prof. Meyers, "Interest is the price paid for the use of loan able funds." According to Prof. Carver, "Interest is the income which goes to the owner of capital." According to Prof. Lord J.M. Keynes, "Interest is the reward for parting with liquidity." In this way, there are different definitions of interest. Even then the same conclusion may be drawn from all these definitions and the conclusion is that the interest is the amount of return paid for the use of capital.

2.1.1 Interest rates and investment pattern

According to the survey conducted by NRB (the interest rate in unorganized sector in Nepal) interest rates has been increased significantly, especially in recent years, in the unorganized sector. It is for the increment because a significant part of the resources come from deposit and is used largely to provide credit for private sector.

2.1.2: Interest Rate and Deposit Mobilization:

Interest is the price paid for the acceptance of deposit, and remuneration received for allowing other to use unutilized deposit for their benefit. A high interest rate diverts the resources from unproductive tangible assets to financial claims. R.D. Pant mentioned that the changing interest rates in deposits change the saving habit of Nepalese individuals. High interest rate in deposit helped to rise the saving, especially from rural area. Lower rates loan showed huge increment in sale and purchase of land building and vehicles in the recent years.

2.1.3: Interest rate and monetary policy

There is deep relationship between interest rate and monetary policy. Monetary policy works by controlling the cost and availability of credit. During inflation the central bank raises the cost of borrowing and reduces the credit creating capacity of the commercial banks, this ultimately increases the interest rate of bank. Increasing the money supply can lower the interest rates.

2.1.4: Interest rate and Profitability

Schulz explains that, "an important aspect of interest rate policy is setting of an appropriate margin between the lending and deposit rate. If the margin is too high, banks will make excessive profits and this may lead to waste of saved resources. If it is low, it will discourage intermediation and devitalize financial institution. (Sclulz, 1978)

2.1.5 Interest Rates and Price Level Changes

Funds are allocated among borrowers by interest rate: firms with the most profitable investment opportunities are willing and able to pay the most for capital, so they trend to attract it away from less efficient firms or from those whose products are not in demand. Of course, our economy is not completely free in the sense of being influenced only by market forces, thus, the federal government has agencies that help designated individuals or groups obtain credit favorable terms among those eligible for this kind of assistance are small businesses, certain minorities, and firms willing to build plants in areas with high unemployment. Still, most capital in the use economy is allocated through the price system. The changes in the interest rate and price level move together because they are interlinked with one another. The relation with each other is termed below:

- High interest rate accompany "high" price and "low" interest rate accompany "low" price.
- Interest rates tend to be high when price are rising and vice-versa.
- Interest rate movement lags behind price level change.

Weston and Bringham mentioned the price level trends affect interest rates-in-two important ways. The nominal interest rates the contract, or stated interest rate reflects expectation about future price level behavior. If prices are rising and expected to rise further, the expected rate of inflation is added to the interest rate that would have prevailed in the absence of inflation to adjust for the decline in purchasing power represented by price increase (Weston and Bringham, 1984)

2.1.6 Function of Interest Rate:

According to Maxwell the three basic functions which interest rates can perform are:

I. The interest can mobilize saving. It is price of saving used by savers to equate marginal rates of substitution between present and future consumption. Under Nepal's imperfect market conditions, it is also has a strong effect on the choice of assets which saving are embodied. A rise in the intere4s rate produces a substitution from unproductive tangible assets held as inflation hedge into financial claims. This substitution as well as any increase in the saving rate free resources for productive investment.

II. The interest rate is an efficient rationing device for the allocation of scarce resources between alternative investments. It is almost invariably superior in this respect to rationing on the basis of the decisions of a bureaucrat in to planning agency, the quantity of the collateral offered, the political influence of the borrower, "name" or the preferences of corrupt loan officers.

III. The interest rate can provide a social discount rate for decision to save and invest. In this role, it equates plans to save and invest. Here it acts as a market cleaning devices, influencing in an optimal manner the choices of what to produce and how to produce it interest rate can discourage highly capital incentive techniques of production in countries where capital, instead encouraging greater use to labour. Where labour is plentiful and capital scarce, the interest rate directs entrepreneurial activities into simple things with simple technologies, but with high return to capital.

In Nepal, interest rate can perform the following functions:

i. The interest rates mobilize savings

ii. The interest rate is an effective rationing device for the allocation of the scare resources between alternative investments.

iii. The interest rate can provide a social discount rate for decision to save and invest.

iv. Interest rate has guideline for directing the investment into productive sector. The cheaper interest rate of the commercial banks diverted the capital into unproductive and speculative sectors.

2.1.7 Theory of determining interest rate

Various interest rate theories have been propounded by various economists, which describe how interest rate is determined in various situations. Some well known theories of interest rates are as follows:

Gross Interest and pure Interest

In ordinary terms, the amount, to which we call interest, is the total interest in economics. The pure interest is also included in this total interest.

- Pure or Net interest: - The net interest is the net return paid only for use of capital.
- Insurance against Risk:-Interest also includes reward for risk taking. While investing capital; a capitalist has to been some risks. He includes some amount in the net interest for this risk the amount for insurance against risk. The additional amount is called the amount for insurance against risk .The capitalist bearing two ways of risk.

a. Personnel risk

b. Trade risk

- Reward for inconvenience: While investing capital, a capitalist has to face two kinds of inconvenience. The first inconvenienced is that after an investment is done, he cannot be able to use capital in his need. The second inconvenience is that when he receives back the amount he has invested, the golden opportunity to invest the capital elsewhere has already been cost. The amount over the net interest due to the possibilities of these inconveniences is the reward for inconvenience.
- Payment for management expenditure: While investing capital, the capitalist should also keep the account. In order to keep the account he has to spend a separate amount. If may also be possible that the creditors should knock the debtors door many times to receive back his amount. In this way, the creditor should spent some among for keeping accounts, for hiring employees, for visiting the debtors repeatedly etc for all these difficult the creditors charge some amount over the net interest against the borrowers and these expenses are called the payments for management expenditure**.(Joshi 2058:385)**

Forces Determining Interest rate

The problem with interest rates is that although interest rates are critical to every bank. Bankers simply cannot control either the level of or the trend in market rate of interest. The rate of interest on any particular loan or security is ultimately determined by the financial market place where supplies of lonable funds (credit) interact with demands of lonable funds (credit) trends to settle at the point where the quantities of lonable funds (credit) demanded and supplied are equal**.(Rose 2003: 120)**

- Interest Rate Risk is one of the Bankers greatest challenges
- The Interest rate is one of the sources of revenue
- When interest rate charge in the financial Marketplace, Bankers find that the change affects.
- Changing interest rate also change the market value of a banks assets and liabilities.
- Interest rate impacts both a bank's balance sheet and its statement of income and expenses.

2.1.7.1 Classical theory of interest rates

One of the oldest theories concerning the determinants of the pure or risk free interest rate is the classical theory of interest rates, developed during the eighteenth and nineteenth century by a number of British economists and elaborated by Irving Fisher in 1930. The classical theory argues that the rate of interest is determined by two forces: 1) The supply of saving derived mainly from the households 2) Demand of the investment capital, coming fairly from the business sectors (Rose, 1997:193)

Saving by Households:

Generally, most of the savings in modern industrialized economics is carried out by individuals and families. For these households, saving is simply abstinence from consumption spending. Current saving therefore is equal to the difference between current income and current consumption.

Saving by Business Firms:

Not only households but also business saves. Most business hold savings balance in the form of retained earnings (as reflected in their equity or net worth accounts). In fact, the increase in retained earnings reported by businesses each year is a key measure of the volume of current business savings which supplies most of the money for annual investment spending by business firms. It depends on the level of business profits and the dividend policies of corporations.

Saving by Government:

Government also saves, though less frequently than households and businesses. In fact, most government saving (i.e. budget surplus) appears to be unintended saving that arises when government receipts unexpectedly exceed the actual amount of expenditures. Income flows in the economy (out of which government tax revenues arises) and the pacing of government spending programs are the dominant factors affecting government saving.

The total supply (saving) of funds is sum of above three elements (households, business and government) depends on the interest rate positive manner (If rate increases the supply also increases.

The Equilibrium Rate of Interest in the Classical Theory of Interest

According to the classical economists, the interest rate in the financial market and determined by the interplay of the supply of saving and demands for investment. Specially, the equilibrium of interest is determined at the point where the quantity of saving supplied to the market is exactly equal to quantity of funds demanded for investment.

2.1.7.2. The Loanable Funds Theory of Interest

The Loanable Funds Theory of Interest was propounded simply to remove the drawbacks of the classical Theory of Interest. First of all, this theory was propounded by the famous Swedish economist Johan Gustav Knut Wicksell. Later on, the other Swedish economists, like Bertil Ohlin, Erich Lyndahl, Gunnar Myradah, etc. and the British economist Sir Dennis Robertson, improved and developed the theory very much. These economists are of the neo-classical age. So this theory is also called the Neo-classical theory of Interest. This theory shows that the rate of interest is determined by the interaction of the demand for and the supply of the loanable funds. In the demand for loanable funds, the investment for the production of the capital goods and the loans for consumption purpose are also included. And in the supply of loanable funds, the disposable income, the bank money or credit, etc. are included. In this way, in context to the determination of the rate of interest, both the monetary and real factors are involved. On the other hand, this theory is also called the Periodic Analysis funds on the period of time. According to this theory, the demand for and the supply of the loanable funds are influenced by different factors. **. (Joshi 2058: 386).**

Demand for Loanable Funds

The classical theory of interest has mentioned that the capital is demanded only for the investment to produce the capital goods. But the demand for the loanable funds (capital) depends on the following factors:

I) Demand for Investment- Generally, the business firms demand for capital to purchase the capital goods like buildings, machines, tools, etc. and to conduct the production activities. The amount to be paid to receive such loans is called the interest. The demand for such loans depends on the marginal revenue productivity of capital or on the expected net rate of return of capital. Therefore, the loanable fund is demanded only up to the point where the marginal revenue productivity of capital and the rate of interest to be paid are equal to each other. If the rate of interest is low, the demand for capital or the loanable funds is high and if the rate of interest is high, the demand for loanable funds is low. Thus, the demand for loanable funds is interest-elastic and its curve slopes downwards from left to right.

II) Demand for Consumption- The loanable fund is also demanded for the consumption purposes. Generally, the loanable funds for consumption purposes are demanded for purchasing durable goods like houses, radios, T.V. sets, motor cars, refrigerators, etc. The people demand for the loanable funds especially at the time when their current incomes and idle cash resources are insufficient to buy the durable goods they desire. Such demand for loanable funds is called the Dissaving. If the rate of interest is low, the demand for loanable funds for the consumption of such durable goods will be high and if the rate of interest is high, the demand for loanable funds for such purposes will be low. Therefore, the demand for loanable funds for consumption purposes is also interest-elastic and its curve also slopes downwards from left to right.

III) Demand for Hoarding- People are naturally liquidity-prefers. Therefore, they desire to keep some portions of their incomes in liquid-money or cash-money or idle-money. They do this by spending some percentages of their disposable income. The amount saved in this way is called the Hoarded-money or Hoarding. This hoarding may be used to buy shares, securities the capital goods and to provide loans to somebody else. Or this hoarding may be kept with one self in cash form or in the form of idle money. This act of hoarding is done for two objectives: a) the hoarded or cash money may be invested immediately when the rate of interest goes up in the market and the higher profits may be secured, b) the hoarded money may be invested to purchase shared and securities when their prices are low and aim at selling them at higher prices in the future. Thus, people desire to hoard too much cash money at low rates of interest and desire to hoard less cash money at higher rates of interest. Therefore, the demand for loanable funds to hoard cash money also makes a supply of loanable funds.

Supply of Loanable Funds

The classical theory of interest tells us that the saving is formed out of current income and the capital is supplied from this saving. But according to the loanable funds theory, the sources of supply of capital depend on the following factors.

I) Savings: - The supply of loanable funds is made out of savings of individual persons, families, business concerns, etc. According to Prof. Robertson, the amount of difference between the past income and the present consumption expenses is the amount of savings of a person of a family. This amount of savings depends upon the level of income of a person. But if we assume the level of income as constant, the amount of savings changes with a change in the rate of interest. The business firms also save some amount out of their incomes. These firms save aiming at not borrowing from the loan markets. Therefore, if the rate of interest is high in the market, they save more and if the rate of interest is low, they save less. In fact, such business firms do not enter into the loan markets even the amount of their savings substitute for the loanable funds of the loan market. Therefore, the amount of this savings influences the rate of interest. Thus, the savings of all kinds are interest elastic. Or if the rate of interest is high, the volume of savings is greater and if the rate of interest is low, the volume of savings is also low. Therefore, the savings curve slopes upwards form left to right.

II) Dishoarding: - People hoard some portions of their past income in the form of liquid or idle money. When such hoarded idle money is invested, then it is called Dishoarding. This is another important source of supply of the loanable funds. People invest a greater volume of such hoarded money when the rate of interest is high and when the price of shares and securities is low in the market. Likewise, the investment of such hoarded money decreases when the rate of interest is low and when the price of shares and securities is high in the market. Thus, such dishoarding is also interest-elastic and its curve also slopes upwards from left to right.

III) Disinvestment:- If there is an economic havoc in the economy or if the current market rate of interest of capital is higher than the marginal revenue productivity of capital to be received or the expected net rate of return of capital, then the business firms start to disinvest their capital. The amount of such disinvestment may be found from both the fixed and the working capitals. The business firms keep some amounts in form of capital consumption allowances or the depreciation charges for their fixed capital.

Now, when they think not to continue or not to run the business, they make the amount of disinvestment received from the capital consumption allowances available in the market in the form of loanable funds. In the same way, the amount received from the sales of the firm's output may also be made slowly available in the market in the form of loanable funds. The volume of the amount of such disinvestment is greater at higher interest rates and smaller at lower interest rates. Therefore, the disinvestment is also interest-elastic and its curve also slopes upwards from left to right.

IV) Bank Money: - The commercial banks create credit which is called bank money. The banks provide loans to the businessmen and the industrialists by means of credit or bank money created in this way. The commercial banks can also contract credit when necessary. These also buy and sell securities. Thus, the commercial banks play an important role to supply the loanable funds. But Prof. Knut Wicksell was of the opinion that the bank money is interest inelastic. According to him, the bank money is influenced by the liquidity position of the bank not by the rate of interest. But the economists after Prof. Wicksell improved a lot on their ideas and argued that the bank money is not perfectly interest-inelastic but it is interest-elastic to some extent. These economists argue that the less the interest rate is, the less credits the bank creates and the higher the interest rate becomes, the more credits the bank creates. Therefore the curve of bank money also slopes upwards from left to right.

Determination of the Rate of Interest

The rate of interest is determined by the interaction of the demand for and the supply of the loanable funds. The process of the determination of the rate of interest of the Loanable Funds theory may be simplified by the use of pure savings (savings-dissavings), pure hoarding (hoarding-dishoarding) and pure investment (investment-disinvestment) or the rate of interest is determined at a point where the pure investment and pure hoarding from the demand side and pure savings and bank money from the supply side are equal to each other.

2.1.7.3 Liquidity Preference Theory of Interest

Prof. Lord John Maynard Keynes had propounded the Liquidity Preference Theory of Interest. Therefore, this theory is also called the Keynesian Theory of Interest. Prof. Keynes has propounded this theory by criticizing the classical and the Loanable Funds Theories of interest. According to Keynes, the rate of interest is calculated by means of money and the interest is a purely monetary phenomenon. Therefore, the Keynesian Theory of Interest is also called the Monetary Theory of Interest. According to this theory, the rate of interest is determined by the demand for money; Keynes has indicated the liquidity preference of the people. On the other hand, the supply of money indicates the total quantity of money available in a fixed period of time. This total quantity of money is changed by the Central Bank of a Country. **(Joshi 2058: 394)**

People spend a fixed percentage of their income on consumption on the basis of their propensity to consume. The remaining portion of income after having been spent on consumption may be kept by the people in idle or liquid form or may also be invested to get an additional or extra income. The fact that how much of the income should be invested depends upon the liquidity preference of a person. If the liquidity preference is greater, people will prefer a greater portion of income to keep in the form liquid money with them and if the liquidity preference is smaller, people will prefer a smaller portion of their income to keep in the form of liquid money with them and they will invest the remaining portion of their income to a place from where an extra income may be secured. But, by nature, people prefer to hold cash money with them. So they expect to receive some returns as remunerations for money they have invested. Or people desire to get remuneration for parting with their income even for a specified period. To the amount of remuneration received in this way, Prof. Keynes has called 'Interest'. According to Prof. Keynes, "Interest is the reward for parting with liquidity for specified period". Thus the liquidity preference of the people may be bought by paying them the amount in the form of interest.

It is necessary to explain both, the demand and supply sides of money, separately on the basis of the Keynesian liquidity preference theory of interest.

Demand Side

People prefer to keep a fixed portion of their income in the form of cash or liquid money for the fulfillment of their different objectives. This preference (desire) of cash or liquid money has a great influence on the determination of the rate of interest. If the liquidity preference is greater, the rate of interest is also higher and if the liquidity preference is smaller, the rate of interest is also lower. In the same way, if the current rate of interest is higher is the market, people prefer less cash money to hold, and if the current rate of interest is lower, people prefer too much cash money to hold with them. Prof. Keynes has divided the objectives or the preferences of the people to hold cash with them into three parts.

Supply Side

The total supply of money is composed of the total coins, total notes (paper money) and the total bank money available in a country. In fact there is a special difference between the supply of goods and the supply of money. The supply of goods refers to a production and a continuous consumption of it. Therefore, the supply of goods is a flow. But the Central Bank makes the supply of money under the laws and regulations of the government of a country. This supply of money is a stock. Therefore, Prof. Keynes has considered the supply of money as constant and the supply curve of money is a vertical straight line. A change in the rate of interest does not have any influences the rate of interest and it also directly influences the liquidity preference of the people through changes in the rate of interest. The more the supply of money is, the lower the rate of interest becomes and the less the supply of money is, the higher the rate of interest becomes. But if both the supply of and the demand for money have been increased simultaneously, there will be no increase in the rate of interest. For the supply of money, if the monetary authority of the Central Bank increased the supply of money any time the supply curve of money shifts to the right than the previous one.

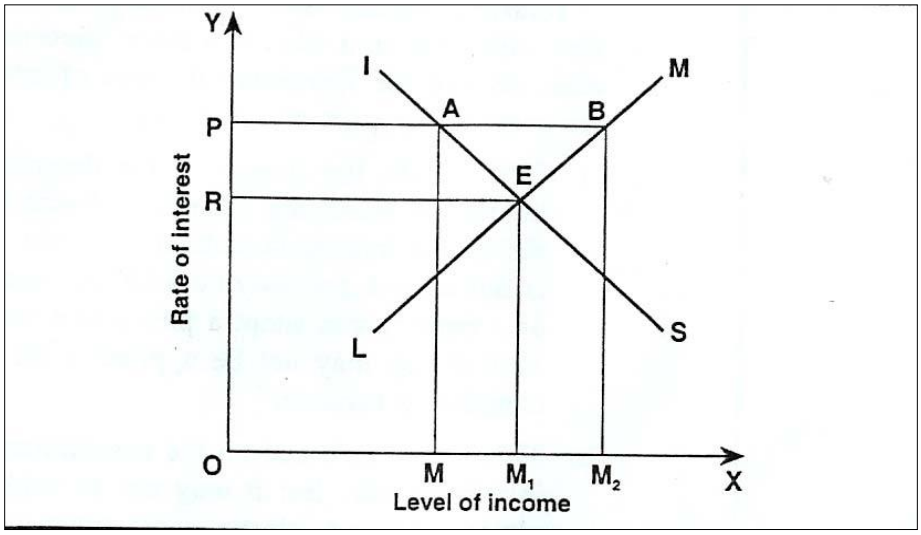
All the theories of the rate of interest appeared till today are uncertain and indeterminate. For example, the classical theory has laid a great emphasis on the role of real factors in determining the rate of interest. The Loanable Funds Theory has included both the real and the monetary factors in this work, but it has not been succeeded in it. In the same way, Prof. Keynes has laid a special emphasis only on the monetary factors. Thus, not any theory has been able to present a satisfactory explanation in relation to the determination of the rate of interest. Therefore, Prof. Hicks and Hansen have propounded a separate theory about it. This theory is called the Modern Theory of Interest. This theory is also called the Determinate Theory of Interest. Profs. Hicks and Hansen have opined that there is only a difference in the concept of savings between the classical and the Loanable Funds Theories and in all other things they are same. Therefore, these economists have attempted to mix from the one side the classical and the neo- classical theories and from the other side the Keynesian theory of interest in their modern theory of interest. Or in this Modern Theory attempts have been made to mix both the real and the monetary factors. In fact, in the determination of wages, both the real factors of the classical theory and the monetary factors of the Keynesian theory are logical. Therefore, these modern economists have presented a satisfactory explanation of the determination of the rate of interest by mixing both these factors. According to this modern theory, (i) Saving Function, (ii) Investment Function, (iii) Liquidity Preference Function and (iv) Supply Function are included in the determination of the rate of interest. The theory may be brought into a complete form also by including the level of income in these four factors.

