

# CHAPTER - I

## INTRODUCTION

### 1.1 Background of the Study

Nepal is a land locked country. Its borders are contiguous with the Indian border in the west, south and east with Tibet Autonomous Region of the People's Republic of China in the north. The length of the kingdom is about 880 kilometers towards east to west and 144 to 240 kilometers to north and south. It has an area of 1,47,181 square kilometers, located between 80° 4' to 88° 12' east longitude and 26° 12' to 30° 27' north latitude is the kingdom extends the foothills of the Himalayas in the central Asia.

Nepal ranks among the world's poorest countries, with a per capita income of around \$470 in 2009. Based on national GNP criteria, an estimated 31% of the populations are below the poverty line. Agriculture remains Nepal's principal economic activity, employing over 71% of the population. An isolated, agrarian society until the mid-20th century, Nepal entered the modern era in 1951 without schools, hospitals, roads, telecommunications, electric power, industry, or a civil service. The country has, however, made progress toward sustainable economic growth since the 1950s and is committed to a program of economic liberalization. Commerce and production sector should not be proper developing due to lack of finance. In this situation commercial bank can play vital role to collect small saving and invest into intermediate and long term project.

Nepal has become member of World Trade Organization (WTO) and has committed to open Financial Services Sector (FSS) especially banking services to the foreign banks

and financial institutions by 2010. This could be threat as well as opportunities for banking sector of Nepal. The existing level of Non- Performing Assets (NPA) is not that much healthy sign for the smooth growth of banking sector. One should seriously need to re-think proper strategy for managing NPA.

### **1.1.1 Concepts of Non-Performing Assets**

Non-performing Assets [NPA] means the amount of loan that the individual Commercial bank had provided and the consumer has not paid it until the time is already matured. Once the distributed loan is not returned timely by clients and becomes overdue then, it is known as Non Performing Assets for the bank. Reduction of NPA has always been a significant problem for every commercial banks and proper attention for the management of the NPA now has got the top priority. Due to various hurdles on the way of management of NPA, commercial banks are now losing their profitability and struggling for the existence.

NPA may be defined broadly as the bad debt; however, in terms of banking sector consists of those loans and advances which are not performing well and likely to be turn as bad debt. NPA as per the current directives of Nepal Rastra Bank (NRB), has been categorized as classified loans and advances. NPA has severe impacts on the financial institutions. On the one hand, the investment becomes worthless as expected return cannot be realized and on the other, due to the provision required for the risk mitigation the profitability is directly affected. The existence of the bank can be questioned in this situation. Thus, interest along with principal has to be recovered timely and without any obstacles.

“Non-performing assets could wreck bank’s profitability both through a loss of interest income and need to write off the principal loan amount. It tackles the subject of an entire starting from the stage of their identification till the recovery of dues in such amount” (Bindani, S.N., 2003: 36-38)<sup>1</sup>.

“To start with performance in terms of profitability in a benchmark for any business enterprises, including the banking industry, however increasing non performing assets have a direct impact on bank’s profitability as legally banks are not allowed to book income on such accounts and at the same time banks are forced to make provisions on such assets” (Manamohan, 2002: 06) <sup>2</sup>.

Loans and Advances dominate the assets side of balance sheet of any bank. Similarly, earning from such loans and advances occupy major space in income statement of the banks. However, it is very important to be reminded that most of the bank failures in the world were due to shrinkage in the value of the loan and advances. Hence, loan is known as risky assets. Risk of non-repayment of loan is known as credit risk or default risk. Performing loans have multiple benefits to the society while non-performing loans erodes even existing capital.

Performing assets are those loans that repay principal and interest to the bank from the cash flow it generates. Loans are risky assets, though a bank interest most of its resources in granting loans an advances. If an individual bank has around 10% non-performing assets or loans, it sounds the death knell of that bank, other things remaining the same. The objectives of loan policy are to maintain the financial health of the banks, which

result in safety of depositor's money and increase in the returns to the shareholders. Since the loan is a risky asset there is inherent risk in every loans, however, the bank should not take risk above the certain degree irrespective of the returns prospects.

## **1.2 Statement of the Problem**

High level of NPA is a matter of grave concern for the bank and public alike because bank credit is the catalyst to the economic growth of the country. Rapid rise in NPA level brings an adverse economic environment to the country. In order to have a permanent presence in the market, bankers must have enough vigilance to control the NPA within a reasonable limit.

As shown by the Nepal Rastra Bank on its statistical report on the Non Performing Assets of commercial banks, the average NPA of all commercial banks to total gross loan is 6.08% in FY 2064/65 which is less than the previous year NPA level i.e. 10.56%. The NPA level of NABIL and SCBNL is 0.79 % and 0.92 % respectively, which determines its good health and where as the NPA level of NBBL was 31.10 % highest of all and which show the poor health of the bank. The NPA of HBL, NIBL and BOK are 2.35%, 1.12% and 1.76% respectively.

Assets are the most critical factor in determining the strength of any bank. The primary factors that can be considered are the quality of the loan portfolio, mix of risk assets and the credit administration system.

The lower NPL ratio indicates better risk assessment and robust credit management system are in place and vice-versa. At the same time higher loan loss provisions indicate

poor credit management; it also indicates adequate reserve for possible loan loss, protecting the balance sheets of respective banks.

Nepalese Commercial Banking industry is still under the developing condition.

Considering the current period, we find this phase was hit by situation like political uncertainty, conflict and unrest in the country. Even in this kind of a scenario, the fact that, overall, the banking sector was able to increase their assets base by a significant percentage indicates that they have been capable of switching their areas of investments. One good example would be the retail sector (housing, vehicle, personal loans, etc.).

This study will investigate the effects of Non-Performing Assets of the bank on its total lending policy and its profitability. The investigation will be conducted on a “real work” setting and will use a computer – based task. A sample of 6 commercial banks among 25 commercial banks is taken. Thus, this study makes a modest attempt to analyze the non-performing assets of the banks.

### **1.3 Research Questions**

There are four research questions in this study to find out the effect of NPA on the bank:

1. What is the overall impact of the NPA on the profitability of the Commercial Banks under study?
2. Is there any relationship between NPA and the profitability of the Commercial Banks and the other Non-Banking Assets, [NBA]
3. What might be the other factors that influence the non-performing assets of the Commercial Banks in the banking industry of Nepal?

4. Are there any internal factors of the individual Commercial Banks in increment of the non-performing assets of them?

#### **1.4 Significances of the Study**

The proper mobilization and utilization of domestic resource become indispensable for suitable economic development and there is no doubt that commercial banks have pivotal role for the collection of dispersed small savings of Nepalese people and transforming them into meaningful investment. The success and prosperity of the bank relies heavily upon the successful investment of collected resources to the important sectors of economy as well as to generate more profit by investing in the consumer's demand. The main aim of the present study is to find out what sorts of tools and techniques have been used to overcome the problem of conversion of performing assets into the non-performing assets, by the commercial banks in the country and to analyze what other kinds are being used in the present world that the corresponding banks can adopt, if found, under the study.

Loans and advances are the most profitable of all the assets of a bank. These assets constitute primary sources of income to the bank. It means interest earned from such loan and advances occupy major space in income statement of the bank. Since loans and advances are more profitable than any of other assets, the bank is willing to lend as much as its fund as possible. But it has to be careful about the safety of such loans and advances. It is very important, therefore, to remember that most of the banks failures in the world are due to the shrinkage on the value of loans and advances. Hence loan is known as risky assets. Risk of non-repayment of loan is known as credit risk or default

risk. Performing loan/assets has multiple benefits while non-performing loan/ assets erode even existing capital. Therefore, success of any bank doesn't depend upon how much money a bank is able to lend, but it depends upon the quality of the loan. So success of a bank depends upon the amount of performing assets/ loan. Performing assets are those loans that repay principal and interests to the bank from the cash flow it generates.

It is well known fact that bank and financial institutions in Nepal have been facing the problem of swelling non-performing assets and issues is becoming more and more unmanageable. Unfortunately, nowadays, banks are the victims of high level of NPA, which has been the subject of headache to the banking sector and Nepalese banking industry is not also exception from this truth.

This present study mainly concern with the analysis of level of NPAs in total assets, total deposits and total lending of different commercial banks of Nepal. Therefore, it is significant to find out the level of NPA and to find out whether the banks maintained loan loss provision in accordance to NRB's directives or not. It also examines the effects of NPA in ROE and ROA of the bank and points out the defect inherent in it and provide package of suggestion for its improvement if found any.

Apart from above, this study will be a matter of interest for the students, academicians and other professionals.

### 1.5 Test of Hypothesis

The main objective of this test is to test the significance regarding the parameters of the population on the basis of sample drawn from the population. In this study we set the following hypothesis:

- ) Is there any significant relation between total lending of Commercial Bank and the amount of the non-performing assets?

  - Null Hypothesis,  $H_0: p=0$ , i.e. there is significant relation between total lending of Commercial Bank and the amount of the non-performing assets.
  - Alternative hypothesis,  $H_1: p \neq 0$ , i.e. there is not any significant relation between total lending of Commercial Bank and the amount of the non-performing assets.
  
- ) Is there any significant relation between the amount of non-performing assets of sample banks and the population?

  - Null hypothesis,  $H_0: p=0$ , i.e. there is significant relation between the amount of non-performing assets of sample banks and the population.
  - Alternative hypothesis,  $H_1: p \neq 0$ , i.e. there is not any significant relation between the amount of non-performing assets of sample banks and the population.

### 1.6 Research Methodology

For this study, both Field and Desk research will have been adopted. The fieldwork will have been conducted to collect necessary information, while deskwork has been conducted to analyze and interpret the information so collected. In order to make the report meaningful and purposeful the following procedural methodology has been used.



### **1.6.1 Population and Sample**

There are many financial institutions in Nepal. This study focuses on the non-performing assets of sampled commercial banks in Nepalese banking industry. The population of the study is the total numbers of commercial banks, which are 25 banks. The following are the banks, selected as sample for the study.

- ) Nabil Bank Limited
- ) Standard Chartered Bank Nepal Limited.
- ) Himalayan Bank Limited.
- ) Nepal Investment Bank Limited
- ) Bank of Kathmandu Limited.
- ) Nepal Bangladesh Bank Limited

The NPA level of NABIL and SCBNL are in good, i.e. 0.79% and 0.92% respectively and where as the NPA level of NBBL is 31.10% highest of all having a poor health. The NPA of HBL, NIBL and BOK are 2.35%, 1.12% and 1.76% respectively, which are moderate of all. In other to get the variation in study and distinction in the results this banks are selected among the 25 other banks.