Determination of the Rate of Interest

According to the classical economists, the rate of interest is determined at the state of equilibrium of these investments and savings (real factors). According to Prof. Keynes, the rate of interest is determined at the state of equilibrium of this demand for cash balances and the supply of money (monetary factors).

But both these processes of the determination of the rate of interest are one sided and according to Profs. Hicks and Hansen, the rate of interest is determined only by the interaction of these two processes. The process of the determination of the rate of interest according to the modern theory is presented in the figure 2.1

Figure No 2.1, IS &LM Joint Curve



In this figure, OX axis measures the level of income and OY axis the rate of interest. IS curve is sloping downwards from left to right. LM curve is sloping upwards from left to right. These two curves meet at point E. So OR (EM_1) rate of interest is determined. Apart from this, the point of equilibrium also shows that the level of income is determined at OM. Thus, the modern theory of the determination of the rate of interest explains the determination of the rate of interest together with the determination of the level of income.

Thus, the modern theory has included all the factors like the desire to save (propensity to save), supply of money, investment, liquidity preference, etc. in the process of the interest rate determination and it also explains how a change in any factor among them affects the rate of interest and the level of income. Besides, the theory also explains how the government of a country influences the supply of money (LM curve) by changing her monetary policy and how the government influences the savings and the investment (IS curve) by changing the public expenditures.

2.1.8 Factor Affecting the Difference in Interest Rates

Although it is assumed that deposit increase as interest increases but interest rate is affected by numerous factors. In real world, different financial institutions quote different

interest rate. It means that the same type of instrument carries different interest rate at the same time, so there is presence of interest spread (Kohn, 1993: 169). For this, there are various factors affecting the difference in interest rate:

- Credit or Default Risk
- Liquidity Risk
- Marketable Risk
- Call of Prepayment Risk
- Servicing Costs
- Exchange Rate Risk
- Taxability

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

Liquidity Risk: A desirable quality of assets that are to be part of a precautionary reserve is liquidity. An asset is liquid if it can be turned into cash quickly without loss. But the risk that the lender might not be able to get cash on short notice is called the liquidity risk. The difference in interest rate due to liquidity risk is called liquidity spread.

Marketability Risk: Marketability is the capacity of being sold quickly at low transaction cost. Marketability risk deals with the degree of difficulty in being able to convert a financial into cash at its most recent transaction price or very close to it. Saver who purchases poorly marketable investments, expects to be compensated for the lack of

marketability. This represents an additional interest spread and is referred to as the marketability risk premium.

Call of Prepayment Risk: Some financial claims offer the borrower the right to repay the principle debt prior to maturity. On financial claims like bond, these provisions are referred to as call provision and on some financial claims such as home mortgage and installment auto loan, they are called prepayment provisions. These provisions are options. The borrower has the option to call or repay the debt before the maturity date. The investor in such callable financial claim must accept repayment risk. The repayment risk is that if interest rates fall, the borrower will call the bond or repay the mortgage. The investor receiving cash cannot reinvest it at an interest rate as high as risk. The compensation that investor demand to accept this risk is an additional interest spread offered as the call premium.

Servicing Cost: Some financial claims are difficult to service. This means that the process of collecting interest and principle payment providing accurate records or monitoring the ongoing credit positions of the borrowing involves considerable operating costs. This cost is included in the interest rate charged and is referred as to the servicing cost.

Exchange Rate Risk: A foreign company establishing manufacturing facility in Nepal might be inclined to issue shares and or bonds denominated in Nepalese rupees rather than foreign dollars. Investors also have available to them many investments involving exchange rate risk. This risk refers to the potentially that the rate of exchange between the domestic currency and foreign denominated currency will change as a result of any factors. The primary risk for the borrower is the devaluation of the domestic currency. This results in an unexpected cost on the international loans, since the loan would have to be repaid in the foreign currency that has risen in value relative to the domestic currency. This potential change in currency values must be reflected in computing the cost of borrowing.

Taxability: The final factor influencing the change in interest rate is taxability. Financial claim income is typically subject to taxation. Since the value of the financial claim is based on it's anticipate cash flow, taxation acts to reduce those cash flows. Not all incomes are taxable equally. Thus, higher the tax, lower will be the cash flow and higher the interest rate and vice versa.

2.2 Review of Articles and Journal

Rameshwori Pant (2056), *in Nepal Bank Patrika* viewed the management of internal loan is directly affected by the interest rate. According to her, the interest rate determines the level of investment which can be invested by the investors. In case of perfect financial market, interest rate is determined by the supply of money (which can be invested) and its demand (from private sector, government sector). But in developing countries interest rate must be higher because of government' high demand of capital.

Sahindra Shrestha (2000), *in Prashasan: The Nepalese Journal of Public Administration* mentioned that top banks have comparatively lower dependency than smaller banks; smaller banks are prone to face higher impact of interest rate on mobilization of its fund. This is the reason why smaller banks need to increase deposit interest rate and decrease lending rate to minimize the expected negative impact of interest rate. He came to the following findings:

- The wider spread of interest rate helps the commercial banks to manage the higher liquidity position and good profitability.
- A high interest in deposit and low in lending is important to attract costumer to the bank but facilities offered by banks also plays an important role for the success of banks.
- An appropriate and realistic interest tae on lending can help in the optimum utilization of available resources.

Deepak Raj Bhandari (2001) *in Prashashan: The Nepalese Journal of Public Administration* mentioned that "Impact of Interest Rate structure on investment portfolio of Commercial Banks of Nepal" He found the deposit rate and lending rate increased

slightly immediately after liberalization of interest rate on August 31 1999 but started to decline thereafter. To point out his findings:

- Interest rate structure of commercial banks greatly influenced their profitability which depends upon their interest spread.
- Deposit rate is still the most important determinant of the deposit collection of the commercial banks.
- Lower rate of interest helped increase the credit flow.
- Commercial banks investment in government and other securities dramatically increased in the following years of the interest rate liberalization.
- Many commercial banks invest a small part of their resource in non-fund based area.
- The study showed decreasing trend of increasing ratio of loan and advance of commercial banks to their resources.
- The study also shows the increasing demand for credit can be met only increasing deposit collection.

Kishor Kumar Khati (2004), *in Nepal Bank Patrika* viewed to share, according to him the overall performance of commercial banks is satisfactory and NRB has to pay more active role to enhance the operation. He further writes:

- Liquidity position of commercial banks is satisfactory.
- The coefficient of correlation of deposit and lending and investment of commercial banks have better position.
- The coefficient of interest rates and deposit of commercial banks do not have better position.
- The trend of deposit, loan and advances and investment and investment to deposits are in decreasing trend.

He concluded his thesis mentioning that the interest rate has played important role in deposit and mobilization of the bank. So the structure of interest rate should be changed according to the need of nation.

2.3 Review of Thesis

The review of the old but valuable literature, study, research paper and genuine thesis are done for depth understanding of interest rate and it's impact in the following order:

Rajbhandary (2000) conducted a study entitled "The interest Rate Structure of Commercial Banks in Nepal." The objective of his study was to show the relation of interest rate with saving and fixed deposits; with loans and advances and with interest earning (i.e. interest received on loan minus int4erest paid on deposits).

His analysis concludes that the time deposits are positively and significantly correlated with the interest rates. There is significant correlation between the saving deposits and the rate of interest. Fixed deposit is more sensitive to the interest rate revision done by NRB. The correlation between the growth of fixed deposits and the interest rate particularly from 1994 to 2000 is most significant but the relation between the interest arte and loan advances is less significant. Among the entire sector, private sector seems most sensitive to interest rate change. Most of the loans too correlated positively if absolute cumulative figure are taken. But the growth rate of total loans and advances except investment on government securities is negatively correlated more with the weighted average rate of interest since 1994. The growth of loan to private sector is also negatively correlated with interest rate since 1991. Negative correlation between loans and interest rate meant that loan decrease at higher interest rate and vice versa.

The net interest earning is depended upon interest coverage. The total interest received and the total interest paid is significantly correlated in the case of both of the banks i.e. Nepal bank limited and Rastriya Banijya Bank, the sample organizations of the study.

Kshetry (2001) conducted a study entitled "Interest rate structure and its relation with deposits, inflation and credits in Nepal". He was of the view that deposit depends upon numerous factors besides income, inflation and interest rates and he conducted his study as:

- If other variable are kept constant, institutional interest rate is important explanatory variables to influence the volume of deposit in Nepal.
- Interest rates play an important role in under developed country like Nepal where the demand for capital is increasing at each level of income. An appropriate rate can divert investment in proper field. This means that the upward movement in the deposit rates increases the volume of deposits.

- The fixation of attractive interest rates on deposit has been responsible for the substantial growth in the volume of deposit in recent years.
- Finally, the relationship between credit flow and loan rates is found out to be negative. If the loan rate of interest is in concession, there is the possibility of raising investment and thus the volume of credit.

Bhatta (2004) conducted a study entitled "*Interest Rate and its effect on Deposit and lending". The conclusions drawn by Bhatta are as follows:*

- Deposit Rate of all sample banks under study are in decreasing trend. Meaning that every year deposit Rates of Sample banks under study have decreased.
- Lending Rates of all sample banks under study are also in decrease trend, means that every year lending rates of sample banks under study have decreased.
- Analysis shows that interest rates on lending are for higher than deposit rates of sample banks. The correlation coefficient between deposit rate and lending rate of sample banks comes highly positive.
- The simple correlation coefficient between deposit rate and deposit amount of sample banks were highly negative.
- The correlation analysis between lending rate and lending amount of all sample banks under study comes highly negative. The borrowers seem to be more interest conscious.

Parajuli (2005) has conducted a research on "Interest rate and its relation with Deposit, lending and inflation in Nepal". The findings drawn by Mr. Parajuli were as follows:

- The interest rate on both deposit and lending of all the sample banks are found to be in decreasing trend. Theoretically, there is positive relationship between saving amount and saving interest rate but here negative relationship is found. It states that there is no substitution effect in Nepalese financial market.
- The analysis of fixed deposit amount and fixed interest rate shows negative relationship except RBB and NBL. Theoretically, there is negative relationship

between lending interest rate and lending amount. In this study for the 5 sample banks except NBL have negative correlation between these two variables.

- The relationship between interest rate on deposit and inflation rate is positive. He also concluded that the spread between deposit interest rate and lending interest rate is in decreasing trend.

Khanal (2067) has conducted a research work on "Impact of Interest Rate on Deposit Mobilization in Nepalese Commercial Banks". From the study following major findings are obtained:

- The figure of interest earned to total assets showed banks are behaving in similar patterns. This ratio is in increasing pattern. Over the years the ratio lies between 5 to 7 percent.
- The total loan to total deposit ratio of Everest Bank Limited and Nabil Bank limited shows that EBL has comparatively invested high portion of its deposit funds into lending than NABIL. So EBL has been much aggressive in lending larger portion of its deposit funds.
- Total investment to total deposit shows fluctuating investment pattern. NABIL has invested higher than EBL. Bigger banks do not depend on lending of its deposit; they foresee the future prospects in investments and take risk to uncertain venture that's why they inverted as high as in investment.
- Net interest income of these banks shows NABIL has maintained comparatively higher net interest income than EBL. Both banks have positive growth rates.

2.4 Reviews of International Articles

Determinants of the term structure of interest rates –approaches to combining arbitrage free models and monetary macroeconomics

DEUTSCHE BUNDESBANK

Monthly Report April 2008: 15

The term structure of interest rates represents the relationship between the maturities and the yields of bonds. While short-term interest rates are influenced crucially by monetary policy, longer-term interest rates mainly reflect market players' expectations of future macroeconomic developments. Interest rates of different maturities do not move independently of each other, however. Rather, they are linked by the condition of absence of arbitrage, which means that the term structure must not allow any trading strategy which permits risk-free investment profits from investment in bonds of differing maturities. Modern term structure models link this key concept from the finance literature to explanatory approaches from macroeconomics. This article presents the basic idea of such combined modeling using the German term structure as an illustration. It identifies how the term structure reacts to inflationary and business cycle movements and calculates the level of the risk premiums contained in bond yields. Basic concepts and shape of the term structure over time the nominal term structure reflects the relationship between the maturities of a bond.

2.4 Research Gap:

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 deposits. There are few researches in the topic impact of interest rate on deposit mobilization and profitability. However, no one has done study on "Impact of interest rate on deposit and lending" with reference to four banks of EBL, NABIL, NSBL and BOK. Therefore, the researcher attempts to study in this area.

CHAPTER -3

RESEARCH METHODOLOGY

Research methodology refers to the various sequential steps to be adopted by a researcher in studying a problem with certain objectives in view. Research methodology describes the methods and process applied in the entire subject of the study. This chapter attempts to have an insight into the impact of interest rate on lending and deposit of three banks of EBL, NABIL, NSBI and BOK. Research Methodology is a way to systematically solve the research problem (Kothari, 1990:10). It is understood as a science of studying how the research is done scientifically step by steps that are generally adopted by a researcher, studying the research problem among with the logic behind them.

With a view to attain the overall objective of examining the interest rate and its impact on deposit mobilization and profitability, this study attempts to identify the impact of interest rate on lending and deposit of commercial banks in Nepal. To achieve the stated objectives certain methodology should have to be followed with is discussed in this chapter. It provides a description of methods and procedures for collecting and analyzing the data.

3.1 Research Design

A research design is the arrangement of conditions for collection and analysis of data that aims to combine relevance to the research purpose. Research design is the plan, structure and strategy of investigations conceived so as to obtain answers to research questions and to control variances (Kerlinker, 1996).

3.2 Sources of Data and Collection Procedure

Mainly, the study is conducted on the basis of the secondary data. The data required for the analysis are directly obtained from the website and reports of NRB and concerned banks.

3.3 Population and Sample

The relevant data collected to make research on the Everest Bank Ltd, NABIL Bank Ltd, Nepal SBI Bank Ltd. (NSBI) and Bank of Kathmandu Ltd (BOK) only even though there are 32 commercial banks established in Nepal which is selected from the population. To analyze the data from all banks is not practical due to time constraints and unavailability of resources. Only four banks are chosen as samples from the population of 32 banks. *(Source: Banking and Financial Statistic NRB 2068/ NRB website)*

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

3.4 Methods of Data Analysis (Tools of data analysis)

In the study, various financial, accounting and statistical tools have been used to achieve the objective of the study. The analysis of data will be done according to the pattern of data available. Due to limited time and resources, simple analytical statistical tools such as graph, Karl Pearson's Coefficient of correlation are used in the study. The various tools applied in this study, have been briefly presented as under. In order to get 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. Arithmetic mean is the sum of all observations divided by the number of observations. In such case, all the items are equally important. In this study, arithmetic mean is used as per necessary for analysis. It is computed by using following formula:

Arithmetic Mean ($\overline{X}$) = $\frac{\sum X}{n}$

Where ∑X = Means

∑X= Sum of all variable X

n= Variables involved

Arithmetic Mean is calculated to find the mean of the financial ratio.

3.4.2 Standard Deviation

The Standard Deviation is statistic used as a measure of 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 ( ). It is known as "Root Mean-Square Deviation" and is computed by using following formula:

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

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

3.4.3 Co-efficient of Correlation Analysis:

The correlation coefficient determines the relationship between two properties. This analysis identifies and interprets the relationship between two or more variables. In the case of highly correlated variables, the effect on one variable may have effect on other correlated variables. When two elements have zero correlation with other they are unrelated in any way and have zero variance. Positive correlation implies positive covariance. 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.

Symbolically,

Karl person's correlation coefficient (r) = $\frac{Co\ var\ iance\ (X1,X2)}{\sigma\ (X1)\ \sigma\ (X2)}$

Where, Covariance (X1X2) = 1/n {X1-$\bar{X}$1) (X2-$\bar{X}$2)}

Or,

Actual Mean Method (r) = $\frac{\sum X1X2}{\sqrt{\sum x1}\ \sqrt{\sum x2}}$

$$= \frac{\sum (X1 - X1)(X2 - X2)}{\sqrt{\sum (X1 - X1)2}.\sqrt{\sum (X2 - X2)2}}$$

N= Total number of observation

X1 and X2 = 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 significant 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 $(r12)^2 = (r12)^2$

3.4.5 T-test for significant 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

$$t = r \ x \ \frac{\sqrt{n-2}}{\sqrt{1-r2}}$$

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

Research Methodology and the various statistical tools discussed above have been used in the next chapter to analyze and interpret the EBL, NABIL, NSBI and BOK.

CHAPTER -4
PRESENTATION AND ANALYSIS OF DATA

Presentation and analysis of data is the major part of this research study. The main objectives of this chapter is detailed presentation, analysis and their interrelationship of the data and other available information concerning interest rate of commercial banks (sample banks) and their impact in deposit and lending of money from which result of Nepalese commercial banks and their market can be obtained. The relevant data and information necessary for the study and to show the relationship between variables i.e. between interest rate on deposit and deposit amount and interest on lending and lending amount are presented analyzed and interpreted keeping the objectives set in mind. This chapter is categorized into three parts: presentation, analysis interpretation and findings. The analysis is fully based on secondary data. Firstly, data are presented in term of table, graph chart of figures according to the need. The presented data are then analyzed using various statistical tools as mentioned in chapter three according to the requirement of the study and at last interpretation is made as per properties of presented data and calculated value. Using the various financial variables and statistical tools discussed in 'Research Methodology', we analyze the data to achieve our objective of the study.

Appropriate Model to Determine the Interest Rate

Interest Rate is a cost of money. It is determined for bearing the various costs like, Insurance against Risk, Reward for Inconveniences and payment for management expenditure etc. The determinant of Interest Rate is the composition of risk free rate, risk factor, inflation rate, time period, etc.

The classical theory the determinant of Interest rate is determined by the financial market place where supplies of lonable funds interest with demands of lonable funds trends to settle at the point where the quantities of lonable funds demanded and supplied are equal.

The lonable funds show that the rate of interest is determined by the interaction of the demand and supply. In the demand for lonable funds, the investment of the production of the capital goods and the loans for consumption purpose are also included.

The liquidity preference theory of Interest, the interest rate of interest is determined by the demand money. Keynes has indicated the liquidity preference of the people. On the other hand, the supply of money indicates the total quantity of money available in a fixed period of time .This total quantity of money is changed by the central Bank of a country.

According to Professor Keynes the rate of interest is determined by the interaction of the total demand of liquid money and the total supply of money. The total demand for liquid money includes the demand for liquid money transaction precautionary and speculative motives.

The modern theory explanation of the determination of the rate of interest by mixing classical theory and monetary factors, saving function, investment function, liquidity preference function and supply function are included in the determination of the rate of interest. Out of above presentation various model are use for determinate of interest rate, the modern theory is more suitable in practice.

Interest Rate Determination Methods: The Methods of charging interest on lending as follows.

i. Add on installment method
ii. Simple interest/ collect basis
iii. Discounted method
iv. Simple or regular installment method
v. Flat method

i. Add on installment Method: Add on installment Method interest on whole principle is added to principle amount and the sum is the divided by the number of payments to fix the size of installment. This method is used in finance companies.

ii. Simple interest/collect basis/lump sum method: This method calculates installment might be monthly, quarterly and even daily. Duration of installments depends upon the nature of loan i.e. it differs according to the sector and borrowing party. Most of the commercial bank uses this method.

iii. Discounted method: Under this method interest on whole amount is deducted from principle and remaining is provided to borrowers as proceeds.

iv. Simple or regular installment method: This simple method amount of principle and interest together is payable at the end of maturity.

v. Flat Method: The flat method interest is charged on whole amount and payable in installment. Principle also payable in installment but interest is charged on whole principle amount even if remaining balance of principle is decreasing.

4.1 Analysis of Deposit and Interest Rate

Analysis of trend and relationship of deposit, lending, and various rates.

The analysis of trends and relationship between the various variables are presented in tables, calculation of correlation analysis, and presentation on figure and show the relationship, t-test and verification in static's tools and techniques. Correlations analysis represents the statistical technique for identifying the degree of relationship between two variables. It is the tool generally used to analyze the nature and degree to which one variable is related to another. Karl Pearson's coefficient of correlation is a widely accepted method for the correlation analysis that finds the coefficient of correlation.