### **1.6.2 Sources of Information**

The main sources of information are their published documents, NRB and its published documents, experts' views, newspapers; others published and unpublished documents and many others secondary data have been collected for analysis. The major sources of secondary data area:

- ) Economic survey, HMG Ministry of Finance.

- ) Nepal Rastra Bank directives.
- ) Nepal Rastra Bank news.
- ) Annual general reports of the concerned Commercial Banks.
- ) National and international newspaper, journals, magazines etc.
- ) And many other books as far as possible.
- ) Different web sites.

### **1.6.3 Tools for Analysis and Presentation**

Secondary information collected from annual reports of the sample banks was first tabulated in Excel spreadsheet and then analyzed using formula and charts. Correlation analysis has also been used. Financial tools such as ratio analysis also have been used. Some data were parametric and some were non-parametric. Suitable tools such as descriptive statistics, Mean, Standard deviation, etc. were also used.

### **1.6.4 Data Presentation and Analysis**

Presentation and the analysis of the available data is the major task of the study. The methods of analysis are applied as simple as possible so that it can be understood by the nonprofessionals and the students who want to study the subject individually for their knowledge to be strengthened. Every result is tabulated and clear interpretation on it is given simultaneously. Data is presented in tabular, graphical and chart wherever necessary and possible. Summary and conclusions as well as recommendations are presented as found necessary at the final stages.

### **1.7 Limitation of the Study**

This study is simply a partial study for the fulfillment of MBS Degree. Following are the limitations:

- ) Inadequate coverage of banking industries,
- ) Limited coverage time period,
- ) Reliability of statements,

#### **In addition following are some limitations of the study:**

1. Profitability of an organization is caused by many factors. This study, however, covers only those factors, that are directly affected by the non-performing assets of the Commercial Banks.
2. The whole study is based on secondary data provided by the concerned banks.
3. The whole study is based on five years data.
4. The study covers only six banks.

### **1.8 Objectives of the Study**

Increasing NPA has now become the major issue for every commercial bank. Every bank now has put the NPA management under the top priority and is functioning to reduce the major part of it from the assets side of their balance sheet. The main objectives of the study are to access the non-performing assets of the different banks under the study. The other specific objectives of the present study are listed as follows:

- ) To evaluate the non-performing assets of the different banks that has become the challenge to the Commercial Banks in the Nepalese banking industry.

- ) To access the relationship between the profitability and the non-performing assets of the Commercial Banks.
- ) To find out the internal and external factors that influence the performing assets to become the non-performing one.
- ) To recommend for the improvement of the management of NPA on the basis of the findings of the study.

### **1.9 Organization of the Study**

The whole study is divided into the following five different chapters.

#### Chapter – I Introduction

This chapter includes background of the study, statements of the problems, research questions, significance of study, test of hypothesis, research methodology, limitation of the study and objectives of the study.

#### Chapter – II Review of Literature

This chapter is basically concerned with the review of the literature relevant to the non-performing assets of the Commercial Banks.

#### Chapter – III Research Methodology

This chapter includes introduction, research design, population and sample, sources of the information used, period of the study, financial indicators and the statistical tools used.

#### Chapter – IV Data Presentation and Analysis

This chapter includes presentation of the financial variables and the statistical tools used while interpreting the data so collected from the different sources.

## Chapter – V Summery of Findings, Conclusions and the Recommendations

This chapter briefly represents the summery of the whole study made and the conclusions so made and the recommendations for the effective and smooth running of the concerned commercial banks under the study.

**End Notes:**

1. Bindani, S.N. (2003). *Managing Non Performing Assets*. New Delhi: Vision Book Publishers. P. 36-38.
2. Singh Manmohan, (2002) *Directive Reserve Bank of India*. P. 6.

## **CHAPTER - II**

### **REVIEW OF THE LITERATURE**

#### **2.1 Background**

There are several types of banks but among them commercial banks play significant contribution in the financial system of the country. They pool together the savings of the community and arrange for their productive use. They supply the financial needs of modern business by various means. They accept deposits from public on the condition that they are repaid on demand or on short notice. Their business is confined to financing the short-term and medium term needs of trade and industry such as working capital financing.

Commercial Bank Act 2031 B.S. of Nepal has defined the commercial banks as an organization, which exchanges money, accepts, grants loans and performs commercial banking functions and which is not a bank meant for co-operative, agriculture, industries or for such specific purpose.

It is the fact that financial sector plays a vital role for the economic development of a country. Even before the establishment of a banking system in Nepal, financial transactions were in practice as undertaken by some moneylenders like Sahu- Mahajans, Jamindars, relatives, friends, and few informal organizations limited to ethnic group such as guthi. The borrowing from the other people and the informal organization was limited

and based on personal understanding. At that time people deposit their gold, silver and valuable goods for the sake of security. Thus, the private moneylenders can be taken as forerunner of the concept of financial institution.

However, the private money lenders supported the economic development of a country, the transactions undertaken by them was totally based on their personal understanding.

No legal restriction was against them and their monopolies in transactions were the reasons for covering the interest in personal understandings and exploiting the people.

Thus, it was then realized the need to establish financial intermediaries in supporting the economic development of a country.

Nepal has been ruled over by many rulers like Kirati, Lichchhavi, Malla, Ranas, and Shahs. Mostly Kirati, Lichchhvi and Malla regimes, who were concerned with the construction of temples, pati-pouwa, chautaris, etc. At that period neither the people nor the government needed to think about the economic development of the country.

According to ancient “Vanshawali” in fourteenth century, the ruler of the then Kathmandu Jayasthiti Malla segregated the local domiciles into 64 different classes according to profession they had undertaken. Tankadhari was one of those classes who used to deal in coins and precious metals such as gold. These Tankadharis were said to have carried out the borrowing and lending of money (coins). Hence, Tankadharis can be regarded as the traditional bankers of Nepal.

After long time, during the Rana regime, only handfuls prime minister thought about the economic development of the country. They established some offices in 1993 BS.

‘Tejarath Adda’ was established during the tenure of Prime Minister Ranodip Singh Rana



as a first institutionalized credit house. Tejarath Adda provided loans under the security of gold and silver to the government employees and public. The government established its various branches and sub- branches at different places of the country for the sake of benefits of people. In the overall development of the banking system in Nepal, the Tejarath Adda may be regarded as the father of modern banking institution and for a quite long time it rendered a good service to the government employees as well as to the general public. The government also implemented the rules against the vast interest rate taken by moneylenders. Thus, the government financial institution occupies an important role in the banking history of Nepal.

No financial institutions were established over a long period due to political reasons. To fulfill the growing need of economy in Nepal, banking activities were performed only after the establishment of Nepal Bank Limited in 1994 BS as the first Commercial Bank in Nepal. This bank was established under the Nepal Bank Act 1994 BS.

At beginning, 49% of the ownership belongs to the promoters as well as general public and remaining belongs to government. The incorporation of Nepal Bank Ltd. is the real starting of the banking institution in Nepal. The bank started the act of consolidating the scattered capital since its establishment in order to mobilize it in productive sector. It developed systematic tradition in culture of modern banking system in Nepal. Such system could be able to establish a strong base for the uplift of national economy. Beside, it also acted as Central Bank for more than three decades.

Nepal Rastra Bank was established in Baisakh 14, 2013 BS under Nepal Rastra Bank Act 2012 BS as the Central Bank of Nepal. It is totally owned by government. NRB is heavily assisting for the development of the whole economy. It is giving timely directives to all financial institutions operating and conducting in all over the country.

After a long period, the second commercial bank namely Rastriya Banijya Bank (RBB) has been established in 2022 B.S. with cent percent government ownership. This bank has been established under the Rastriya Banijya Bank Act 2021 B.S. Both Nepal Bank Ltd (NBL) and Rastriya Banijya Bank (RBB) have made a remarkable contribution by providing reliable banking services to the Nepalese people. Its contribution is well noted on terms of capital formation to the small dispersed saving into meaningful capital investment in order to flourish industry, agriculture, and commercial sector in the country.

The government introduced Commercial Bank Act in Nepal in 2033 B.S. to cover the vast field of financial sector. This act has helped to emerge number of commercial bank with a view to maintain the economic interest in comfort of the public in general facilitated to provide loan for agriculture, industry, and trade and make a available banking services to the country and people.

Along vacuum in the banking sector got some rays of hope only when the government forwarded the economic liberalization policy in 2039 B.S and decided to allow foreign banks to operate their activities in Nepal in “joint- venture model”. ‘Joint–venture Banks can be defined as an association of two or more parties having common objectives and

goals so as to get maximum satisfaction. Basically at that time, it was envisioned that Joint-venture Banks (JVBS) would support the country in various ways.

In Nepalese context the main purpose of joint venture is to develop economic forces in order to achieve distinguished results, which the partners separately could not achieve. Nowadays, Joint-venture Banks (JVBs) are playing a dynamic and vital role in the economic development of the country.

The Nabil Bank Ltd is the first Joint-venture Bank established in 2041 B.S. and started its operation with modern banking services. In the same way, Nepal Indosuez Bank (currently Nepal Investment Bank), the second joint-venture bank established in 2042 B.S. with an objective to encourage efficient banking services and facilities. Likewise Standard Chartered Bank Nepal Limited is operated in the year 1987.

With the satisfactory result of Joint-venture Banks, Nepalese promoters are highly encouraged and as a result, commercial banks are introduced with 100 percent domestic investment. At present, Nepal Industrial and Commercial Bank (NIC), Lumbini Bank Ltd., Machhapuchhre Bank Ltd., Kumari Bank Ltd, Laxmi Bank Ltd, Siddhartha Bank Ltd., Bank of Kathmandu, Nepal Credit and Commerce Bank Ltd., came into operation with 100 percent domestic investment by Nepalese promoters which is the plus point of development of banking sector of Nepal. Now, there is a strong competition between commercial banks for their existence so that the growing needs of the customers can easily be achieved.

## **2.2 Definition of Loan and Advances**

Loan is defined as a sum of money transferred to another for temporary use, to be repaid with or without interest according to terms of the loan agreement written in the accompanying bond, note, mortgage or other document of indebtedness. However, in financial terms loan or debt means principal or interest availed of to the borrower against the security. Debt means the money that bank owes or lends to individual or person. Likewise, the term loan is defined as a lending, a sum of money, Delivery by one party and receipt by another party upon agreement expressed or implied, to repay it with or without interest (Boerne Vs. Colwell Co., 1997: 125-129)<sup>1</sup>. Any thing furnished for temporary use to a person at his request on condition that it shall be returned, or its equivalent in kind, with or without compensation for its use. Loan includes:

- ) The creation of debt by the lender's payment of or agreement to pay money to the debtor or to a third party for the account of the debtor.
- ) The creation of debt by a credit to an account with the lender upon which the debtor is entitled to draw immediately.
- ) The creation of debt pursuant to a lender credit card or similar arrangement.