Deposit is that amount which is deposited by savers in banks or other financial institutions for safe keeping as well as for earning the interest from it. Deposits are the main sources of resources to meet the growing demands of financial existence. The existence of commercial banks basically depends upon the mobilization upon the deposits. The commercial banks may function when they 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 general deposits on its mobilization in an effective manner. The following tables and figure shows 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)

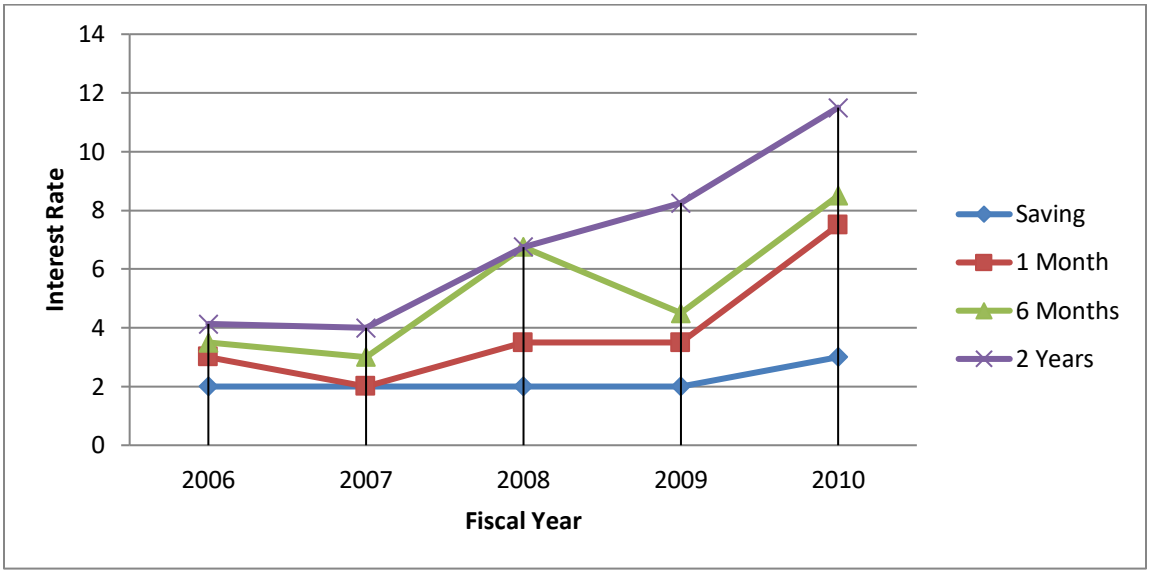
Deposits/Year	**2006**	**2007**	**2008**	**2009**	**2010**
Saving	2.00	2.00	2.00	2.00	3.00
Fixed					
7 Days					
14 Days	2.50	1.75	3.00		
1 Month	3.00	2.00	3.50	3.50	7.50
2 Months					
3 Months	3.25	2.75	6.75	4.50	8.50
6 Months	3.50	3.00	6.75	4.50	8.50
1 Year	4.00	4.00	6.75	5.50	9.50
2 years/Above	4.125	4.00	6.75	8.25	11.50
Fixed Deposit Mean	**3.40**	**2.83**	**5.29**	**5.82**	**9.40**
Whole Mean	**3.20**	**2.71**	**4.82**	**5.20**	**8.33**
S. D.	**1.9767**				

Source: Statistics, Interest Rate Structure, NRB (www.nrb.org.np)

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

Table 4.1, shows that the interest rate structure on deposit of NABIL Bank during the last five fiscal years. For the 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% in the year 2006 and remained constant till the year 2009 and it increase to 3% in 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 year 2007 and witnessed highest increase in the year 2010. The table shows that average interest rate on fixed deposit were 3.4% for the year 2006, 2.83% for the year 2007, 5.29% for the year 2008, 5.85% for the year 2009 and 9.4% for the year 2010. Similarly, average interest rate for deposit was 3.2%, 2.71%4.82%, 5.20% and 8.33% for the year 2006, 2007, 2008, 2009 and 2010 respectively. The average figures also shows the increasing tendency in interest rate expect the year 2007.

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



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 1 month, 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)

Year (1)	**Saving Deposit Interest Rate (2)**	**Saving Deposit Amount (3)**	**Fixed Deposit Interest Rate (4)**	**Fixed Deposit Amount (5)**
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	9.40	14711.07
Correlation	**R_{23}=0.4311929**		**R_{45}= 0.990260**	
Coefficient of Determination	**R_{23}^2 = 0.1859273**		**R_{45}^2= 0.980615**	
t-Statistics	**t-cal = 0.827752** **t-tab = 3.182**	**Insignificant**	**t-cal = 12.31** **t-tab= 3.182**	**Significant**

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 calculate 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 Bank during the last five fiscal years starting from 2006 to 2010. The table shows that the interest rates of saving deposit remains constants except the year 2010 while the interest rate of fixed deposit is increasing continuously except the year 2007. On the other hand, total saving deposit amount is 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 also be quantified by calculating correlation coefficient between them. This relationship can be shown in Figure 4.2 and 4.3

Figure 4.2 Deposit Amount of NABIL during different Fiscal Years

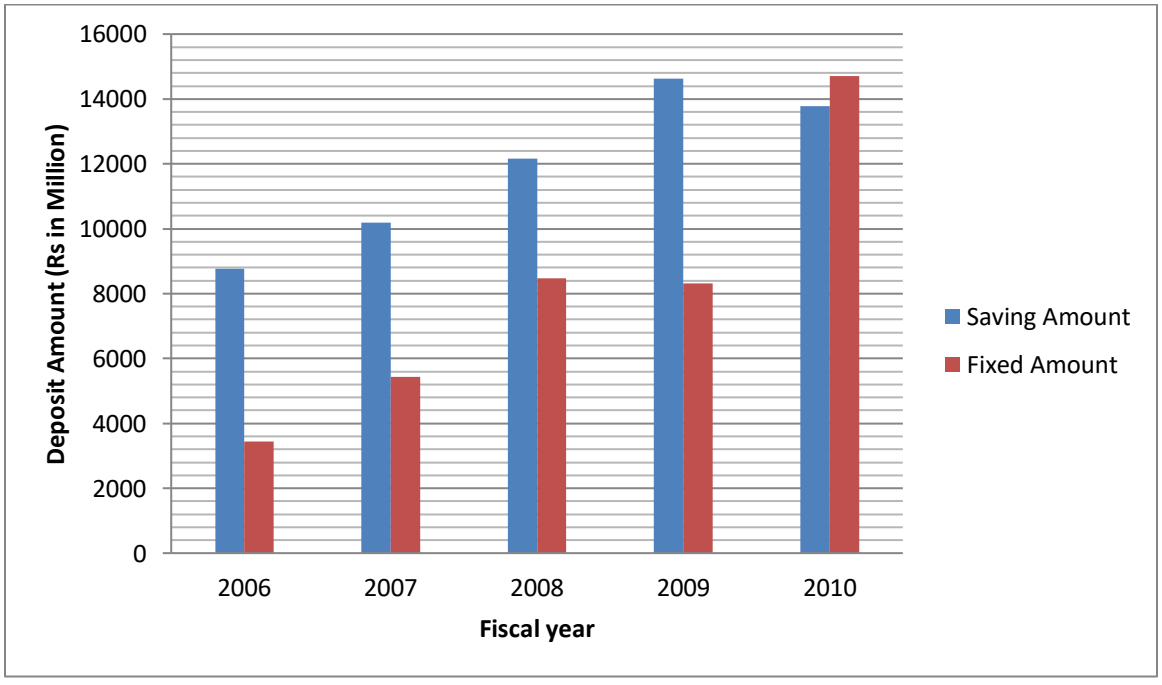


Figure 4.3: Deposit Rate of NABIL during different Fiscal Years

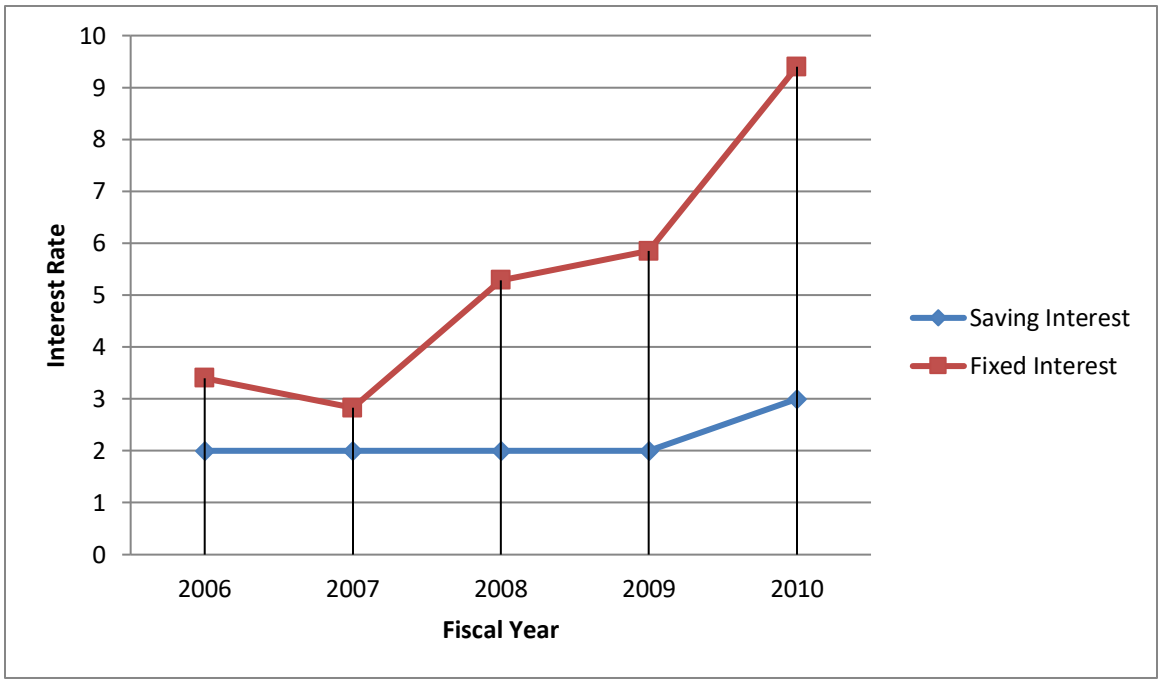


Table 4.2 shows that the interest rate on saving deposit has increased from 2% to 3% during five fiscal years. In the period, the deposit amount has increased from Rs 8,770.80 to Rs 14,620.40 and decreases in the year 2010 to Rs 13,783.60 millions. This shows that in spite of constant in the interest 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 3.4% to 9.4% in year 2006 to 2010. On effect of this increase, the amount of fixed deposit has also increased from Rs 3,450.20 million to Rs 14,711.07 Millions.

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 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 (H0) 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 means 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-cal= 12.31 which is more than the tabulated t-value (t-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 (H0) is accepted i.e. there is negative relationship between fixed deposit interest rate and fixed deposit amount of NABIL.

4.1.2 Everest Bank Limited

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

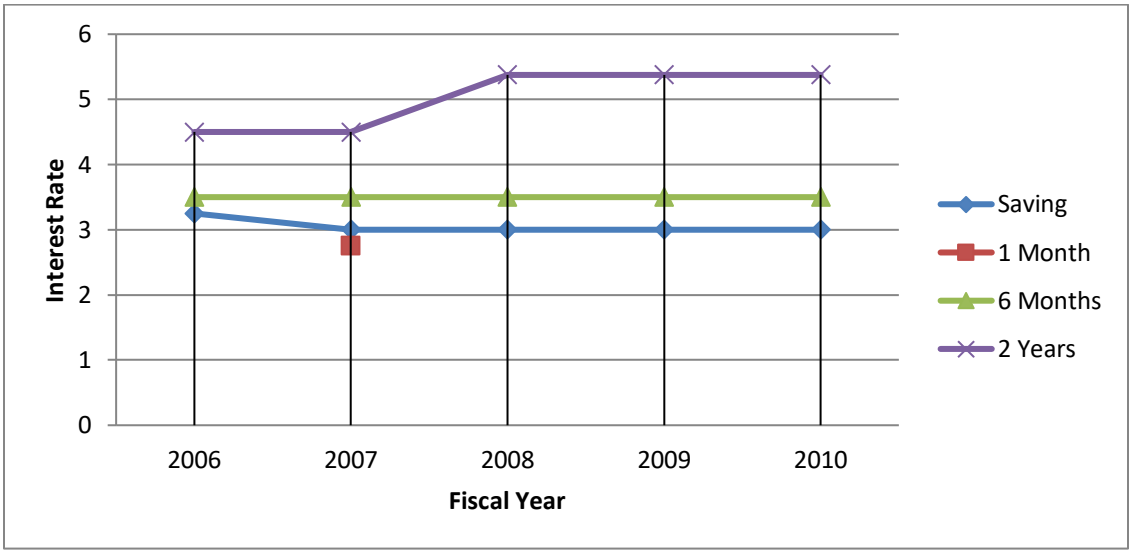
Deposits/Year	**2006**	**2007**	**2008**	**2009**	**2010**
Saving	3.25	3.00	3.00	3.00	3.00
Fixed					
7 Days					
14 Days					
1 Month		2.75			
2 Months		2.75			
3 Months	3.00	3.00	3.00	3.00	3.00
6 Months	3.50	3.50	3.50	3.50	3.50
1 Year	4.00	4.00	5.00	5.00	5.00
2 years/Above	4.50	4.50	5.375	5.375	5.375
Fixed Deposit Mean	**3.75**	**3.42**	**4.22**	**4.22**	**4.22**
Whole Mean	**3.65**	**3.36**	**3.98**	**3.98**	**3.98**
S. D.	**0.2501**				

Source: Statistics, Interest Rate Structure, NRB (www.nrb.org.np)

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

Table 4.3, shows that the interest rate structure on deposit of Everest Bank during the last five fiscal years. For the study 2006 is taken as initial year and 2010 as final year. Table shows those interest rates 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 raises 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 Bank



The above figure 4.4 clearly 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
Correlation	**R_{23}= - 0.745084**		**R_{45}= 0.628976**	
Coefficient of Determination	**R_{23}^2 = 0.555150**		**R_{45}^2= 0.395611**	
t-Statistics	**t-cal = - 2.59689 t-tab = 3.182**	**Insignificant**	**t-cal = 1.40131 t-tab= 3.182**	**insignificant**

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 calculate 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 the 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 be shown in Figure 4.5.

Figure 4.5 shows deposit amount is continuously rising each 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 below:

Figure 4.5 Deposit Amount of EBL during different Fiscal Years

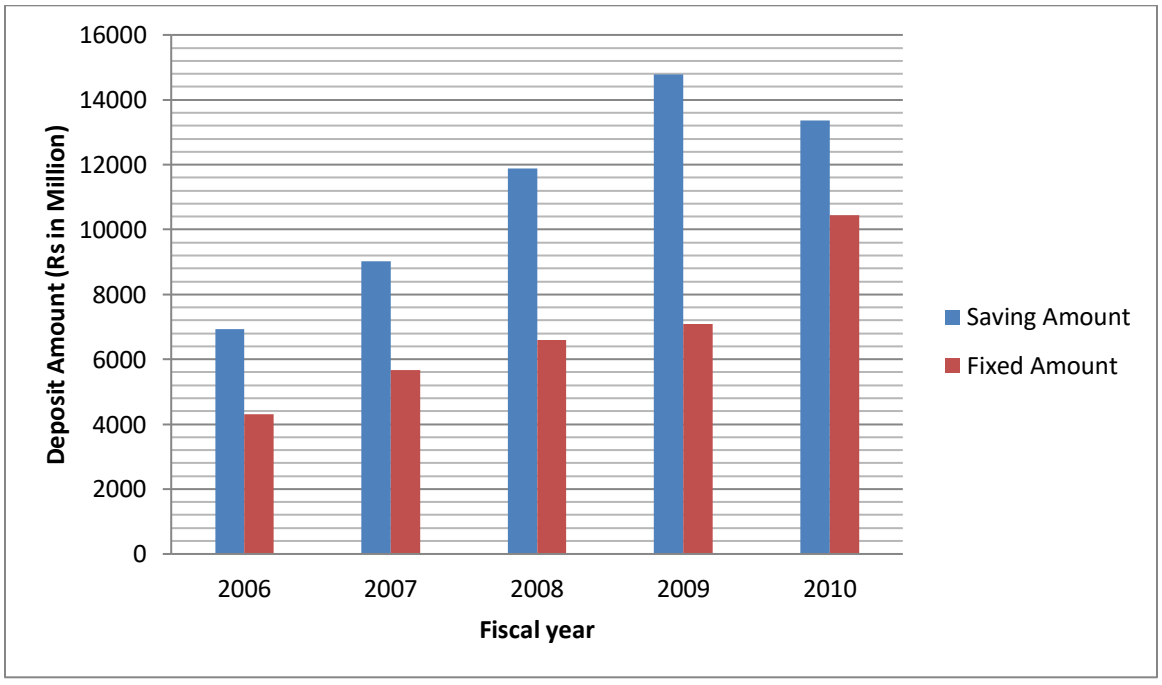


Figure 4.6: Deposit Rate of EBL during different Fiscal Years

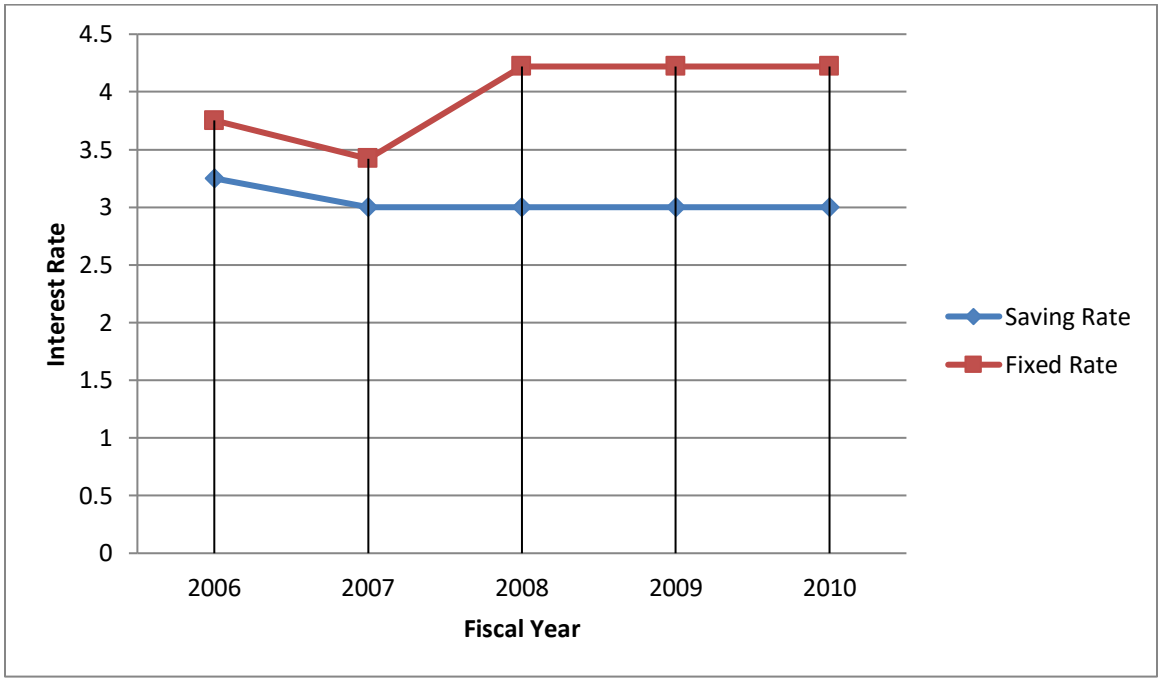


Table 4.4 shows that the decrease of interest rates in saving deposit and then remains constant and fluctuating trend in fixed deposit. To verify the above trend, it is necessary to calculate the correlation coefficient and t-statistics. The calculation of correlation coefficient between saving deposit 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 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% total variation in dependent variable (saving deposit amount) is explained by independent variable (interest rate) and remaining percentage of 44.49% is the effect of other factors. The t-value for testing the significance of the correlation coefficient between variable is t-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-tab=3.182) is greater than the calculated value (t-cal= 2.59682), 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 (H0) is accepted which means there is positive relationship between interest rate on deposit and the amount saving deposit of EBL.

In the same manner, the correlation coefficient for fixed deposit interest rate and fixed deposit amount r_{45} = 0.628976. The figure indicates that these two variables are directly correlated but the magnitude of correlation is very low. In the other word, change in one variable cause the change in other variable in the save direction. The coefficient of determination between these two variables is r_{45}^2 = 0.395611 which means 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 t-cal= 1.40131 which is less than the tabulated t-value (t-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 (H0) is accepted i.e. there is no relationship between fixed deposit interest rate and fixed deposit amount of EBL.