Further, debt means 'Principal and interest provided to debtor by banks or financial institutions, with or without the pledge of immovable or movable property or other securities or guarantees or without guarantee, and the word also mean over dues of the transactions beyond balance or fees, commission and interest incurred in that relation (Debt Recovery 2058 Act.79)<sup>2</sup>.

The supreme court of India has defined the debt during the decision of the case of United Bank of India Vs. DRT. Sudhir Gupta states that "In the case in hand, there cannot be any

dispute that the expression 'debt' has to be given the widest amplitude to mean any liability which is alleged as dues from any person by a bank during the course of any business activities undertaken by the bank either in cash or otherwise, whether secured or unsecured, whether payable under a decree or order of any court or otherwise and legally recoverable on the date of the application (Ghimire, G., 2005: 17)<sup>3</sup>.

To define NPA first of all meaning of Assets should be understood. Assets mean the property of a person or a company. This indicates that assets are the property of a company accumulated with the help of sources.

### **2.3 Definition of NPA**

Non Performing Loan means an outstanding loan that is not repaid, i.e. neither payments of interest, or principle are made. In case of the banks the loans and advances are the assets as the banks flow loans from the funds generated through shareholders equity, money deposited by the people and fund having through the borrowings, Hence the term NPA means the loans and advances that are not performing well. Thus all the irregular and/or overdue loans and advances can be termed as NPA.

### **2.4 Classification of NPA**

As per NRB directives 2058 the NPA of bank is classified as below:

#### **2.4.1. Pass**

Loans or assets in this category are fully protected by the current sound worth and paying capacity of the obligor or the collateral pledged, are performing in accordance with contractual terms, and are expected to continue doing so.

) Any asset which is past due period up to 90 days shall be classified as Pass.

### **2.4.2. Substandard**

Loans or assets in this category are not adequately protected by the current sound worth and paying capacity of the obligor. The primary source of repayment is not sufficient to service the debt, and the financial institution must rely on secondary sources such as realizing on collateral, sale of fixed assets, refinancing, or capital injections from external sources. Substandard assets have well-defined weaknesses that jeopardize the orderly repayment of the debt. These assets may, or may not, be past due but have a higher than normal risk due to absence of current credit documentation. There is a distinct possibility that the financial institution will sustain loss if deficiencies are not corrected.

- ) Any asset which is past due 90 days or more but less than 180 days shall be classified as Substandard, at a minimum.
- ) Re-negotiated and restructured loans shall be graded Substandard unless
  - i. All past due interest is paid in cash at the time of restructuring,
  - ii. All principal and interest payments have been made according to the modified repayment schedule for at least six consecutive months from the date the loan was re-structured, and
  - iii. The terms and conditions of the restructured loan comply with the loan policy.

### **2.4.3. Doubtful**

Loans and assets in this category have all the weaknesses inherent in substandard assets but the loans are not well-secured. Weaknesses make collection in full highly questionable and improbable on the basis of existing facts, conditions, and value. The possibility of loss is high, but the actual amount of loss cannot be fully determined

because specific pending factors may mitigate. Pending factors may include a merger, acquisition, or liquidation; a capital injection; obtaining additional collateral; or refinancing. If pending events do not occur within 180 days and repayment must again be deferred, Loss classification is warranted.

- ) Any asset which is past due 180 days or more but less than 360 days shall be classified as Doubtful, unless
- i. The asset is well-secured,
  - ii. Legal action has commenced, and
  - iii. The time to realize on collateral or on a guarantee does not exceed 180 days.

#### **2.4.4. Loss**

Loans and assets in this category are deemed uncollectible or of such little value that carrying on the books is no longer warranted. Loss classification does not mean there will never be a recovery, but rather that it is no longer appropriate to defer writing off the asset. Losses shall be taken when identified as uncollectible and shall not remain on the books while pursuing long-term recovery efforts.

- ) Any asset which is past due 360 days or more shall be classified as Loss, unless
- i. The asset is well-secured,
  - ii. Legal action has commenced, and
  - iii. The time to realize on collateral or on a guarantee does not exceed 180 days. In some cases, a reduced carrying value or partial write-down is justified. If a partial write-down is taken, the remaining book value must be supported by tangible facts.





Furthermore the provision made for the NPA according to their classification is as below:

**Table 2.4**

**Classification of Loan and Advances**

<b>Classification of Loans and Advances</b>	<b>Criteria for Provisioning</b>	<b>Provision Rate</b>
Pass	Not past due and past due for a period up to 3 months. [Performing loans]	1%
Substandard	Past due for a period of 3 months to 6 months	25%
Doubtful	Past due for a period of 6 months to 1 year	50%
Loss	Past due for a period of more than 1 year or advance which have least possibility of recovery	100%

*Source: Nepal Rastra Bank, Directives for Commercial Banks 2058*

**Effects of NPA on Profitability of the Banks**

Under the circumstances assets that do not earn any income to the bank affect the profits in a number of ways, which are explained as follows:

Profitability Impact:

- ) The resources locked up in NPA are borrowed at a cost and have to earn a minimum return to service this cost.
- ) NPA on the one hand do not earn any income but on the other hand drain the profits earned by performing assets through the claim on provisioning requirements.
- ) Since they do not earn interest they bring down the yield on advances and the net interest margin or spread.
- ) NPA have a direct impact on assets and return on equity, the two main parameters for measuring profitability of the Commercial Banks.