4.1.3 Bank of Kathmandu (BOK)

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

Deposits/Year	**2006**	**2007**	**2008**	**2009**	**2010**
Saving	2.50	2.25	2.25	2.25	2.25
Fixed					
7 Days	1.5	1.5	2.00	20..	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
Fixed Deposit Mean	**3.13**	**2.79**	**3.64**	**3.64**	**5.47**
Whole Mean	**3.05**	**2.72**	**3.469**	**3.469**	**5.47**
S. D.	**0.2501**				

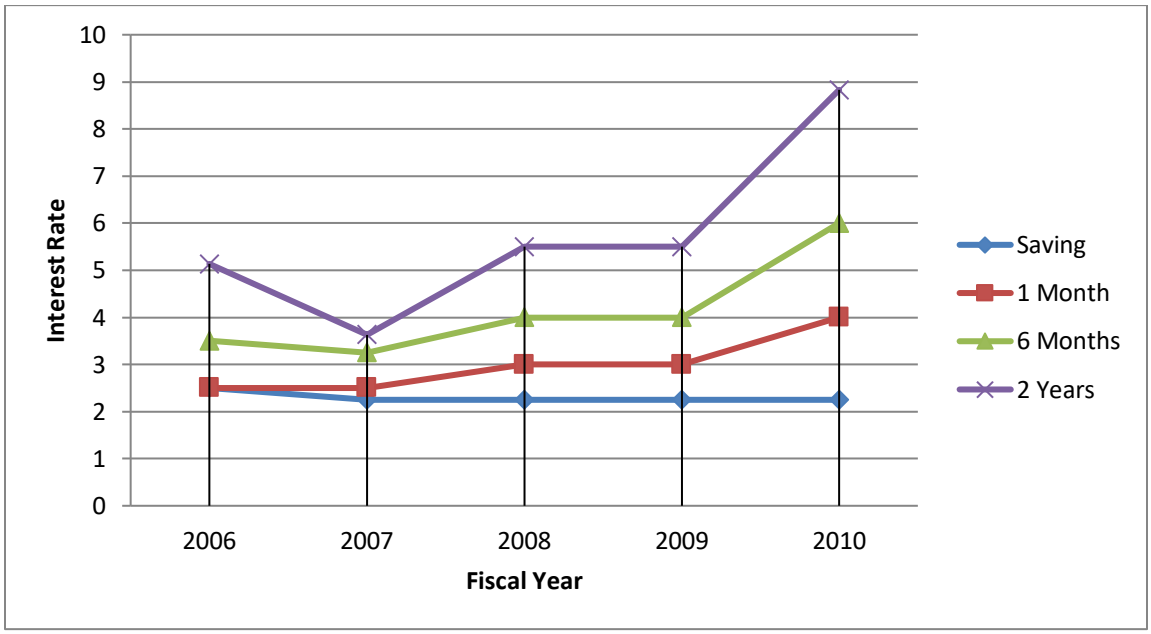
Source: Statistics, Interest Rate Structure, NRB (www.nrb.org.np)

(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 the 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 and which decreased 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% for the year 2006 which decrease to 2.79% for the year 2007, rapidly increase to 3.64% in the 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% for 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 the fluctuating tendency of BOK during the five fiscal years. In the second year there was a decrease in the interest rate. The entire figure shows that the saving interest rate is on constant trend where fixed interest rate is on fluctuating rend.

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)

Year (1)	**Saving Deposit Interest Rate (2)**	**Saving Deposit Amount (3)**	**Fixed Deposit Interest Rate (4)**	**Fixed Deposit Amount (5)**
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
Correlation	**R_{23}= 0.810354**		**R_{45}= 0.660947**	
Coefficient of Determination	**R_{23}^2 = 0.656673**		**R_{45}^2= 0.436852**	
t-Statistics	**t-cal = - 2.3954 t-tab = 3.182**	**Significant**	**t-cal = 1.5255 t-tab= 3.182**	**Insignificant**

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 calculate 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 the last five fiscal years starting from 2006 to 2010. The table shows that the interest rate of saving deposit is decreased and then 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 be shown in Figure 4.8.

Figure 4.8 Deposit Amount of BOK during different Fiscal Years

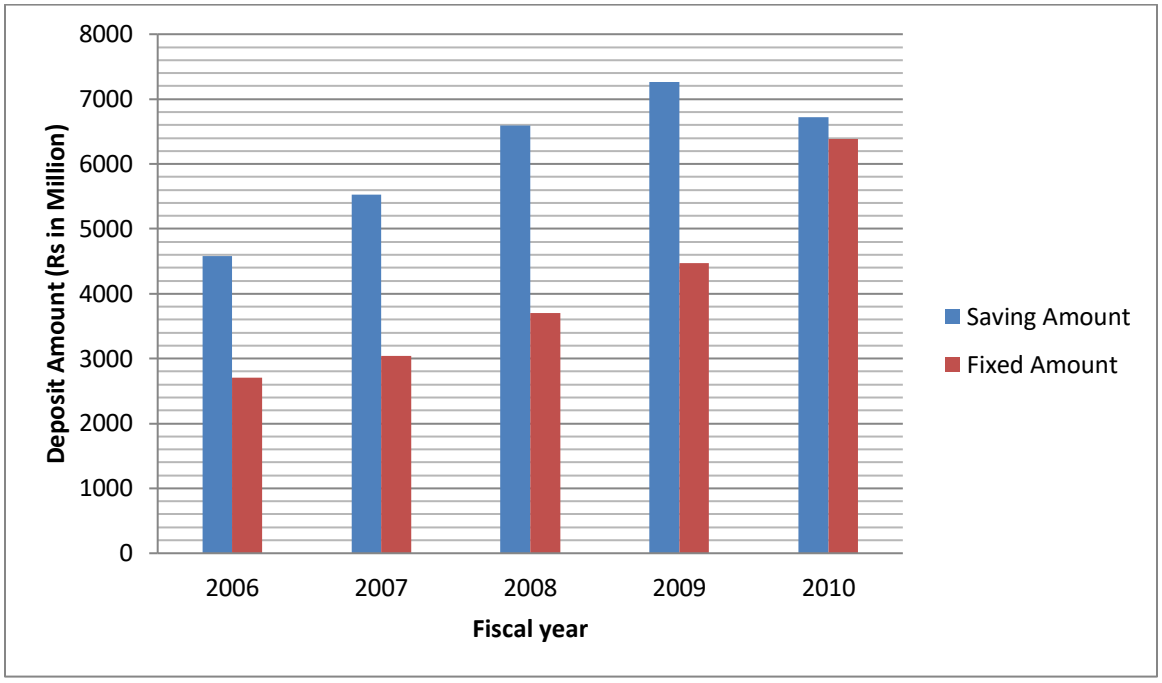


Figure 4.8 shows saving deposit amount is continuously rising each year except the year 2010 but fixed deposit amount seems to grow each year without any fluctuation. It means that there is rise in fixed deposit amount. Similarly, the interest rate of fixed deposit and saving deposit can also be shown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

Figure 4.9: Deposit Rate of BOK during different Fiscal Years

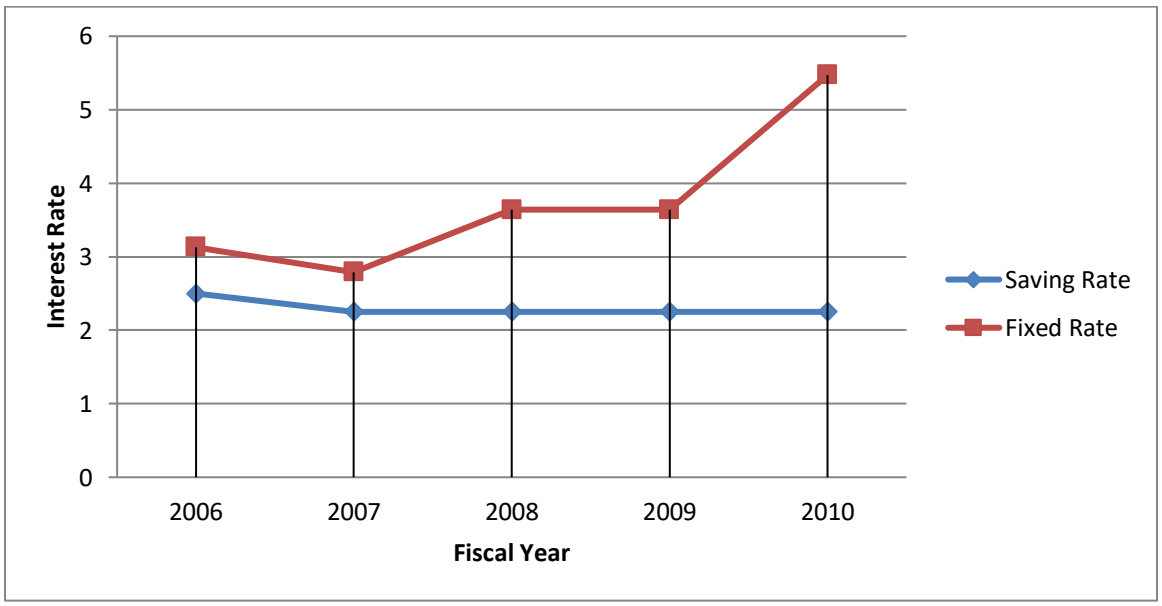


Figure 4.9 shows the constant and fluctuating trend of interest rates both in saving and fixed deposit respectively. The saving deposit rate is in decrease and then remains constant. On the other hand the fixed deposit rate is also in fluctuation trend except the year 2008 and 2009 where it remains constant. 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 percentage of 34.34% is the effect of other factors. The t-value for testing the significance of the correlation coefficient between variable is t-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-tab=3.182) is greater than the calculated value (t-cal= 2.3954), the correlation coefficient is significant. This means the variables mentioned (interest rate on saving deposit and amount of saving deposit) for BOK are significantly correlated and alternative hypothesis (H1) is accepted which means there is no relationship between interest rate on saving deposit and the 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 the other word, change in one variable cause the change in other variable in the save direction. This care is in favor of the substitution effect. The coefficient of determination between these two variables is r_{45}^2 = 0.436850 which means 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 t-cal= 1.5255 which is less than the tabulated t-value (t-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 (H0) is accepted i.e. there is no relationship between fixed deposit interest rate and fixed deposit amount of BOK.

4.1.4 Nepal SBI Bank Ltd (NSBI)

Table 4.7: Interest rate structure of NSBI on deposits (Mid-July 2006 to 2010)

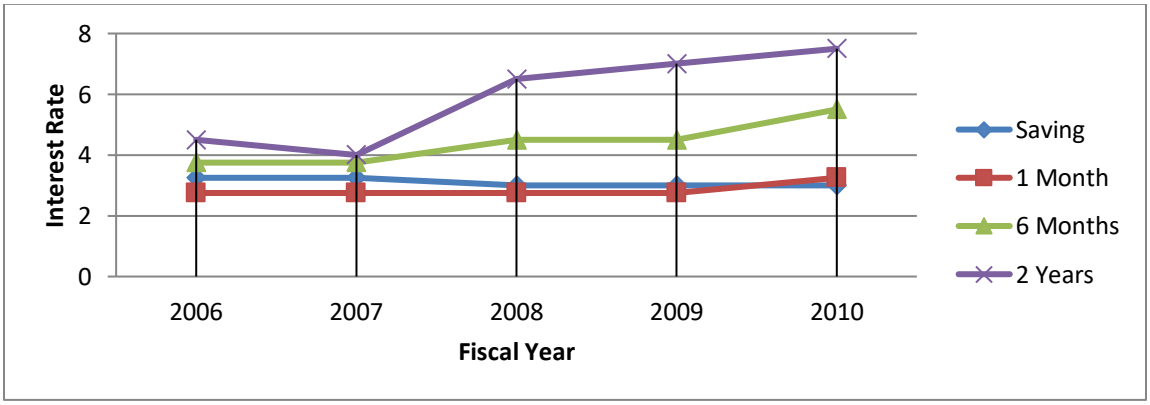
Deposits/Year	**2006**	**2007**	**2008**	**2009**	**2010**
Saving	3.25	3.25	3	3	3
Fixed					
7 Days					
14 Days					
1 Month	2.75	2.75	2.75	2.75	3.25
2 Months					
3 Months	3.25	3.25	3.25	3.25	3.75
6 Months	3.75	3.75	4.5	4.5	5.5
1 Year	4.5	4	5.5	5.5	6.5
2 years/Above	4.5	4	6.5	7	7.5
Fixed Deposit Mean	**3.75**	**3.55**	**4.5**	**4.6**	**5.3**
Whole Mean	**3.67**	**3.50**	**4.25**	**4.33**	**4.92**
S. D.	**0.50733**				

Source: Statistics, Interest Rate Structure, NRB (www.nrb.org.np)

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

Table 4.7, shows that the interest rate structure on deposit of NSBI Bank during the last five fiscal years. For the study, 2006 is taken as initial year and 2010 as final year. The data shows the decrease of interest rate in saving deposit rate and increasing tendency in fixed deposit rate.

Figure 4.10: Interest Rate on Saving and Fixed Deposits of NSBI Bank



The above figure 4.10 shows the trends of interest rate on saving and fixed deposits. Deposit rate on saving is decreasing but in fixed is in increasing trend. The all interest rate has fluctuating in each year. The graph in this study shows the average of 1 month, 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 4.8: Relationship between Interest Rate on Deposit and Deposit Amount of NSBI.

(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	2832.7	3.75	6116.2
2007	3.25	3274.7	3.55	5517.3
2008	3	4171.2	4.5	6854.9
2009	3	5822.3	4.6	17438.4
2010	3	7348.8	5.3	22148.9
Correlation	**R_{23}= - 0.79633**		**R_{45}= 0.875954**	
Coefficient of Determination	**R_{23}^2 = 0.634136**		**R_{45}^2= 0.767295**	
t-Statistics	**t-cal = - 3.76992 t-tab = 3.182**	**Insignificant**	**t-cal = 3.145 t-tab= 3.182**	**Insignificant**

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 calculate as shown in Appendix I)

Table 4.8, shows that the total amount of fixed deposit and saving deposit and the interest rate offered on such deposits of NSBI Bank during the last five fiscal years starting from 2006 to 2010. The table shows that the interest rates of saving deposit are in decreasing trend while the interest rate of fixed deposit is increasing continuously. In case of saving there is negative relation between interest rate and deposit amount. This shows people do not stop to save despite the constant or decrease 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. It could also be quantified by calculating correlation coefficient between them. This relationship can be shown in Figure 4.11 and 4.12

Figure 4.11 Deposit Amount of NSBI during different Fiscal Years

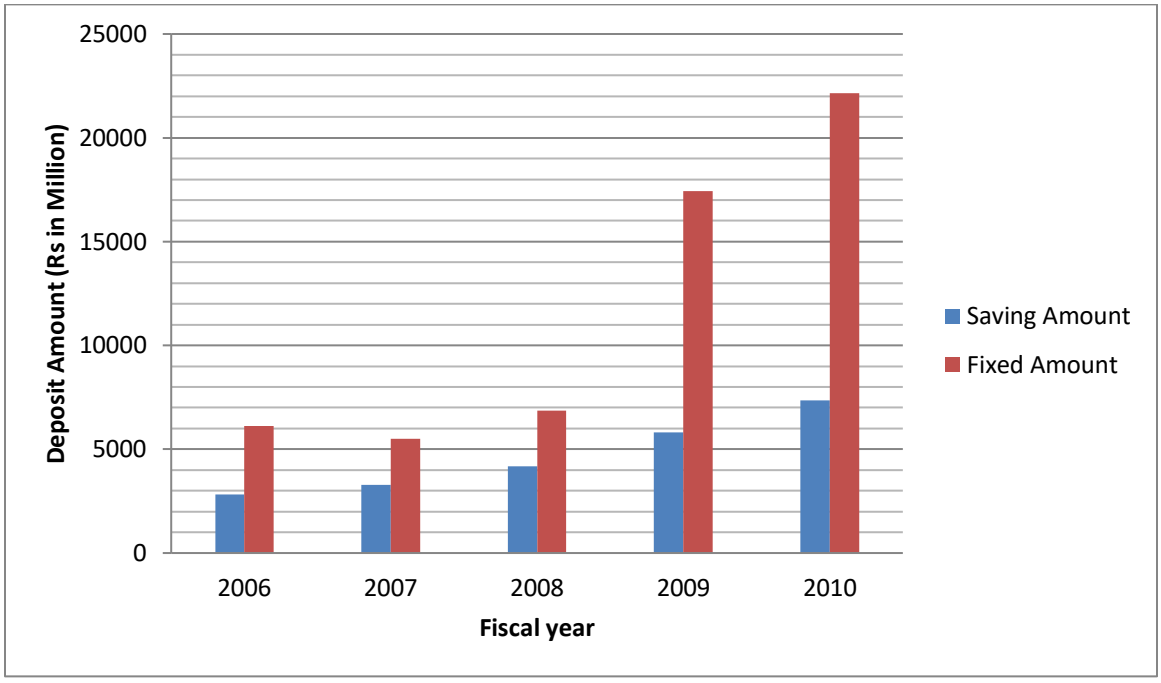


Figure 4.12: Deposit Rate of NSBI during different Fiscal Years

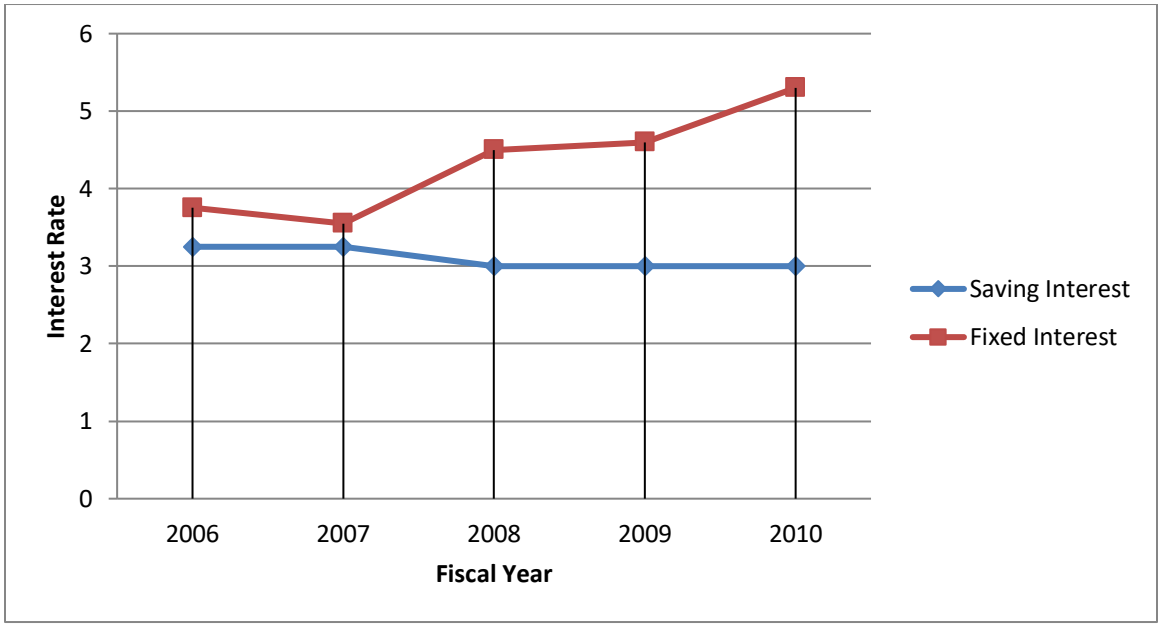


Table 4.8 shows that the interest rate on saving deposit has decreased from 3.25% to 3% during five fiscal years. In the period, the deposit amount has increased. This shows that, in spite of constant/reduces in the interest rate on saving deposit, the saving amount increased within the period. Similarly, table shows that the fixed interest rate has increased from 3.75% to 5.3% in year 2006 to 2010. On effect of this increase, the amount of fixed deposit has also increased. 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}) = - 0.79633. This negative correlation coefficient indicates that they have negative relationship with each other. The coefficient of determination between these two variables is r_{23}^2 = 0.634136 which means 63.41% total variation in dependent variable (saving deposit amount) has been explained by independent variable (interest rate) and remaining percentage of 36.59% is the effect of other factors. The t-value for testing the significance of the correlation coefficient between variable is t-cal= - 3.76992. 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= -3.76992), the correlation coefficient is insignificant. This means the variables mentioned (interest rate on saving deposit and amount of saving deposit) for NSBI are not correlated and null hypothesis (H0) is accepted which means there is negative relationship between interest rate on deposit and saving deposit amount of NSBI.

In the same manner, the correlation coefficient for fixed deposit interest rate and fixed deposit amount r_{45} = 0.875954. 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 = 0.767295 which means 76.72% of total variable (fixed deposit) is explained by independent variable (fixed deposit rate) and remaining 23.28% is the effect of other variables. The t-value for testing the significance of the correlation coefficient between variables t-cal= 3.145 which is less than the tabulated t-value (t-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 (H0) is rejected i.e. there is positive relationship between fixed deposit interest rate and fixed deposit amount of NSBI.

4.2 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 analyzed. Generally, when there is higher interest rte (specially lending or credit rate) in the economy, people normally borrow lesser amount then 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 users 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 economy. So this study tries to explore the relationship between lending rate and lending amount in Nepalese economy.

4.2.1 NABIL Bank Ltd.

NABIL bank 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 4.9: 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	10.11	9.25	9.50	11.25	15.50

Sectors/Years	2006	2007	2008	2009	2010
Average Lending rage (1)	**9.50**	**8.62**	**8.71**	**10.41**	**13.25**
Loan Amount (2)	**13021.00**	**15657.10**	**21514.63**	**27816.56**	**32902.83**
Correlation Coefficient (r_{12})	**-0.818898**				
Coefficient of Determination (r_{12}^2)	**0.670595**				
t-statistics	**t-cal= -2.47129** **t-tab= 3.182**			**Insignificant**	
S.D.	**1.714113**				

Source: Statistics, interest rate structure, sources and uses of funds NRB

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

Table 4.9 shows the lending interest rate on different area is in increasing trend. Table shows the maximum interest rate is 15.50% and 12.50% in 2010 and minimum rate is 6.75 on 2007. This shows the interest rate increased drastically during the five years period. Generally the productive sector loan rate like commercial loan, industrial loan are not given and priority sector loan, working capital loan and son on rises less in magnitude than non productive sector loan (like overdraft, loan against government bond, BG/CG rate and son on). For example during the last five fiscal years 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%, 3.75% in priority sector, deprived sector, term loan and working capital 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 trend from the year 2007 i.e. 9.5%, 8.62%, 8.71%, 10.41% 13.28% in fiscal year 2206, 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 4.13: Average Lending Rate of NABIL during different FYs.

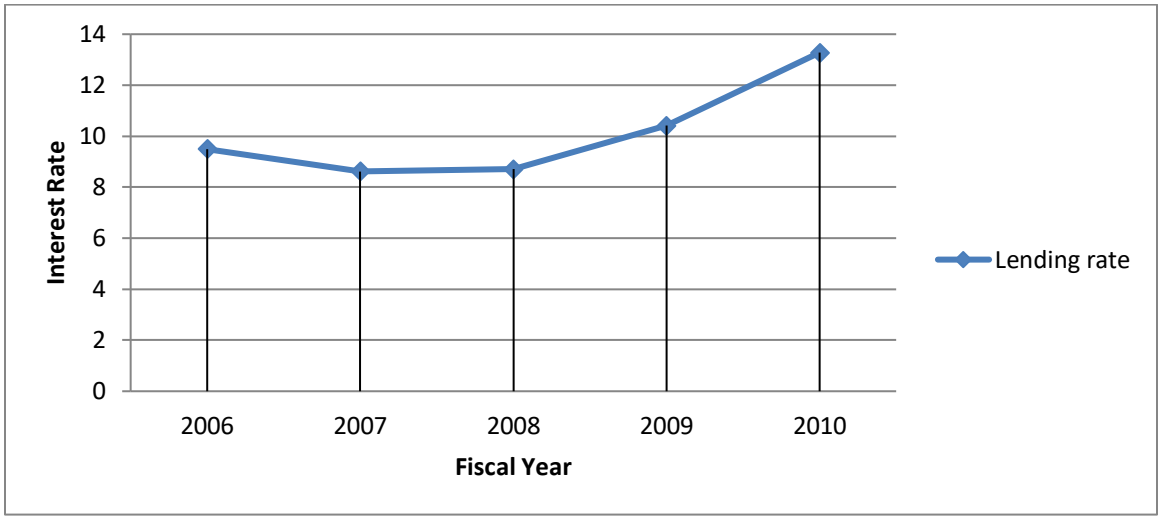
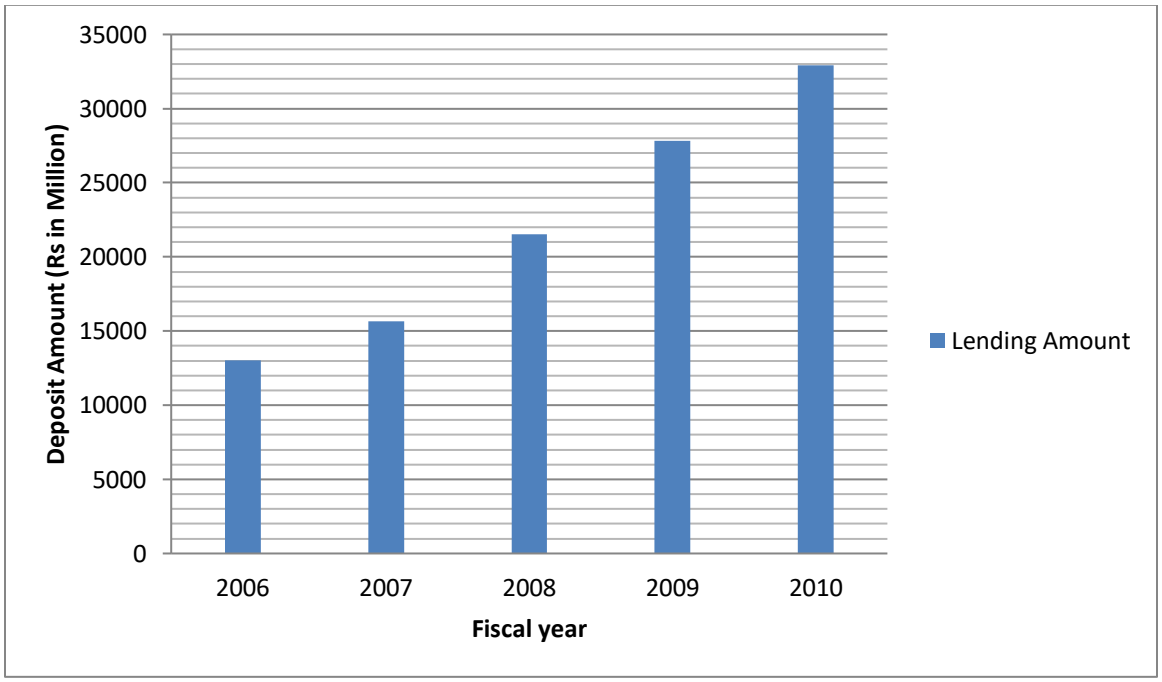


Figure 4.14: Lending Amount of NABIL during different FYs



The above figure no 4.13 and 4.14 shows the trend 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 to 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 to 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 tabulated t-value at 5% level of significance for two tails at (5-2) degree of freedom (t-tab=3.182). In this condition (H0) 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.

4.2.2 Everest Bank Limited (EBL)

Table 4.10: 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

Sectors/Years	**2006**	**2007**	**2008**	**2009**	**2010**
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
Average Lending rage (1)	**8.20**	**8.44**	**8.85**	**8.85**	**8.85**
Loan Amount (2)	**10124.00**	**14059.20**	**18814.29**	**24366.20**	**28129.69**
Correlation Coefficient (r_{12})	**-0.8900049**				
Coefficient of Determination (r_{12}^2)	**0.792108**				
t-statistics	**t-cal= 3.3809** **t-tab= 3.182**			**Insignificant**	
S.D.	**0.270510**				

Source: Statistics, interest rate structure, sources and uses of funds NRB

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

Table 4.10 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. Table shows the maximum interest rate is 9.75% in FY 2008, 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 is lending amount is given on figure no 4.15 and 4.16.

Figure 4.15: Average Lending Rate of EBL during different FYs.

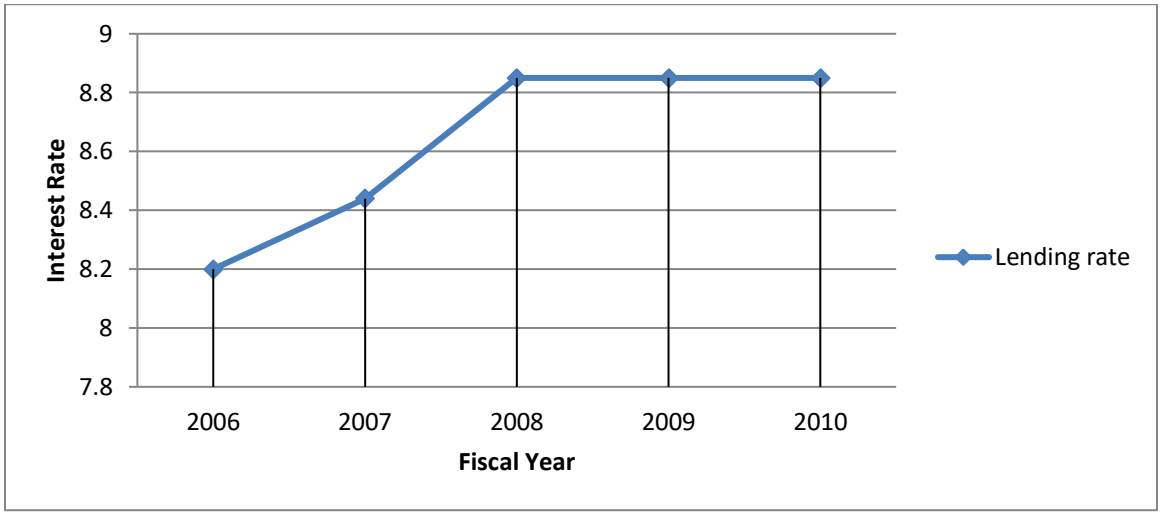
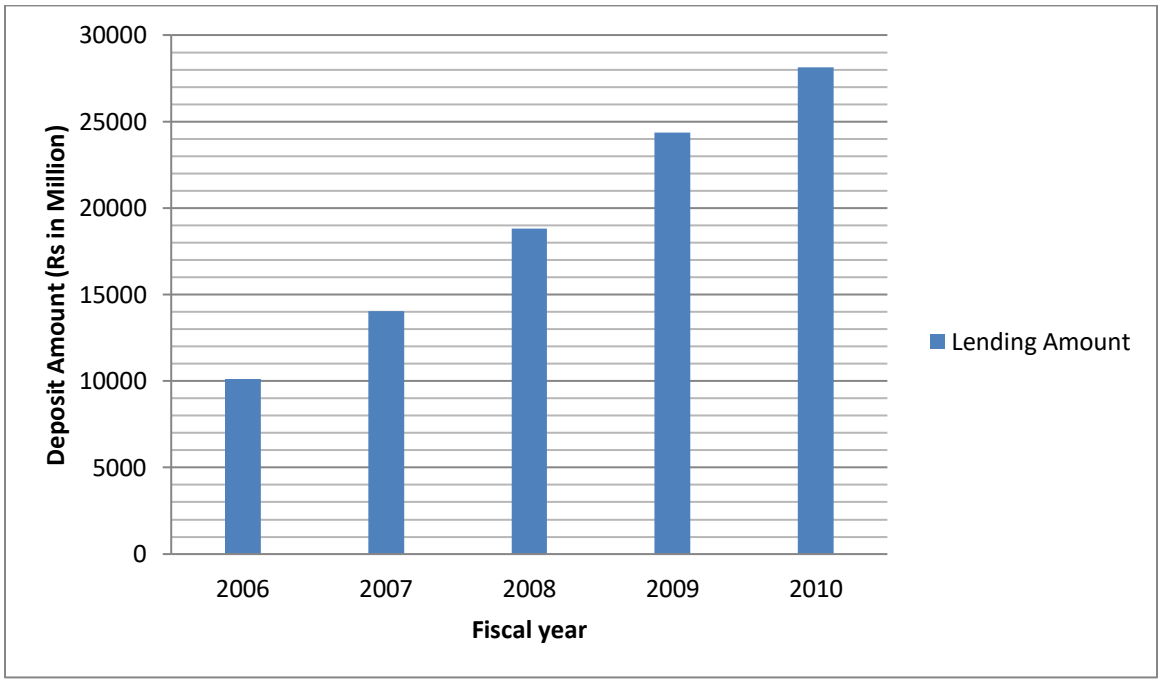


Figure 4.16: Lending Amount of EBL during different FYs



The above figure no 4.15 and 4.16 shows the trend 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 also in increasing trend during the five fiscal years despite the rise or constant in interest rate. We can conclude that there is no relationship between lending rate and lending amount EBL.

Correlation Coefficient, Coefficient to Determination and t-statistics of EBL

From figure 4.15, 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 to 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 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 tabulated t-value at 5% level of significance for two tails at (5-2) degree of freedom (t-tab=3.182). In this condition (H0) is rejected and (H1) is accepted. 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.

4.2.3 Bank of Kathmandu (BOK)

Table 4.11: 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 Sector					
Deprived Sector	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
Average Lending rage (1)	**9.71**	**9.71**	**9.71**	**10.52**	**13.06**
Loan Amount (2)	**7525.00**	**9663.60**	**12692.90**	**14894.70**	**16847.10**
Correlation Coefficient (r_{12})	**0.784553**				
Coefficient of Determination (r_{12}^2)	**0.615524**				
t-statistics	**t-cal= 2.1915 ; t-tab= 3.182**			**Insignificant**	
S.D.	**1.297416**				

Source: Statistics, interest rate structure, sources and uses of funds NRB

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

Table 4.11 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 in increasing trend.

The table shows the maximum interest rate is 14.50% in FY, 2010 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 the other hand, non productive sector loan (like overdraft, loan against government bond, BG/CG rate and son on rises in year 2009 and 2010. For example during the last five fiscal years 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 the fiscal years. Overdraft remains constant during different fiscal years except rises by 2.75% in the year 2010. Loan against government 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 other. 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 somewhat 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 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 4.17: Average Lending Rate of BOK during different FYs.

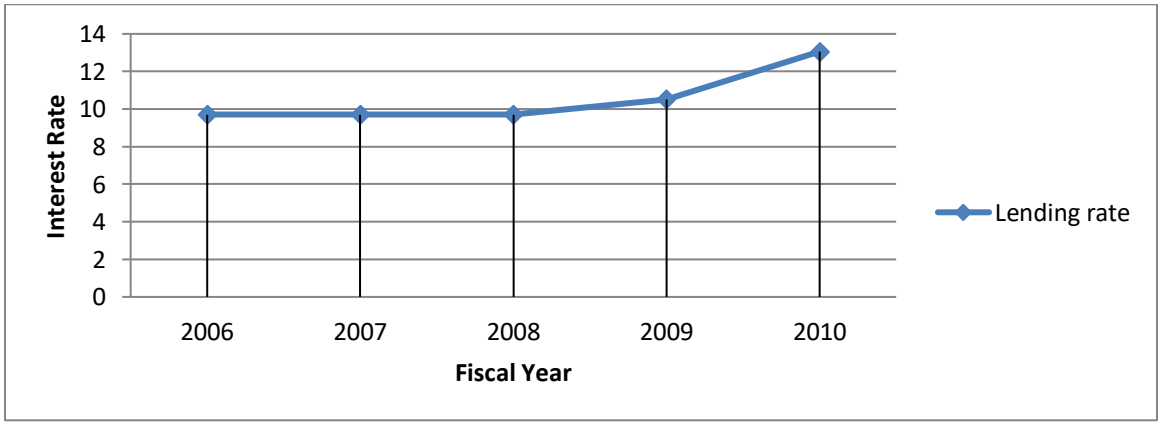
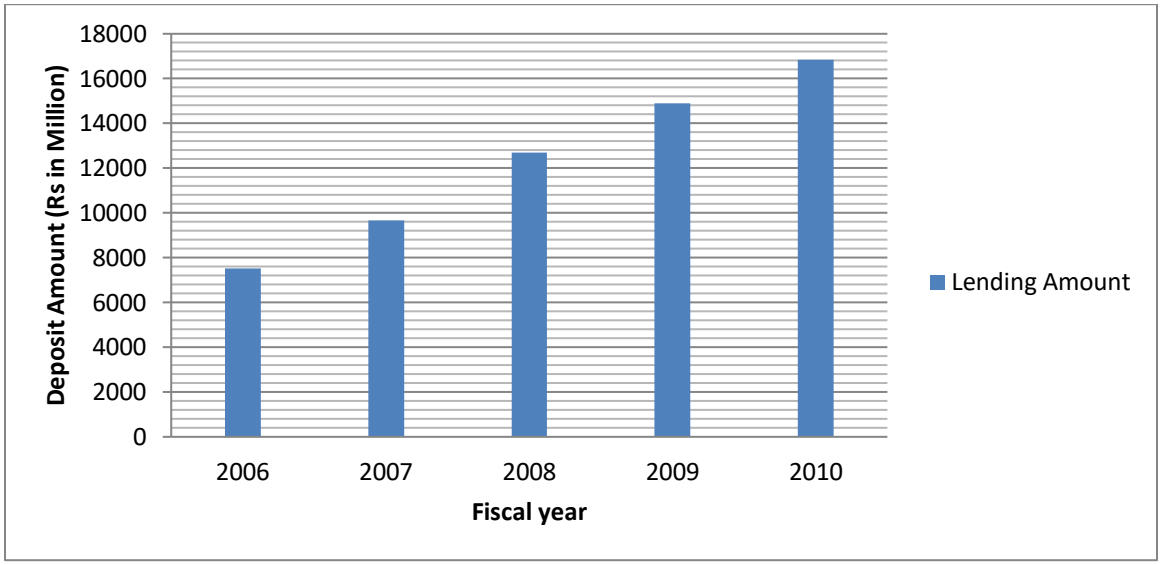


Figure 4.18: Lending Amount of BOK during different FYs



The above figure no 4.17 and 4.18 shows the increasing trend of lending interest rate and lending amount of BOK during different fiscal years. The interest rate has slightly increased during the five fiscal years. It rises from 9.71% to 13.06%. Similarly, the lending amount is also in increasing trend during the five fiscal years. We can conclude that there is positive relationship between lending rate and lending amount BOK.

Correlation Coefficient, Coefficient to Determination and t-statistics of BOK

From the table 4.11, the correlation coefficient between lending rate and lending amount (r_{12}) is 0.784553. The 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 to use money when the market interest rate is low in the market. Similarly, the coefficient of determination is (r_{12}^2) = 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 more than tabulated t-value at 5% level of significance for two tails at (5-2) degree of freedom (t-tab=3.182). In this condition (H0) is accepted. 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 is of BOK.

4.2.4 NSBI Bank Ltd.

NSBI bank 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. The following shows that lending interest rate, average lending interest rate and correlation coefficient, coefficient of determination, t-value and standard deviation of NSBI.

Table 4.12: Lending rate of NSBI on different sectors during last five FYs

(Rs in Million)

Sectors/Years	2006	2007	2008	2009	2010
Overdraft	11.25	9.75	9.75	9.75	11.25
Export Credit	9.25	7.75	7.75	7.75	10.25
Import L/C					
Against FDR					
Against Govt Bond	6.75	6.75	8.75	8.75	10.25
Against BG/CG	9	8.5	8.75	8.75	10.25
Against Other Guarantee			8.5	8.5	10.25
Industrial Loan			10.25	10.25	
Commercial Loan					
Priority Sector	11.75	10.25			
Deprived Sector	8.00	8	8	8	8.5
Term Loan	11.75	9.75	10.25	10.25	12
Working Capital loan					
Hire Purchase	10	9			
Others	9.75	8.625	9.5	9.5	11.125
Average Lending rage (1)	**9.72**	**8.71**	**9.06**	**9.06**	**10.48**
Loan Amount (2)	**9010.7**	**8302.8**	**8420**	**8507.9**	**8860.1**
Correlation Coefficient (r_{12})	**0.836971**				
Coefficient of Determination (r_{12}^2)	**0.70052**				
t-statistics	**t-cal= 2.649031 ; t-tab= 3.182**			**Insignificant**	
S.D.	**0.62863662**				

Source: Statistics, interest rate structure, sources and uses of funds NRB

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

Table 4.12 shows the lending interest rate on different area is in increasing trend. Table shows the maximum interest rate is 10.48% and minimum rate is 8.71. This shows the interest rate increased drastically during the five years period. Generally the productive sector loan rate like commercial loan, industrial loan are not given and priority sector loan, working capital loan and son on rises less in magnitude than non productive sector loan (like overdraft, loan against government bond, BG/CG rate and so on). 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 somewhat costlier than other non productive loan.

The standard deviation for average interest rate is 0.6286% which shows deviation from mean return. With harmony to interest rate, the lending amount of NSBI 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 4.19: Average Lending Rate of NSBI during different FYs.