- J Return on assets will be affected because while the total assets include the NPA they do not contribute to profits which are the numerator in the ratio
- J Return on equity is also affected as provisioning eats more and more into profits earned.
- J The cost of maintaining these include administration costs, legal costs and cost of procuring the resources locked in them.
- J NPA bring down the profits, affects the shareholders value and thus, adversely affect the investor confidence.

**As a whole, his impact of NPA can be assessed with the following:**

- J Lower ROE and ROA
- J Lower image and rating of Banks
- J Disclosure reduces investor's confidences
- J Increases costs/difficulties in raising capital.
- J NPA do not generate income.
- J They require provisioning
- J Borrowing cost of resources locked in
- J Opportunity loss due to non-recycling of funds.
- J 100% risk weight on net NPA for CRR
- J Capital gets blocked in NPA
- J Utilizes capital but does not generate income to sustain the capital that is locked
- J Recapitalization by government comes with string.
- J Administration and recovery costs of NPA
- J Effects in employee morale and decision-making (Ghimire, G.,2005:21)<sup>4</sup>.

## **2.5 Causes of NPA: [Country– wise Analysis] (Reddy, P.K., 1998: 84-86)<sup>5</sup>**

### **2.5.1 China**

- i. Moral Hazard: The State Owned Enterprises (SOE)'s believe that there the government will bail them out in case of trouble and so they continue to take high risks and have not really strived to achieve profitability and to improve operational efficiency.
- ii. Bankruptcy laws favour borrowers and law courts are not reliable enforcement vehicles.
- iii. Political and social implications of restructuring big SOE's force the government to keep them afloat.
- iv. Banks are reluctant to lend to the private enterprises due to
  - a. Non- standard accounting practices
  - b. While an NPA of an SOE is financially undesirable, an NPA of a private enterprise is both financially and politically undesirable.

### **2.5.2 Thailand**

- i. Liberalized capital and current account and external borrowings with inaccurate assessment of exchange rate risk and risk of capital flight in a crisis.
- ii. A legal system that made credit recovery time consuming and difficult.
- iii. Real estate speculators took massive loans projecting high growth in demand and prices of properties. When this did not materialize all the loans went bad.
- iv. Steep interest rate rise turned a lot of loans into NPAs
- v. Inability to correctly assess credit risk.

### 2.5.3 Korea

- i. Directed credit: Protracted periods of interest rate control and selective credit allocations gave rise to an inefficient distribution of funds. The Chaebols' focus on increasing market share and pursuing diversification with little attention to profitability caused tremendous stress on the economy.
- ii. The "compressed growth" policy via aggressive, leveraged expansion worked well as long as the economy was growing and the ROI exceeded the cost of capital. This strategy backfired when slowing demand and rising input costs placed severe stress on their profitability.
- iii. Lack of Monitoring-Banks relied on collaterals and guaranteed in the allocation of credit, and little attention was paid to earnings performance and cash flows.
- iv. Contagion effect from South East Asia coincided with a period of structural adjustments as well as a cyclical downturn in Korea.

### 2.5.4 Japan

- i. Investments were made Real Estate at high prices during the boom. The recession caused prices to crash and turned a lot of these loans bad.
- ii. Legal mechanisms to dispose bad loans were time consuming and expensive and NPA's remained on the balance sheet.
- iii. Expansionary fiscal policy measures administered to stimulate the economy supported industrial sectors like construction and real estate, which may have further exacerbated the problem.
- iv. Crony capitalism to the Keiretsus.

- v. Weak corporate governance coupled with a no-bankruptcy doctrine was a moral hazard in Japanese economy.
- vi. Inadequate accounting systems and information flow makes assessment of loan performance outside a Bank in Japan difficult.

### **2.5.5 U.S the Financial Crisis of 2007–2009** (wikipedia.org/wiki)<sup>6</sup>

- i. The immediate cause or trigger of the crisis was the bursting of the [United States housing bubble](#) which peaked in 2005–2006. High default rates on "[subprime](#)" and [adjustable rate mortgages](#) (ARM) began to increase quickly thereafter.
- ii. [Defaults](#) and [foreclosure](#) activity increased dramatically as easy initial terms expired, home prices failed to go up as anticipated, and ARM [interest](#) rates reset higher.
- iii. In 2007, significant amounts of foreign money flowed into the U.S. from fast-growing economies in Asia and oil-producing countries. This inflow of funds made it easier for the Federal Reserve to keep interest rates lower in the United States 2002–2006 which contributed to easy credit conditions, leading to the United States housing bubble.
- iv. As housing prices declined, major global financial institutions that had borrowed and invested heavily in subprime mortgage-backed securities reported significant losses. Falling prices also resulted in homes worth less than the mortgage loan, providing a financial incentive to enter foreclosure.