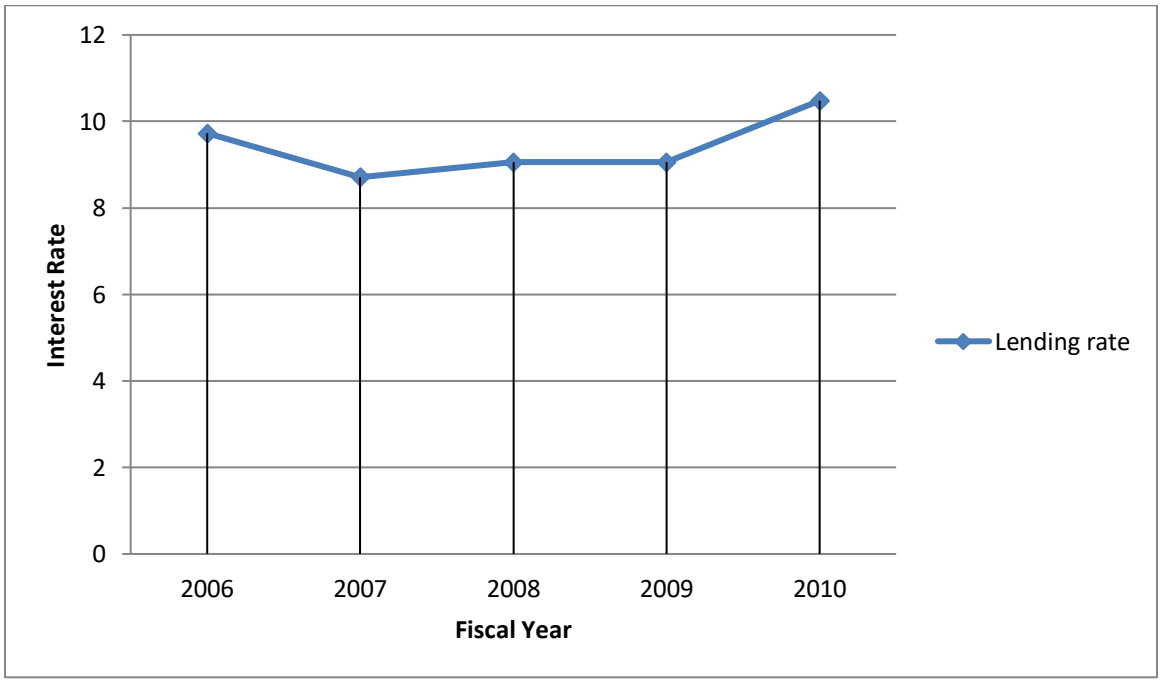
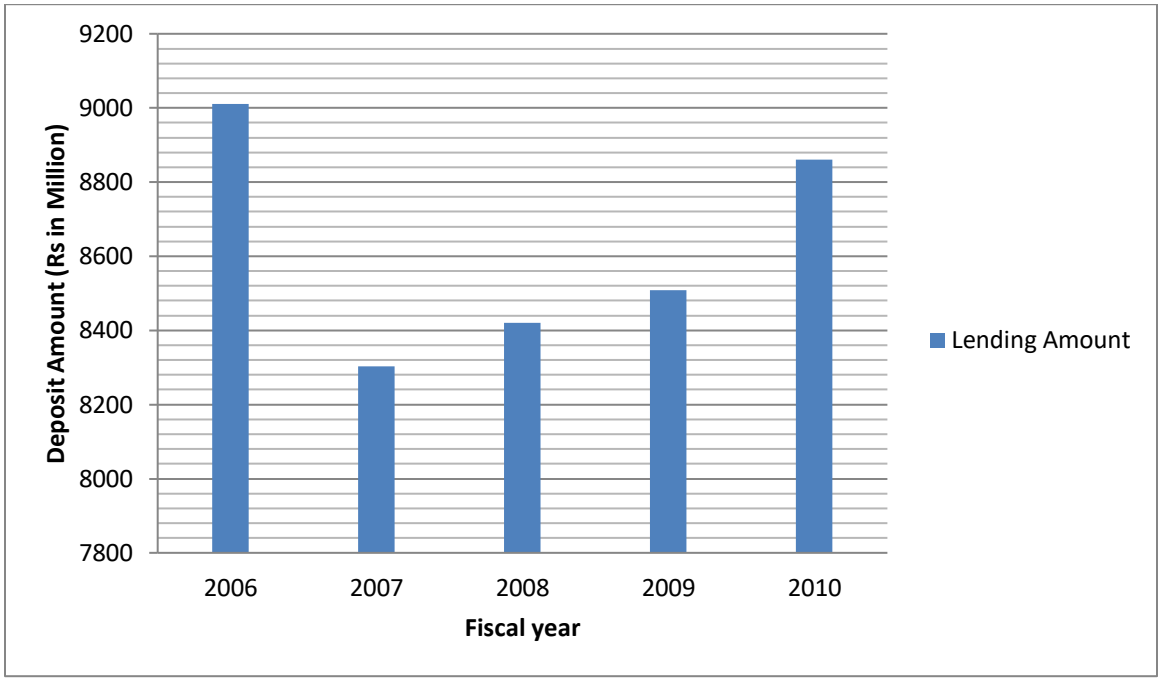


Figure 4.20: Lending Amount of NSBI during different FYs



The above figure no 4.19 and 4.20 shows the trend of lending interest rate and lending amount of NSBI during different fiscal years. The interest rate has slightly deceased and again increased during the five fiscal years. Similarly, the lending amount is also decreased and after 2007 if was in increasing trend.

Correlation Coefficient, Coefficient to Determination and t-statistics of NSBI

From table 4.12 the correlation coefficient between lending rate and lending amount (r_{12}) is 0.836971. Similarly, the coefficient of determination is (r_{12}^2) = 0.70052. When total lending amount is taken as dependent variable and lending rate as independent variable, then 70.05% of total variation in dependent variable is explained by lending rate and remaining percentage of 29.95% 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 = 2.649 which is lower than tabulated t-value at 5% level of significance for two tails at (5-2) degree of freedom (t-tab=3.182). In this condition (H0) 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 NSBI.

4.3 Analysis of relation between deposit rate and lending rate

4.3.1 NABIL Bank Limited

Table 4.13: Relationship between interest rate on deposit and lending of NABIL

Years	Deposit rate	Lending rate
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
Correlation Coefficient (r_{12})	**0.907484**	
Coefficient of determination (r_{12}^2)	**0.823527**	
t-statistics	**t-cal= 3.7416** **t-tab=3.182**	**Significant**

Note: the average interest rate of deposit and lending is taken from "whole men" and Average Lending rate" respectively. Calculation of Correlation Coefficient, Coefficient of Determination and t-statistics is sown in appendix III)

Figure 4.21: Relationship between Deposit rate and Lending rate of NABIL

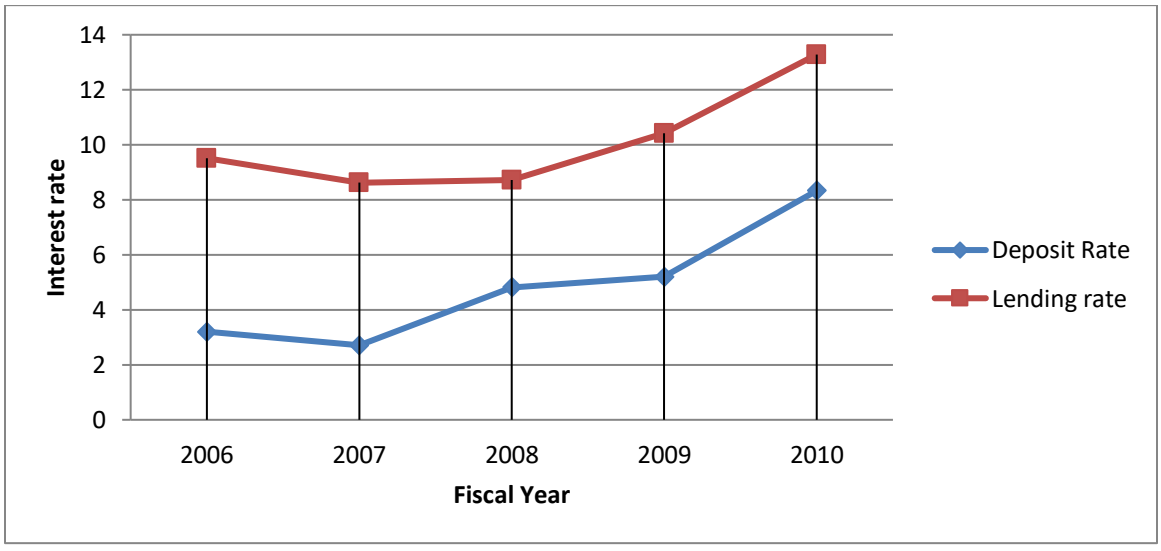


Table no 4.13 shows the trend of interest rate on both deposit and lending of NABIL. The lending interest rate and deposit interest rate show the decreasing and then increasing trend during five fiscal years. The correlation coefficient between two variables (r_{12}) = 0.907484. The Positive sign indicates that there is positive relationship between deposit interest rate and lending interest rate. The coefficient of determination (r_{12}^2)=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 tabulated value at 5% level of significance for two ails at (5-2) degree of freedom (t-tab=3.182). Hence, It is significant and null hypothesis (H0) is rejected i.e. (H1) is accepted which means there is positive relationship between deposit interest rate and lending interest rate of NABIL.

4.3.2 Everest Bank Ltd (EBL)

Table 4.14: 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
Correlation Coefficient (r_{12})	**0.88258**	
Coefficient of determination (r_{12}^2)	**0.473699**	
t-statistics	**t-cal= 1.6432** **t-tab=3.182**	**Insignificant**

Note: the average interest rate of deposit and lending is taken from "whole men" and Average Lending rate" respectively. Calculation of Correlation Coefficient, Coefficient of Determination and t-statistics is sown in appendix III)

Figure 4.22: Relationship between Deposit rate and Lending rate of EBL

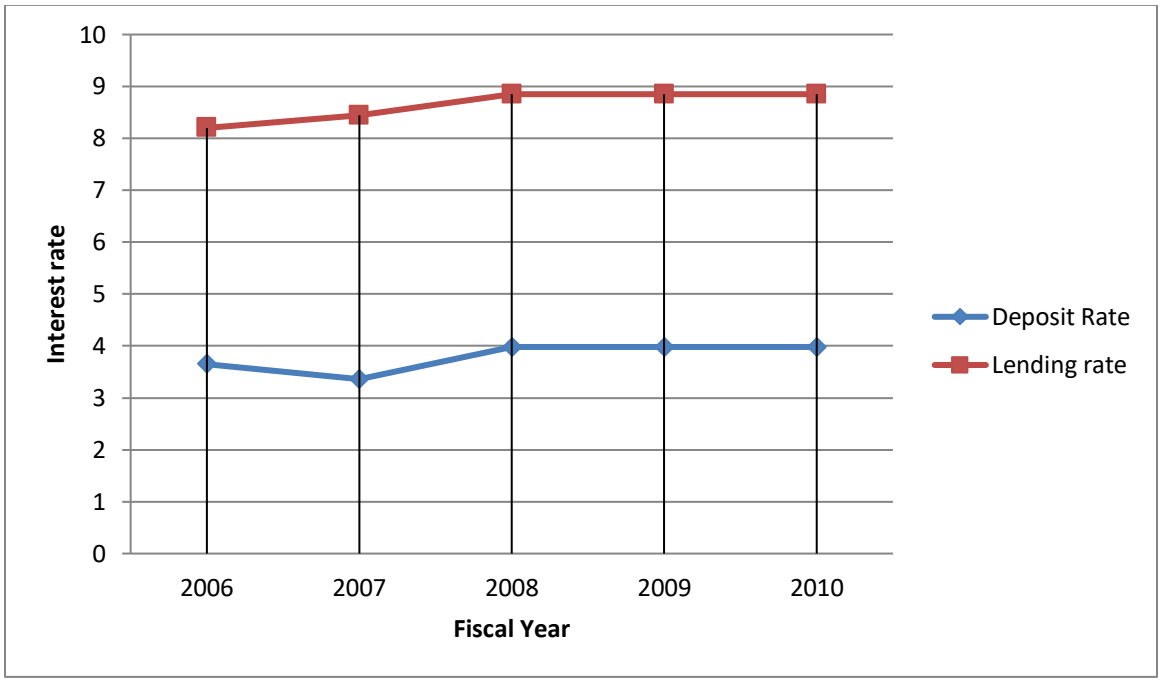


Table no 4.14 shows the trend of interest rate on both deposit and lending of EBL. The trend of deposit interest rate is fluctuation during five fiscal years and lending rate is in increasing trend. Lending interest rate steeply rises in the second and third year and remains constant up to fifth year. The correlation coefficient between two variables (r_{12}) = 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)=0.473699 which indicates that the variation in dependent variable is explained up to 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 tabulated value at 5% level of significance for two ails at (5-2) degree of freedom (t-tab=3.182). Hence, it is insignificant and null hypothesis (H0) is accepted which means there is no relationship between deposit interest rate and lending interest rate of EBL.

4.3.3 Bank of Kathmandu (BOK)

Table 4.15: Relationship between interest rate on deposit and lending of BOK

Years	Deposit rate	Lending rate
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
Correlation Coefficient (r_{12})	**0.954633**	
Coefficient of determination (r_{12}^2)	**0.911324**	
t-statistics	**t-cal= 5.5525** **t-tab=3.182**	**Significant**

Note: the average interest rate of deposit and lending is taken from "whole men" and Average Lending rate" respectively. Calculation of Correlation Coefficient, Coefficient of Determination and t-statistics is sown in appendix III)

Figure 4.23: Relationship between Deposit rate and Lending rate of BOK

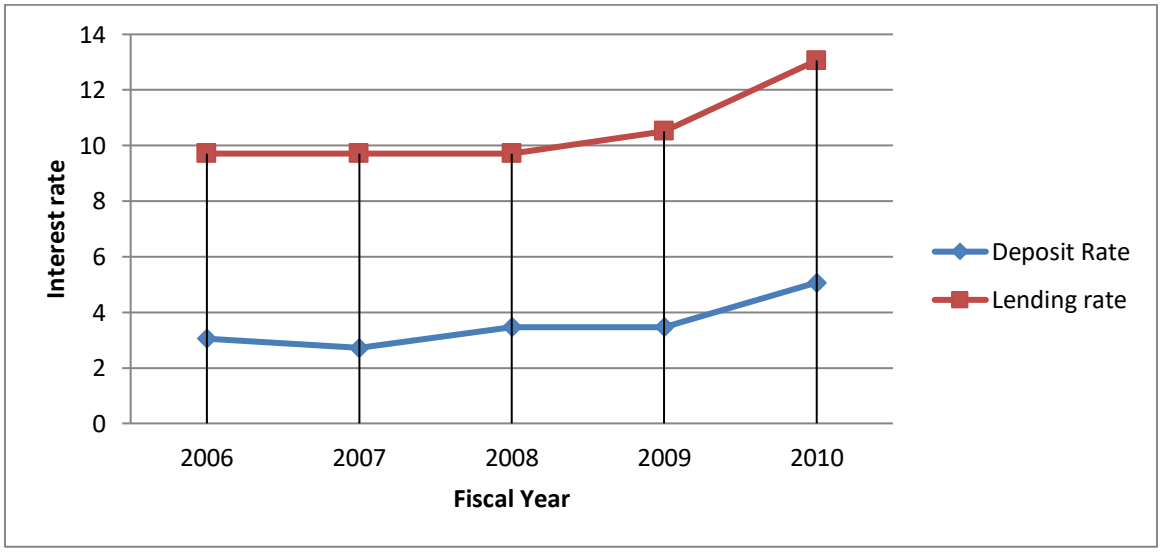


Table no 4.15 shows the trend of interest rate on both deposit and lending of BOK. The interest rate on lending is in increasing trend during five fiscal years where as the interest rate on deposit is fluctuating every year decreasing in second year, increase again in the third year and remains constant in fourth and fifth year. The correlation coefficient between two variables (r_{12}) = 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)=0.911324 which indicates that the variation in dependent variable is explained up to 91.13% by independent variable and remaining 8.87% 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 tabulated value at 5% level of significance for two ails at (5-2) degree of freedom (t-tab=3.182). Hence, it is significant and null hypothesis (H0) is rejected and alternative hypothesis (H1) is accepted which means there is a relationship between deposit interest rate and lending interest rate of BOK.

4.3.4 NSBI Bank Limited

Table 4.16: Relationship between interest rate on deposit and lending of NSBI

Years	Deposit rate	Lending rate
2006	3.67	9.72
2007	3.50	8.71
2008	4.25	9.06
2009	4.33	9.06
2010	4.92	10.48
Correlation Coefficient (r_{12})	**0.64361**	
Coefficient of determination (r_{12}^2)	**0.414235**	
t-statistics	**t-cal= 1.45654** **t-tab=3.182**	**Insignificant**

Note: the average interest rate of deposit and lending is taken from "whole men" and Average Lending rate" respectively. Calculation of Correlation Coefficient, Coefficient of Determination and t-statistics is sown in appendix III)

Figure 4.24: Relationship between Deposit rate and Lending rate of NSBI

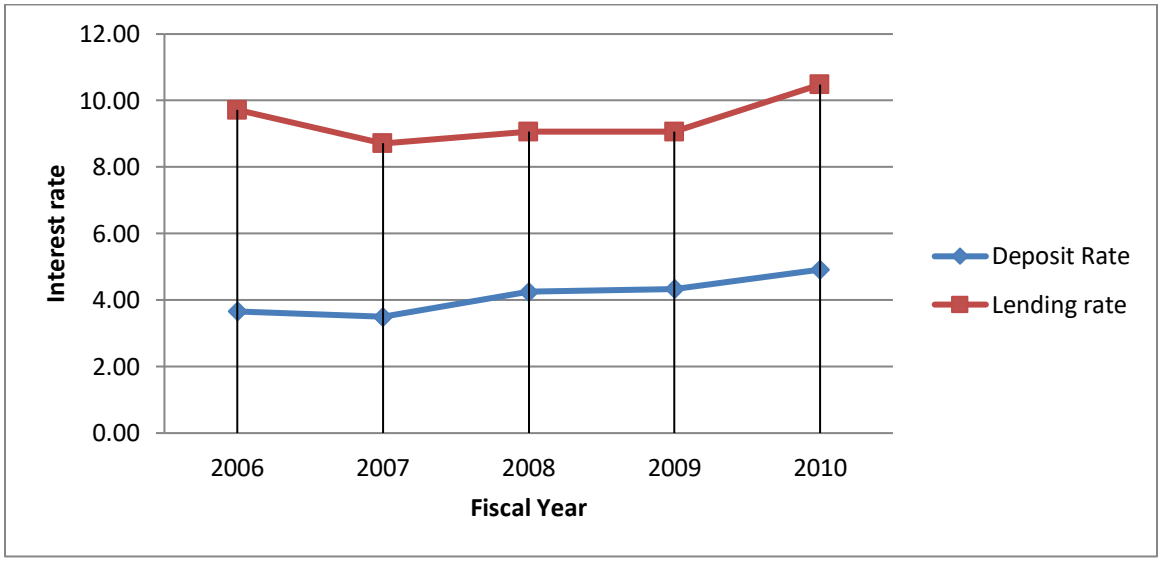


Table no 4.16 shows the trend of interest rate on both deposit and lending of NSBI. The lending interest rate and deposit interest rate show the decreasing and then increasing trend during five fiscal years. The correlation coefficient between two variables (r_{12}) = 0.64361. The Positive sign indicates that there is positive relationship between deposit interest rate and lending interest rate. The coefficient of determination (r_{12}^2)=0.414235 which indicates that the variation in dependent variable is explained up to 41.42% by independent variable and remaining 58.58% is due to the effect of other variables in the economy. Similarly, the calculated t-value between the two variables is 1.456 which is less than tabulated value at 5% level of significance for two ails at (5-2) degree of freedom (t-tab=3.182). Hence, It is insignificant and null hypothesis (H0) is accepted which means there is no relationship between deposit interest rate and lending interest rate of NSBI.

4.4: Major findings of the study

Based on the presentation and analysis of relevant date of sample banks using various analytical tools, the major findings have been drawn as below:

- Saving deposit amount and saving interest rate has inverse relationship of all sample banks (except NABIL). The value of correlation coefficient between saving deposit are and saving deposit amount of sample banks under study is found as 0.431192, -0.745084, -0.810354, -0.79633 for NABIL, EBL, BOK and NSBI respectively. These value shows that there is high degree of inverse relationship except NABIL. That means if one variable increases, other variables decrease and vice versa. This case is against the theory of substitution effect.
- 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 of lending amount is increasing every year.
- 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 explained by the deposit rate (independent variable) and remaining percentage are due to the effect of other factors in the economy.
- The t-statistics between saving deposit amount and saving deposit rate is insignificant which also clarify that the above two variables have strong position correlation except 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, BOK and NSBI. The correlation coefficient is found as 0.99026, 0.628976, 0.660947, 0.875954 for NABIL, EBL, BOK and NSBI. 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 for 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 factor 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 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 variables does not affect demand of funds. By using correlation tools, it can be inferred that NSBI, EBL and BOK have less degree of correlation where as NABIL has highly negative relationship.
- Though EBL, NSBI and BOK have less degree of correlation between lending rate and lending amount, the t-statistics 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 due to the other reason.
- The t-value of the sample NABIL and BOK is significant where as EBL and NSBI is insignificant. It means that the NABIL and BOK have positive relationship between deposit rate and lending rate. So the changes in one variable cause change in another variable in same direction. But in 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 the other reason.
- The correlation coefficient between deposit rate and lending rate is 0.907484, 0.688258 0.954633 and 0.414235 for NABIL, EBL, BOK and NSBI 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 correlation analysis between the deposit rate and deposit amount, lending amount and lending rate show the result negative correlation and others factors show the positive relation. Another presentation t-statistics show the result between rates deposit rate and deposit amount and lending rate, lending amount and lending rate, deposit rate and lending rate. T- Value at 5% level of significance for 5 degree of freedom 2.44 is less than calculated value. Correlation coefficient is significant.
- Interest rate is important factor for commercial bank. It plays the vital role in banking business environment. It plays prime role for banking competition .it is needed to regularly decline for extend the business. Most of the opinion is supported in this question.
- NRB is one of the center banks of Nepal. NRB has major responsibility for control national economy. It plays the vital role and responsibility for commercial banks. All the commercial banks are controlled and monitoring through the NRB bank.
- Commercial banks apply the different rate for lending in different sector. It helps to develop in various sectors. The respondent also agreed in segregate interest rate.

CHAPTER -V
SUMMARY, CONCLUSION AND RECOMMENDATION

This chapter highlights some selected actionable conclusion and recommendation on the basis of the major findings of the study derived from the analysis of concerned banks. This chapter is a last part of the research study which includes all the briefing of the whole study and extract of all the previously discussed chapters. This chapter mainly consists of three parts summary, conclusion and recommendations.

5.1. Summary

Nepal is a beautiful country; Nepalese people are depended in agricultural sector. National GDP is most part depended in agricultural. Nepal has a lot of natural resources and need to utilize. Finance is one of the important tools in nation .Nepal is depending on foreign aid and loan in the condition Nepalese financial marketers are helps to generate the required fund and mobilized. Nepal Bank Ltd is the one of first bank in Nepal which is established 1994 BS as a joint venture between government and private sector.

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 intermediary between the deficit and surplus of financial resources. In order to mobilize the limited capital, the government of Nepal adopted the liberalization policy. As a result up to now 32 commercial banks, 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. They are performing its all kind of banking transactions by accepting deposits, advancing loans credit creation and agency function. They provided the short-term, median term and long

term loan. When 1980 Government introduced financial sector reforms than established joint venture banks Deposit advancing loans, credit creation and agency function. They provided the short term, medium term loan and long term loan. When 1980 government introduced financial sector reforms than establishment joint venture banks and they are providing the services to Nepalese and other customer in Nepal.

Due to high completion 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 deposits from savers and transferring the collecting deposits 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 deposits 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.

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 determine 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 objectives 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 these purpose, brief introduction about Nepalese economy, interest rate, sample organizations, statement of problems, significance and objective of the study, hypothesis limitation of the study are made in the first chapter.

Review of literature is an essential part of all studies. It is the way to discover what other resources have concern and left in this sector and a critical review of literature helps to the researcher to develop a thorough understanding an insight into previous research work that relates to the present study. This chapter introduced to meaning of commercial which is accepted different types of deposit and invested in various which are one of the financial institutions, the commercial bank has worked various sectors in economical sector. They are accepting the deposit; provide the loan, Agency function and general utility function. Interest is the cost of among which is very important factors. In financial work, it is price paid for use of loadable funds, Returns for the fund of capital in the interest are different theories rate of interest. The classical theories of interest emphasis save and interest demand as interest rate determining forces. The liquidity preference theory points to demand and supply of cash balance. The modern theory of interest, profs. Hicus and Hansin have opened that there is only difference in the concept of saving between the classical and the loadable funds. The modern theory often has been made to mix both the real fund and the monetary factors.

The interest rate is affected the inflation rate economic greater budget deficit money supply. Specific risk and cost factors affecting interest rate on debt security are marketability, liquidity default risk taxability, servicing cost exchange rate risk and environment risks, political resources.

Research design is a plan structure and strategy of investigation. It used is mainly analytical. Out of the total financial system, 4 commercial banks are chosen for sample purpose. The study is mainly based on the secondary data. The secondary data collected from NRB's economic report and annual reports of related banks. That was the third chapter.

Lastly, the fourth chapter, collected date presented in table and graphic form and analyzed various financial and statistical tools like mean, standard deviation, correlation coefficient, coefficient of determination and t-statistics.

5.2. Conclusions

The conclusion is the finding of the study. This study focused in find out the presented objectives. Through the method and techniques of data analysis, we can evaluate and summarize the conclusion as below:

i. According to the theory, there is positive relationship between deposits rates and deposit amount. But the analysis of substitution effect for both fixed and saving deposits shows that substitution effect do not 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 fiscal years, people accumulated most of their funds on saving and fixed accounts though they do not get appropriate interest on it. As well as banks are providing high interest on fixed deposit due to the crises of liquidity from last three years in banks. It may be just because of unavailability of other reliable place of investment, political instability and feeling of insecurity amount people.

ii. The depositors place interest rate's role as secondary in their decision for keeping deposit in the bank. Absence of better investment opportunities, expectation of inflationary pressures and the associated safety, liquidity and profitability, whatever are their respective roles, must have been the factors responsible for increase in volume of deposit despite downscaling introduced in inters rates during the review period. This might have produced negative relationship between interest rates and deposits.

iii. From 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 no relationship between deposit interest rate and deposit amount of all sample banks proved by negative correlation coefficient of all banks except NABIL.

iv. In case of fixed deposit, all the sample banks have positive correlation coefficient between interest rate and deposit indicating positive relationship between fixed deposit interest rate and deposit amount. But as per the t-test, the relation is significant in case of NABIL and insignificant in case of EBL, NSBI and BOK. 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 the 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 conclusions 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.

v. 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 require by theory. The increment of lonable fund for NABIL is due to not increase in lending rate because of other factors 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 factors, as it lowers t-calculated value then 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.

vi. 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 variables in same direction. Banks wants 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 Recommendations

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

- Most of the people are unknown above the lot of things do to lack of education, communication, techniques and technology. The national economy plays the vital role in development of every sector for that saving and lending is most necessary factor. It helps to mobilize the capital. Interest rate is the fundamental component to mobilize the capital so it must be optimum level.
- 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 country. Money gets invested in unproductive sectors like gold, land and real estate business due to low interest rate in Banks. 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. Inconsequence of which we could see hopping rise in interest rate of banks of deposit collection.
- The NRB's role is needed to strongly monitor to the banking sectors, which helps to maintain and implement the rules and regulation by providing clear cut policies related to interest rates on both deposit and lending.
- 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 sectors 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 sectors, 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 sectors implies consumers loans, hire purchase loan, personal loans, pledge loans and those sectors which do not create wealth and do not add to GDP of the country.

- Commercial banks should emphasis on the repayment on loan and provide incentive to borrower to encourage paying loan. Good repayment of loans is the strength of commercial bank.
- The financial institutions are suggested to include the inflation premiums as far as possible while fixing the interest rates. In the inflation rate is not considered and real rate come out to be negative then depositors may withdraw their money and utilized 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.
- Although the belief is that high interest rates trend to avoid capital flights to India and other third country, yet the actual fact is that increase in interest rate of government securities has compelled banks to raise interest tae on deposits and thereby making lending to productive sectors only. Thus it is advisable to lower interest on government securities enjoying tax advantage so that there will be better effect on deposit and lending rates.
- The interest rate is one of the basic components collecting the fund and lending to business sector. It is needed to minimize to extend the business environment.
- Suitable interest rate motive to depositor and lenders, so suitable interest rate helps to increase the depositor and lenders so interest rate must be flexible on the basis of development reason. This can be success after the establishment of favorable investment clement and ruled by law and order.
- Strength and stable government is needed for long term vision and implementation of plan and economic program.

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APPENDICES

APPENDES-I

1. Calculation of Mean and Standard deviation of NABIL bank

Whole mean (X)	(X-$\bar{X}$)	(X-$\bar{X}$)^2
3.2	-1.65	2.7225
2.71	-2.14	4.5796
4.82	-0.03	0.0009
5.2	0.35	0.1225
8.33	3.48	12.1104
24.26		**19.5359**

$\sum X \quad \sum X - \bar{X})2$

Where, Fixed deposit mean= Total Fixed deposit mean / n

Whole mean (X) = Total Deposit / n

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

The average interest rate on deposit of NABIL bank is 4.85%

Standard Deviation (σ) = $\sqrt{\sum (X - \bar{X})^2 / n}$ = $\sqrt{19.59/5}$ = 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

For saving deposit- NABIL

Years	Rate (X1)	Deposit (X2)	(X1-$\bar{X}$1)	(X2-$\bar{X}$2)	(X1-$\bar{X}$1) (X2-$\bar{X}$2)	(X1-$\bar{X}$1)^2	(X2-$\bar{X}$2)^2
2006	2	8770.8	-0.2	-3133.634	626.7268	0.04	9819662.046
2007	2	10187.4	-0.2	-1717.034	343.4068	0.04	2948205.757
2008	2	12159.97	-0.2	255.536	-51.1072	0.04	65298.6473
2009	2	14620.4	-0.2	2715.966	-543.1932	0.04	7376471.313
2010	3	13783.6	0.8	1879.166	1503.3328	0.64	3531264.856
$\sum$ =	**11**	**59522.17**			**1879.166**	**0.8**	**23740902.62**

Source: Statistics, interest rate structure, sources and uses of funds NRB

Mean ($\bar{X}1$) = $\frac{\sum X1}{n}$ $= \frac{11}{5} = 2.2\%$

Mean ($\bar{X}2$) = $\frac{\sum X2}{n}$ $= \frac{59522.17}{5} = 11904.434\%$

Karl Persons Correlation Coefficient (r_{23}) = $\frac{\sum X1X2}{\sqrt{\sum X1}\sqrt{\sum X2}}$

$= \frac{\sum(X1-\bar{x}1)(X2-\bar{x}2)}{\sqrt{\sum X1-\bar{x}1)2}\sqrt{\sum(X2-\bar{x}2)2}}$ $= \frac{1879.266}{\sqrt{0.8}\sqrt{237409.62}} = 0.431192$

Therefore, the Correlation coefficient between saving interest rate and saving deposit amount of NABIL is 0.431192

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

t-Statistics (t) = $r\frac{\sqrt{n-2}}{\sqrt{1-r2}} = 0.4311929\frac{\sqrt{5-2}}{\sqrt{1-0.1859273}} = 0.827752$

For Fixed deposit (NABIL):

Years	**Rate (X1)**	**Deposit (X2)**	**(X1-$\bar{X}$1)**	**(X2-$\bar{X}$2)**	**(X1-$\bar{X}$1) (X2-$\bar{X}$2)**	**(X1-$\bar{X}$1)^2**	**(X2-$\bar{X}$2)^2**
2006	3.4	5450.2	-1.954	-3024.052	5908.997608	3.818116	9144890.499
2007	2.83	5435.2	-2.524	-3039.052	7670.567248	6.370576	9235837.059
2008	5.29	8464.09	-0.064	-10.162	0.650368	0.004096	103.266244
2009	5.85	8310.7	0.496	-163.552	-81.121792	0.246016	26749.2567
2010	9.4	14711.07	4.046	6236.818	25234.16563	16.370116	38897898.77
$\sum$ =	**26.77**	**42371.26**			**38733.25906**	**26.80892**	**57305478.85**

Source: Statistics, interest rate structure, sources and uses of funds NRB

Mean ($\bar{X}1$) = $\frac{\sum X1}{n}$ $= \frac{26.77}{5} = 5.354\%$

Mean ($\bar{X}2$) = $\frac{\sum X2}{n}$ $= \frac{42371.26}{5} = 8474.252\%$

Karl Persons Correlation Coefficient (r_{45}) = $\frac{\sum X1X2}{\sqrt{\sum X1}\sqrt{\sum X2}}$

$= \frac{\sum(X1-\bar{x}1)(X2-\bar{x}2)}{\sqrt{\sum X1-\bar{x}1)2}\sqrt{\sum(X2-\bar{x}2)2}} = \frac{38814.3808}{\sqrt{26.808812}\sqrt{57305478.85}} = 0.990260$

Therefore, the Correlation coefficient between saving interest rate and saving deposit amount of NABIL is = 0.990260

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

t-Statistics (t) = $r\frac{\sqrt{n-2}}{\sqrt{1-r2}} = 0.990260\frac{\sqrt{5-2}}{\sqrt{1-0.980615}} = 12.31$

2. Calculation of Mean and Standard deviation of EBL bank

Whole mean (X)	**(X-$\bar{X}$)**	**(X-$\bar{X}$) ^{2}**
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
18.95		**0.3128**

$\sum X \quad \sum X - \bar{X})2$

Where

Fixed deposit mean= Total Fixed deposit mean / n

Whole mean (X) = Total Deposit / n

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

The average interest rate on deposit of EBL is 3.79%

Standard Deviation (σ) = $\sqrt{\sum(X-\bar{X})^2/n}$ = $\sqrt{0.3128/5}$ = 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- EBL

Years	**Rate (X1)**	**Deposit (X2)**	**(X1-$\bar{X}$1)**	**(X2-$\bar{X}$2)**	**(X1-$\bar{X}$1) (X2-$\bar{X}$2)**	**(X1-$\bar{X}$1)^2**	**(X2-$\bar{X}$2)^2**
2006	3.25	6929.2	0.2	-4265.478	-853.0956	0.04	18194302.57
2007	3	9018	-0.05	-2176.678	108.8339	0.0025	4737927.116
2008	3	11883.86	-0.05	689.182	-34.4591	0.0025	474971.8291
2009	3	14782.33	-0.05	3587.652	-179.3826	0.0025	12871246.87
2010	3	13360	-0.05	2165.322	-108.2661	0.0025	4688619.364
$\sum$ =	**15.25**	**55973.39**			**-1066.3695**	**0.05**	**40967067.75**

Source: Statistics, interest rate structure, sources and uses of funds NRB

Mean ($\bar{X}$1) = $\frac{\sum X1}{n}$ $= \frac{15.25}{5} = 3.05\%$

Mean ($\bar{X}$2) = $\frac{\sum X2}{n}$ $= \frac{55973.39}{5} = 11194.678\%$

Karl Persons Correlation Coefficient (r_{23}) = $\frac{\sum X1X2}{\sqrt{\sum X1}\sqrt{\sum X2}}$

$= \frac{\sum(X1-\bar{x}1)(X2-\bar{x}2)}{\sqrt{\sum X1-\bar{x}1)2}\sqrt{\sum(X2-\bar{x}2)2}}$ $= \frac{-1066.3695}{\sqrt{0.05}\sqrt{40967067.75}} = -0.745084$

Therefore, the Correlation coefficient between saving interest rate and saving deposit amount of EBL is - 0.745084

Coefficient of Determination (r_{23}^2) = 0.555150

t-Statistics (t) = $r\frac{\sqrt{n-2}}{\sqrt{1-r2}} = -0.745084\frac{\sqrt{5-2}}{\sqrt{1-0.555150}} = -2.59689$

For Fixed deposit (EBL):

Years	Rate (X1)	Deposit (X2)	(X1-$\bar{X}$1)	(X2-$\bar{X}$2)	(X1-$\bar{X}$1)(X2-$\bar{X}$2)	(X1-$\bar{X}$1)^2	(X2-$\bar{X}$2)^2
2006	3.75	4298.2	-0.216	-2519.774	544.271184	0.046656	6349261.011
2007	3.42	5658.7	-0.546	-1159.274	632.963604	0.298116	1343916.207
2008	4.22	6598.01	0.254	-219.964	-55.870856	0.064516	48384.1613
2009	4.22	7094.68	0.254	276.706	70.283324	0.064516	76566.21044
2010	4.22	10440.28	0.254	3622.306	920.065724	0.064516	13121100.76
$\sum$ =	**19.83**	**34089.87**			**2111.71298**	**0.53832**	**20939228.35**

Source: Statistics, interest rate structure, sources and uses of funds NRB

Mean ($\bar{X}$1) = $\frac{\sum X1}{n}$ $= \frac{19.83}{5} = 3.966\%$

Mean ($\bar{X}$2) = $\frac{\sum X2}{n}$ $= \frac{34089.87}{5} = 6817.974\%$

Karl Persons Correlation Coefficient (r_{45}) = $\frac{\sum X1X2}{\sqrt{\sum X1}\sqrt{\sum X2}}$

$= \frac{\sum(X1-\bar{x}1)(X2-\bar{x}2)}{\sqrt{\sum X1-\bar{x}1)2}\sqrt{\sum(X2-\bar{x}2)2}}$ $= \frac{2111.71298}{\sqrt{0.53832}\sqrt{20939228.35}} = 0.628976$

Therefore, the Correlation coefficient between saving interest rate and saving deposit amount is = 0.628976

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

t-Statistics (t) = $r\frac{\sqrt{n-2}}{\sqrt{1-r2}} = 0.990260\frac{\sqrt{5-2}}{\sqrt{1-0.395611}} = 1.401318$

3. Calculation of Mean and Standard deviation of BOK

Whole mean (X)	$(X-\bar{X})$	$(X-\bar{X})^2$
3.05	-0.506	0.256036
2.72	-0.836	0.698896
3.47	-0.086	0.007396
3.47	-0.086	0.007396
5.07	1.514	2.292196
17.78		**3.26192**

$\sum X \quad \sum X - \bar{X})2$

Where

Fixed deposit mean= Total Fixed deposit mean / n ; Whole mean (X) = Total Deposit / n

Mean $(\bar{X}) = \frac{\sum X}{n} \quad = \quad \frac{17.78}{5} \; = \; 3.55\%$

The average interest rate on deposit of BOK is 3.55%

Standard Deviation $(\sigma) = \sqrt{\sum (X - \bar{X})^2 / n} \quad = \sqrt{3.262422/5} \quad = \; 0.807765\%$

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- BOK

Years	**Rate (X1)**	**Deposit (X2)**	**(X1-$\bar{X}$1)**	**(X2-$\bar{X}$2)**	**(X1-$\bar{X}$1) (X2-$\bar{X}$2)**	**(X1-$\bar{X}$1)^2**	**(X2-$\bar{X}$2)^2**
2006	2.5	4582	0.2	-1555.5	-311.1	0.04	2419580.25
2007	2.25	5526.8	-0.05	-610.7	30.535	0.0025	372954.49
2008	2.25	6595.2	-0.05	457.7	-22.885	0.0025	209489.29
2009	2.25	7260.3	-0.05	1122.8	-56.14	0.0025	1260679.84
2010	2.25	6723.2	-0.05	585.7	-29.285	0.0025	343044.49
$\sum$ =	**11.5**	**30687.5**			**-388.875**	**0.05**	**4605748.36**

Source: Statistics, interest rate structure, sources and uses of funds NRB

Mean ($\bar{X}1$) = $\frac{\sum X1}{n}$ $= \frac{11.5}{5} = 2.3\%$

Mean ($\bar{X}2$) = $\frac{\sum X2}{n}$ $= \frac{30687.5}{5} = 6137.5\%$

Karl Persons Correlation Coefficient (r_{23}) = $\frac{\sum X1X2}{\sqrt{\sum X1}\sqrt{\sum X2}}$

$= \frac{\sum(X1-\bar{x}1)(X2-\bar{x}2)}{\sqrt{\sum X1-\bar{x}1)2}\sqrt{\sum(X2-\bar{x}2)2}}$ $= \frac{-388.89}{\sqrt{0.05}\sqrt{4606099.87}} = -0.810354$

Therefore, the Correlation coefficient between saving interest rate and saving deposit amount of BOK is = - 0.810354

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

t-Statistics (t) = $r\frac{\sqrt{n-2}}{\sqrt{1-r2}}$ = = $-0.810354\frac{\sqrt{5-2}}{\sqrt{1-0.656673}} = -2.3954$

For Fixed deposit (BOK**):**

Years	**Rate (X1)**	**Deposit (X2)**	**(X1-$\bar{X}1$)**	**(X2-$\bar{X}2$)**	**(X1-$\bar{X}1$) (X2-$\bar{X}2$)**	**(X1-$\bar{X}1$)^2**	**(X2-$\bar{X}2$)^2**
2006	3.13	2709.8	-0.604	-1351.86	816.52344	0.364816	1827525.46
2007	2.79	3037.2	-0.944	-1024.46	967.09024	0.891136	1049518.292
2008	3.64	3703.1	-0.094	-358.56	33.70464	0.008836	128565.2736
2009	3.64	4474.6	-0.094	412.94	-38.81636	0.008836	170519.4436
2010	5.47	6383.6	1.736	2321.94	4030.88784	3.013696	5391405.364
$\sum$ =	**18.67**	**20308.3**			**5809.3898**	**4.28732**	**8567533.832**

Source: Statistics, interest rate structure, sources and uses of funds NRB

Mean ($\bar{X}1$) = $\frac{\sum X1}{n}$ $= \frac{18.67}{5} = 3.734\%$

Mean ($\bar{X}2$) = $\frac{\sum X2}{n}$ $= \frac{20308.3}{5} = 4061.66\%$

Karl Persons Correlation Coefficient (r_{45}) = $\frac{\sum X1X2}{\sqrt{\sum X1}\sqrt{\sum X2}}$

$= \frac{\sum(X1-\bar{x}1)(X2-\bar{x}2)}{\sqrt{\sum X1-\bar{x}1)2}\sqrt{\sum(X2-\bar{x}2)2}}$ $= \frac{5809.3898}{\sqrt{4.28732}\sqrt{18013203.83}} = 0.660947$

Therefore, the Correlation coefficient between saving interest rate and saving deposit amount of BOK is = 0.660947

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

t-Statistics (t) = $r\frac{\sqrt{n-2}}{\sqrt{1-r2}}$ = $0.660947\frac{\sqrt{5-2}}{\sqrt{1-0.436850}}$ = 1.5255

4. Calculation of Mean and Standard deviation of NSBI

Whole mean (X)	(X-$\bar{X}$)	(X-$\bar{X}$)^2
3.67	-0.46	0.215296
3.5	-0.63	0.401956
4.25	0.12	0.013456
4.33	0.20	0.038416
4.92	0.79	0.617796
20.67		**1.28692**