## 2.6 Review of the Previous Studies

Books, journals and publications have been studied to formulate ideas about the subject matter. Although, the specific books regarding the NPA could not be found, however, a related book has been consulted such as (Tannan's Banking Law and Practices in India: 1997: 23)<sup>7</sup>. Assessing the gravity of the problem, Tannan found that the Banks and Financial Institutions at present face considerable difficulties in recovery of dues from the clients and a significant portion of the funds of the banks and financial institutions is thus, blocked in unproductive assets.

In India for addressing the question of speeding up the process of recovery was examined in great detail by committee set-up by the government under the chairmanship of the Late Shri Dutta Tiwari.

Suneja (1992)<sup>8</sup> pointed out the causes of NPA that the risk connected with lending to business depends on an enormous number of factors. For any particular type of business the risk failure is affected.

The state of economy trend in demand for the product or service provided competition from any other suppliers, financial resources are too limited and management skills are lacking. Reiterating the difficulties that Suneja says probably the most difficult decision facing a banker is to determine when it becomes necessary to recall a loan and to begin the process of liquidating the security. Further she suggests that if a customer fails to make repayment on the due date, the bank has to consider what steps need be taken to recover the debt.

(Basyal: 2057)<sup>9</sup>, discussing the financial performance of government owned banks agreed that the disappointing performance of these two banks has become serious concern to all the stakeholders. Further he mentions that they are having huge level of NPA, which could be termed as the darkest sides of their operational inefficiency and undisciplined financial behaviors.

(Ghimire: 2056)<sup>10</sup> has made a comparative analysis and found that efficiency indicator of the banks may be viewed on the basis of amount allocated for loan loss provisioning against loan and investment.

(Pradhan: 2058)<sup>11</sup> expressed that unless the growth of NPA is kept in control, it has the potential to cause systematic crisis. He has mentioned that a dream of globalization led to huge investment which unfortunately could not be utilized properly due to hesitant liberalization policies. Large corporate bodies misused the credits and delayed payments and contributed indirectly for enhancing NPA ratio. He further argues that lack of vision in appraisal of proposal while loan sanctioning, reviewing or enhancing credit limits, absence of risk management policy of financing, concentration of credit in few group or parties and sector, lack of coordination among various financiers, lack of initiatives to take timely action against willful defaulters, indecision on existing out of bad loans for fear of investigating agencies like special police, CIAA, Public Accounts Committee of the parliament have also contributed in whatsoever measures to the worsening situation of NPA front. He further pointed out that most crucial reason for the increase in the NPA is the shabby and defaulter friendly legal system. Suggesting the remedy of NPA, he adds that administrative system should be strengthened. Legal reforms should be made and

Assets Reconstruction Company should be formed. Henderson (2003) CEO of RBB during his interview to New Business Age agrees that the challenging target of RBB turn around in restructuring and collection of NPA.

(Khadka: 2004)<sup>12</sup> has explained about the topics in which he had objectives to study and examine the level of NPAs in total assets, total deposits and total lending of commercial banks . He also had studied whether the Nepalese Commercial Banks have been following the directives of NRB regarding loan loss provision for non-performing loan/ assets or not. He had taken sample banks as Nepal SBI Bank Limited, Nepal Investment Bank limited, Nepal Bangladesh Bank limited, Bank of Kathmandu limited, Nabil Bank Limited. From his studies, it is found that the level of NPA of Nepal Bangladesh limited seemed greater than all of the other banks under his study. Similarly, Nepal SBI Bank and Bank of Kathmandu stand at second and third position respectively. The position of Nabil Bank limited seemed to be quite satisfactory because, the bank has been reducing its NPA every year. NPA of Nepal Investment Bank stands at minimum than that of all the other banks. From the study it has also been found that none of the banks have been following the directives of NRB regarding the loan loss provision. Despite of high level of NPA the loan loss provision made by the Nepal Bangladesh Bank seemed to be quite satisfactory than any of the other banks. Despite of the outstanding success in managing the NPA the loan loss provision made by Nepal Investment Bank is not considerable. It meant the loan loss provision of Nepal Investment Bank is very less than the requirement.

A study conducted by (Shrestha: 2004)<sup>13</sup> revealed that the Standard Chartered Bank Nepal Limited had risk averse attitude of the management or they have policy of



investing low in the risky assets i.e. loans and advances as compared to Nepal Bank Limited and Nabil Bank because the loans and advances to total assets ratio of NBL, NABIL and SCBNL during FY 2057/58 to 2061/62 was appeared to be 52.3%, 47% and 29.34% respectively. SCBNL has higher proportion of the investment in risk free or nominally risky assets like treasury bills, National Saving bonds etc.

Similarly the loans and advances to total deposits ratio of NBL, NABIL and SCBNL during the study period was found to be 57.63%, 56.35% and 35.94% respectively. It indicates that the SCBNL has the most consistent and variability during the study period whereas the NBL has the higher consistent and variability as compared to other two banks. NABIL has the moderate level of consistent and variability.

In the same way, the proportion of Non Performing loan with regard to total loans of NBL, NABIL and SCBNL was found to be 48.37%, 10.67% and 4.38% respectively. That means 51.63%, 89.33 and 95.62% of the total loan of NBL, NABIL and SCBNL was found to be performing loan. Not only the public sector bank, even private sector bank like NABIL has higher proportion of non-performing loan. However, in recent years NABIL has shown significant decrement in non-performing assets, which are the result of effective bank credit management and its efforts of recovering bad debts through the recovery of establishment of recovery cell.