$\sum X \quad \sum X - \bar{X})2$

Where, Fixed deposit mean= Total Fixed deposit mean / n ; Whole mean (X) = Total Deposit / n

Mean ($\bar{X}$) = $\frac{\sum X}{n}$ = $\frac{20.67}{5}$ = 4.13%

The average interest rate on deposit of NSBI is 4.13%

Standard Deviation (σ) = $\sqrt{\sum(X-\bar{X})^2/n}$ = $\sqrt{1.28692/5}$ = 0.50733%

Standard Deviation of interest rate on deposit of NSBI is : 0.50733%

Calculation of Correlation Coefficient, Coefficient of Determination and t-Statistics of NSBI

For saving deposit- NSBI

Years	Rate (X1)	Deposit (X2)	(X1-$\bar{X}$1)	(X2-$\bar{X}$2)	(X1-$\bar{X}$1) (X2-$\bar{X}$2)	(X1-$\bar{X}$1)^2	(X2-$\bar{X}$2)^2
2006	3.25	2832.7	0.15	-1857.24	-278.586	0.0225	3449340.418
2007	3.25	3274.7	0.15	-1415.24	-212.286	0.0225	2002904.258
2008	3	4171.2	-0.1	-518.74	51.874	0.01	269091.1876
2009	3	5822.3	-0.1	1132.36	-113.236	0.01	1282239.17
2010	3	7348.8	-0.1	2658.86	-265.886	0.01	7069536.5
$\sum$ =	**15.5**	**23449.7**			**-818.12**	**0.075**	**14073111.53**

Source: Statistics, interest rate structure, sources and uses of funds NRB

Mean ($\bar{X}1$) = $\frac{\sum X1}{n}$ $= \frac{15.5}{5} = 3.1\%$

Mean ($\bar{X}2$) = $\frac{\sum X2}{n}$ $= \frac{23449.7}{5} = 4689.94\%$

Karl Persons Correlation Coefficient (r_{23}) = $\frac{\sum X1X2}{\sqrt{\sum X1}\sqrt{\sum X2}}$

$= \frac{\sum(X1-\bar{x}1)(X2-\bar{x}2)}{\sqrt{\sum X1-\bar{x}1)2}\sqrt{\sum(X2-\bar{x}2)2}}$ $= \frac{-818.12}{\sqrt{0.075}\sqrt{14073111.53}} = -0.79633$

Therefore, the Correlation coefficient between saving interest rate and saving deposit amount of NSBI is = - 0.79633

Coefficient of Determination (r_{23}^2) = 0.634136

t-Statistics (t) = $r\frac{\sqrt{n-2}}{\sqrt{1-r2}}$ = = - 0.79633 $\frac{\sqrt{5-2}}{\sqrt{1-0.634136}}$ = - 3.76992

For Fixed deposit (NSBI):

Years	**Rate (X1)**	**Deposit (X2)**	**(X1-$\bar{X}1$)**	**(X2-$\bar{X}2$)**	**(X1-$\bar{X}1$) (X2-$\bar{X}2$)**	**(X1-$\bar{X}1$)^2**	**(X2-$\bar{X}2$)^2**
2006	3.75	6116.2	-0.59	-5498.94	3244.3746	0.3481	30238341.12
2007	3.55	5517.3	-0.79	-6097.84	4817.2936	0.6241	37183652.67
2008	4.5	6854.9	0.16	-4760.24	-761.6384	0.0256	22659884.86
2009	4.6	17438.4	0.26	5823.26	1514.0476	0.0676	33910357.03
2010	5.3	22148.9	0.96	10533.76	10112.4096	0.9216	110960099.7
$\sum$ =	**21.7**	**58075.7**			**18926.487**	**1.987**	**234952335.4**

Source: Statistics, interest rate structure, sources and uses of funds NRB

Mean ($\bar{X}1$) = $\frac{\sum X1}{n}$ $= \frac{21.7}{5} = 4.34\%$

Mean ($\bar{X}2$) = $\frac{\sum X2}{n}$ $= \frac{58075.7}{5} = 11615.14\%$

Karl Persons Correlation Coefficient (r_{45}) = $\frac{\sum X1X2}{\sqrt{\sum X1}\sqrt{\sum X2}}$

$= \frac{\sum(X1-\bar{x}1)(X2-\bar{x}2)}{\sqrt{\sum X1-\bar{x}1)2}\sqrt{\sum(X2-\bar{x}2)2}}$ $= \frac{18926.487}{\sqrt{1.987}\sqrt{234952335.4}} = 0.875954$

Therefore, the Correlation coefficient between saving interest rate and saving deposit amount of NSBI is = 0.875954

Coefficient of Determination (r_{45}^2) = 0.767295

t-Statistics (t) = $r\frac{\sqrt{n-2}}{\sqrt{1-r2}} = 0.875954\frac{\sqrt{5-2}}{\sqrt{1-0.767295}} = 3.145133$

APPENDICS II

a. Calculation of Correlation Coefficient, Coefficient of Determination and t-Statistics of NABIL

Years	**Rate (X1)**	**Deposit (X2)**	**(X1-$\bar{X}$1)**	**(X2-$\bar{X}$2)**	**(X1-$\bar{X}$1) (X2-$\bar{X}$2)**	**(X1-$\bar{X}$1)^2**	**(X2-$\bar{X}$2)^2**
2006	9.5	13021	-0.604	-9161.424	5533.500096	0.364816	83931689.71
2007	8.62	15657.1	-1.484	-6525.324	9683.580816	2.202256	42579853.3
2008	8.71	21514.63	-1.394	-667.794	930.904836	1.943236	445948.8264
2009	10.41	27816.56	0.306	5634.136	1724.045616	0.093636	31743488.47
2010	13.28	32902.83	3.176	10720.406	34048.00946	10.086976	114927104.8
$\sum$ =	**50.52**	**110912.12**			**51920.04082**	**14.69092**	**273628085.1**

Source: Statistics, interest rate structure, sources and uses of funds NRB

Where, Average lending rate= Total lending rate / n

Mean ($\bar{X}$1) = $\frac{\sum X1}{n}$ $= \frac{50.52}{5} = 10.104\%$

Mean ($\bar{X}$2) = $\frac{\sum X2}{n}$ $= \frac{110912.12}{5} = 22182.424\%$

Karl Persons Correlation Coefficient (r_{12}) =

$$= \frac{\sum(X1-\bar{x}1)(X2-\bar{x}2)}{\sqrt{\sum X1-\bar{x}1)2}\sqrt{\sum(X2-\bar{x}2)2}} = \frac{51920.04064}{\sqrt{14.69092}\sqrt{273628085.1}} = 0.8188984$$

Therefore, the Correlation coefficient between saving interest rate and saving deposit amount of NABIL is = 0.8188984

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

t-Statistics (t) = $r\frac{\sqrt{n-2}}{\sqrt{1-r2}} = 0.8188984\frac{\sqrt{5-2}}{\sqrt{1-0.670595}} = -2.47129$

Standard Deviation (σ) = $\sqrt{\sum(X-\bar{X})^2/n} = \sqrt{14.69092/5} = 1.714113\%$

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

Years	Rate (X1)	Deposit (X2)	(X1-$\bar{X}$1)	(X2-$\bar{X}$2)	(X1-$\bar{X}$1) (X2-$\bar{X}$2)	(X1-$\bar{X}$1)^2	(X2-$\bar{X}$2)^2
2006	8.2	10124	-0.438	-8974.676	3930.908088	0.191844	80544809.3
2007	8.44	14059.2	-0.198	-5039.476	997.816248	0.039204	25396318.35
2008	8.85	18814.29	0.212	-284.386	-60.289832	0.044944	80875.397
2009	8.85	24366.2	0.212	5267.524	1116.715088	0.044944	27746809.09
2010	8.85	28129.69	0.212	9031.014	1914.574968	0.044944	81559213.87
$\sum$ =	**43.19**	**95493.38**			**7899.72456**	**0.36588**	**215328026**

Source: Statistics, interest rate structure, sources and uses of funds NRB

Where,

Average lending rate= Total lending rate / n

Mean ($\bar{X}$1) = $\frac{\sum X1}{n}$ $= \frac{43.19}{5} = 8.638\%$

Mean ($\bar{X}$2) = $\frac{\sum X2}{n}$ $= \frac{95493.38}{5} = 19098.676\%$

Karl Persons Correlation Coefficient (r_{12}) =

$$= \frac{\sum(X1-\bar{x}1)(X2-\bar{x}2)}{\sqrt{\sum X1-\bar{x}1)2}\sqrt{\sum(X2-\bar{x}2)2}} = \frac{7899.724552}{\sqrt{0.36588}\sqrt{215328026}} = 0.8900049$$

Therefore, the Correlation coefficient between saving interest rate and saving deposit amount of EBL is = 0.8900049

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

t-Statistics (t) = $r\frac{\sqrt{n-2}}{\sqrt{1-r2}} = 0.8900049\frac{\sqrt{5-2}}{\sqrt{1-0.792108}} = 3.3809$

Standard Deviation (σ) = $\sqrt{\sum(X-\bar{X})^2/n} = \sqrt{0.36588/5} = 0.270510\%$

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

Years	Rate (X1)	Deposit (X2)	(X1-$\bar{X}$1)	(X2-$\bar{X}$2)	(X1-$\bar{X}$1) (X2-$\bar{X}$2)	(X1-$\bar{X}$1)^2	(X2-$\bar{X}$2)^2
2006	9.71	7525	-0.832	-4799.66	3993.31712	0.692224	23036736.12
2007	9.71	9663.6	-0.832	-2661.06	2214.00192	0.692224	7081240.324
2008	9.71	12692.9	-0.832	368.24	-306.37568	0.692224	135600.6976
2009	10.52	14894.7	-0.022	2570.04	-56.54088	0.000484	6605105.602
2010	13.06	16847.1	2.518	4522.44	11387.50392	6.340324	20452463.55
$\sum$ =	**52.71**	**61623.3**			**17231.9064**	**8.41748**	**57311146.29**

Source: Statistics, interest rate structure, sources and uses of funds NRB

Where,

Average lending rate= Total lending rate / n

Mean ($\bar{X}$1) = $\frac{\sum X1}{n}$ $= \frac{52.71}{5} = 10.542\%$

Mean ($\bar{X}$2) = $\frac{\sum X2}{n}$ $= \frac{61623.3}{5} = 12324.66\%$

Karl Persons Correlation Coefficient (r_{12}) =

$$= \frac{\sum(X1-\bar{x}1)(X2-\bar{x}2)}{\sqrt{\sum X1-\bar{x}1)2}\sqrt{\sum(X2-\bar{x}2)2}} = \frac{17231.9064}{\sqrt{841748}\sqrt{57311146.29}} = 0.7845539$$

Therefore, the Correlation coefficient between saving interest rate and saving deposit amount of BOK is = 0.7845539

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

t-Statistics (t) = $r\frac{\sqrt{n-2}}{\sqrt{1-r2}} = 0.7845539\frac{\sqrt{5-2}}{\sqrt{1-0.615524}} = 2.1915$

Standard Deviation (σ) = $\sqrt{\sum(X-\bar{X})^2/n} = \sqrt{8.41748/5} = 1.29749\%$

c. Calculation of Correlation Coefficient, Coefficient of Determination and t-Statistics of NSBI

Years	Rate (X1)	Deposit (X2)	(X1-$\bar{X}$1)	(X2-$\bar{X}$2)	(X1-$\bar{X}$1) (X2-$\bar{X}$2)	(X1-$\bar{X}$1)^2	(X2-$\bar{X}$2)^2
2006	9.72	9010.7	0.314	390.4	122.5856	0.098596	152412.16
2007	8.71	8302.8	-0.696	-317.5	220.98	0.484416	100806.25
2008	9.06	8420	-0.346	-200.3	69.3038	0.119716	40120.09
2009	9.06	8507.9	-0.346	-112.4	38.8904	0.119716	12633.76
2010	10.48	8860.1	1.074	239.8	257.5452	1.153476	57504.04
$\sum$ =	**47.03**	**43101.5**			**709.305**	**1.97592**	**363476.3**

Source: Statistics, interest rate structure, sources and uses of funds NRB

Where,

Average lending rate= Total lending rate / n

Mean ($\bar{X}$1) = $\frac{\sum X1}{n}$ $= \frac{47.03}{5} = 9.406\%$

Mean ($\bar{X}$2) = $\frac{\sum X2}{n}$ $= \frac{43101.5}{5} = 8620.3\%$

Karl Persons Correlation Coefficient (r_{12}) =

$$= \frac{\sum(X1-\bar{x}1)(X2-\bar{x}2)}{\sqrt{\sum X1-\bar{x}1)2}\sqrt{\sum(X2-\bar{x}2)2}} = \frac{709.305}{\sqrt{1.97592}\sqrt{363476.3}} = 0.836971$$

Therefore, the Correlation coefficient between saving interest rate and saving deposit amount of NSBI is = 0.836971

Coefficient of Determination (r_{23}^2) = 0.70052

t-Statistics (t) = $r\frac{\sqrt{n-2}}{\sqrt{1-r2}} = 0.836971\frac{\sqrt{5-2}}{\sqrt{1-0.70052}} = 2.649031$

Standard Deviation (σ) = $\sqrt{\sum(X-\bar{X})^2/n} = \sqrt{1.97592/5} = 0.62863662\%$

APPENDICS III

A. Calculation of Correlation Coefficient, Coefficient of Determination and t-Statistics of NABIL

Years	Rate (X1)	Deposit (X2)	(X1-$\bar{X}$1)	(X2-$\bar{X}$2)	(X1-$\bar{X}$1) (X2-$\bar{X}$2)	(X1-$\bar{X}$1)^2	(X2-$\bar{X}$2)^2
2006	3.2	9.5	-1.652	-0.604	0.997808	2.729104	0.364816
2007	2.71	8.62	-2.142	-1.484	3.178728	4.588164	2.202256
2008	4.82	8.71	-0.032	-1.394	0.044608	0.001024	1.943236
2009	5.2	10.41	0.348	0.306	0.106488	0.121104	0.093636
2010	8.33	13.28	3.478	3.176	11.046128	12.096484	10.086976
$\sum$ =	**24.26**	**50.52**			**15.37376**	**19.53588**	**14.69092**

Source: Statistics, interest rate structure, sources and uses of funds NRB

Where,

Average lending rate= Total lending rate / n

Mean ($\bar{X}$1) = $\frac{\sum X1}{n}$ $= \frac{24.26}{5} = 4.852\%$

Mean ($\bar{X}$2) = $\frac{\sum X2}{n}$ $= \frac{50.52}{5} = 10.104\%$

Karl Persons Correlation Coefficient (r_{12}) =

$$= \frac{\sum(X1-\bar{x}1)(X2-\bar{x}2)}{\sqrt{\sum X1-\bar{x}1)2}\sqrt{\sum(X2-\bar{x}2)2}} = \frac{15.37376}{\sqrt{19.53588}\sqrt{14.69092}} = 0.907484$$

Therefore, the Correlation coefficient between saving interest rate and saving deposit amount of NABIL= 0.907484

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

t-Statistics (t) = $r\frac{\sqrt{n-2}}{\sqrt{1-r2}}$ $0.907484\frac{\sqrt{5-2}}{\sqrt{1-0.823527}} = 3.74162$

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

Years	Rate (X1)	Deposit (X2)	(X1-$\bar{X}$1)	(X2-$\bar{X}$2)	(X1-$\bar{X}$1) (X2-$\bar{X}$2)	(X1-$\bar{X}$1)^2	(X2-$\bar{X}$2)^2
2006	3.65	8.2	-0.14	-0.438	0.06132	0.0196	0.191844
2007	3.36	8.44	-0.43	-0.198	0.08514	0.1849	0.039204
2008	3.98	8.85	0.19	0.212	0.04028	0.0361	0.044944
2009	3.98	8.85	0.19	0.212	0.04028	0.0361	0.044944
2010	3.98	8.85	0.19	0.212	0.04028	0.0361	0.044944
$\sum$ =	**18.95**	**43.19**			**0.2673**	**0.3128**	**0.36588**

Source: Statistics, interest rate structure, sources and uses of funds NRB

Where,

Average lending rate= Total lending rate / n

Mean ($\bar{X}$1) = $\frac{\sum X1}{n}$ $= \frac{18.95}{5} = 3.79\%$

Mean ($\bar{X}$2) = $\frac{\sum X2}{n}$ $= \frac{43.19}{5} = 8.638\%$

Karl Persons Correlation Coefficient (r_{12}) =

$$= \frac{\sum(X1-\bar{x}1)(X2-\bar{x}2)}{\sqrt{\sum X1-\bar{x}1)2}\sqrt{\sum(X2-\bar{x}2)2}} = \frac{0.232838}{\sqrt{0.3128}\sqrt{0.36588}} = 0.688258$$

Therefore, the Correlation coefficient between saving interest rate and saving deposit amount of EBL= 0.688258

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

t-Statistics (t) = $r\frac{\sqrt{n-2}}{\sqrt{1-r2}}$ $0.688258\frac{\sqrt{5-2}}{\sqrt{1-0.473699}} = 1.6432$

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

Years	Rate (X1)	Deposit (X2)	(X1-$\bar{X}$1)	(X2-$\bar{X}$2)	(X1-$\bar{X}$1) (X2-$\bar{X}$2)	(X1-$\bar{X}$1)^2	(X2-$\bar{X}$2)^2
2006	3.05	9.71	-0.506	-0.832	0.420992	0.256036	0.692224
2007	2.72	9.71	-0.836	-0.832	0.695552	0.698896	0.692224
2008	3.47	9.71	-0.086	-0.832	0.071552	0.007396	0.692224
2009	3.47	10.52	-0.086	-0.022	0.001892	0.007396	0.000484
2010	5.07	13.06	1.514	2.518	3.812252	2.292196	6.340324
$\sum$ =	**17.78**	**52.71**			**5.00224**	**3.26192**	**8.41748**

Source: Statistics, interest rate structure, sources and uses of funds NRB

Where,

Average lending rate= Total lending rate / n

Mean ($\bar{X}$1) = $\frac{\sum X1}{n}$ $= \frac{17.78}{5} = 3.556\%$

Mean ($\bar{X}$2) = $\frac{\sum X2}{n}$ $= \frac{52.71}{5} = 10.542\%$

Karl Persons Correlation Coefficient (r_{12}) =

$$= \frac{\sum(X1-\bar{x}1)(X2-\bar{x}2)}{\sqrt{\sum X1-\bar{x}1)2}\sqrt{\sum(X2-\bar{x}2)2}} = \frac{5.00224}{\sqrt{3.26192}\sqrt{8.41748}} = 0.954633$$

Therefore, the Correlation coefficient between saving interest rate and saving deposit amount of BOK= 0.954633

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

t-Statistics (t) = $r\frac{\sqrt{n-2}}{\sqrt{1-r2}}$ $0.954633\frac{\sqrt{5-2}}{\sqrt{1-0.911324}} = 5.552$

D. Calculation of Correlation Coefficient, Coefficient of Determination and t-Statistics of NSBI

Years	Rate (X1)	Deposit (X2)	(X1-$\bar{X}$1)	(X2-$\bar{X}$2)	(X1-$\bar{X}$1) (X2-$\bar{X}$2)	(X1-$\bar{X}$1)^2	(X2-$\bar{X}$2)^2
2006	3.67	9.72	-0.46667	0.314	-0.146533333	0.21777778	0.098596
2007	3.50	8.71	-0.63333	-0.696	0.4408	0.40111111	0.484416
2008	4.25	9.06	0.116667	-0.346	-0.040366667	0.01361111	0.119716
2009	4.33	9.06	0.2	-0.346	-0.0692	0.04	0.119716
2010	4.92	10.48	0.783333	1.074	0.8413	0.61361111	1.153476
$\sum$ =	**20.6667**	**47.03**			**1.026**	**1.28611111**	**1.97592**

Source: Statistics, interest rate structure, sources and uses of funds NRB

Where,

Average lending rate= Total lending rate / n

Mean ($\bar{X}$1) = $\frac{\sum X1}{n}$ $= \frac{20.6667}{5} = 4.13333\%$

Mean ($\bar{X}$2) = $\frac{\sum X2}{n}$ $= \frac{47.03}{5} = 9.406\%$

Karl Persons Correlation Coefficient (r_{12}) =

$$= \frac{\sum(X1-\bar{x}1)(X2-\bar{x}2)}{\sqrt{\sum X1-\bar{x}1)2}\sqrt{\sum(X2-\bar{x}2)2}} = \frac{1.026}{\sqrt{1.28611111}\sqrt{1.97592}} = 0.64361$$

Therefore, the Correlation coefficient between saving interest rate and saving deposit amount of NSBI= 0.64361

Coefficient of Determination (r_{23}^2) = 0.414235

t-Statistics (t) = $r\frac{\sqrt{n-2}}{\sqrt{1-r2}}$ $0.64361\frac{\sqrt{5-2}}{\sqrt{1-0.414235}} = 1.45654$