Proportion of loan loss provision of NBL was found to be significantly higher i.e. 40.17% as compared to other two commercial banks. The proportion of NABIL and SCBNL was found to be 5.69% and 4.49%.

The average ratio of provision held to non performing loan of NBL, NABIL and SCBNL was found to be 80.03%, 57.85% and 122.32% respectively shows that the SCBNL has maintained adequate level of provision against non performing loan where as NABIL was found to be comparatively lower. The NBL was found to be an average position.

(Ghimire: 2005)<sup>14</sup> studied about the internal and the external factors that affect the non-performing assets to increase from the loan and advances. The internal factors that influence and the effective management of the NPA and its increment. The objective of his studies is also to find out the relationship between the non- banking assets and the Non-Performing Assets, in which he was able to find out very much important result from the survey. The study was able to find out the internal responsible factors that contribute turning good loan into bad loans, bad intention, weak monitoring and miss management are the most responsible factors. Similarly, weak legal provision and credit concentration are also found as the least preferred factors in turning good loans into bad loans. Some factors such as lack of portfolio analysis, not having effective credit policy and shortfall on security were identified as having average effect on NPA growth. In connection to the external factors it has been found that recession, political and legal issues are more relevant factors in turning good loans into bad one. Like wise legal provision for recovery as a reason for increment in NPA in Nepalese Banks have been found the factors having less impact. Supervision and monitoring system have been identified as average factors. It is there fore, can be generalized that economic and industrial recession and not having strong legal provision for loan recovery are the major external factors that have major contribution for the increment of NPA.

It has also been concluded in the study that Nepalese Commercial Banks gave must priority to trade sector for lending its resources, at the same time it is found that service sectors are not being given that much emphasis. He had recommended to the sample banks, Nepal Bangladesh Bank Ltd, Nepal SBI Bank Ltd, and Bank of Kathmandu Ltd, as on different headings, subject matter such as financial strength, personal integrity and security, monitoring and control system, avoidance of credit concentration, strong legal system, assets management company, avoidance of undue pressure, etc.

### **Research Gap**

NPA management is such a delicate topic for any banks and financial institution. NPA has been the reason of increased in the loss and decrease in profit of any banks. NPA management can lead to obvious profits but much more pertinently to growth.

The research conducted could not explain the relation of NPA to the Total Lending. Beside it also did not show the relationship on NPA and the NPA of population banks of the country.

This research has tried to study the effect of NPA on the profitability of the six banks on the country i.e. NABIL, SCBNL, HBL, NIBL, BOK and NBBL. How do increase in the NPA related to the Total lending, Total Deposits, Total Assets and Net profit of the bank. Effort here is to shed light on the delicate and judicious planning and execution of NPA management, which banks have to carry out for its growth. The Hypothetical test of NPA on Total Lending and NPA of the population bank is also performed to deepen the study.

In this regards, previously performed NPA analysis has been referred to as precedence and this research has endeavored to intensively analyze the effect of NPA in commercial banks on its profitability.

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## **CHAPTER - IV**

### **DATA PRESENTATION AND ANALYSIS**

In this chapter, efforts have been made to present and analyze the collected data. Data collected from various sources were classified and tabulated as required. Data are presented in the tables and figures. Different arithmetical and statistical tools are used to analyze the data to make easier and make clearer to the understanding of the study.

Simple percentage is used to analyze the data as arithmetical tools. Karl Pearson's correlation coefficient is also used to analyze the data.

Nowadays Non-Performing Assets [NPAs] have been occupying major space in the total assets and total loan/lending of the bank. It stands around 6% in the Nepalese banking sector. The total NPA in the banking system is about Rs. 19 billion, while it is even worse in case of two large commercial banks, RBB and NBL. The NPA of RBB is 21.65% while that of NBL is 31.10% of the total lending in FY 2064/65. In this way we can say that commercial banks have been suffering by high level of NPA, and the efforts of the banks have been diverted to reduce it.

Keeping this fact into consideration, a provision has been set up by Nepal Rastra Bank to control the level of NPA of Nepalese Commercial Banks in FY 2057/58. According to that provision, every bank has to classify its total loan and advances [including purchased and discounted bills] as pass loan, substandard loan, doubtful loan and bad loan, on the basis of overdue aging schedule. Commercial Banks are also directed to maintain loan loss provision as stated in section 11 of directives No. 2 of NRB's directives for Commercial Banks 2059. Main purpose was to find out the level of NPA in Nepalese Commercial Banks and to take necessary steps to control the level in future.

Data of five FY starting from FY 2060/61 to 2064/65 have been presented to analyze the level of NPA in total assets, total lending and total deposits of the commercial banks.

Data are also presented to analyze the effects to NPA on the profitability of the banks under the study.

#### 4.1 Data Presentation and Analysis of Sample Banks

##### a) NABIL Bank Limited

**Table 4.1**

**Relation between NPA, Net Profit, Total Lending and Total Deposits**

<b>Ratios/Year</b>	<b>2060/61</b>	<b>2061/62</b>	<b>2062/63</b>	<b>2063/64</b>	<b>2064/65</b>
NPA to Total Lending Ratio	3.35	1.32	1.38	1.12	0.74
Total Lending to T Deposits Ratio	60.55	75.05	68.63	68.13	61.18
Net Profit to Total Assets Ratio	2.72	3.02	2.85	2.47	2.01

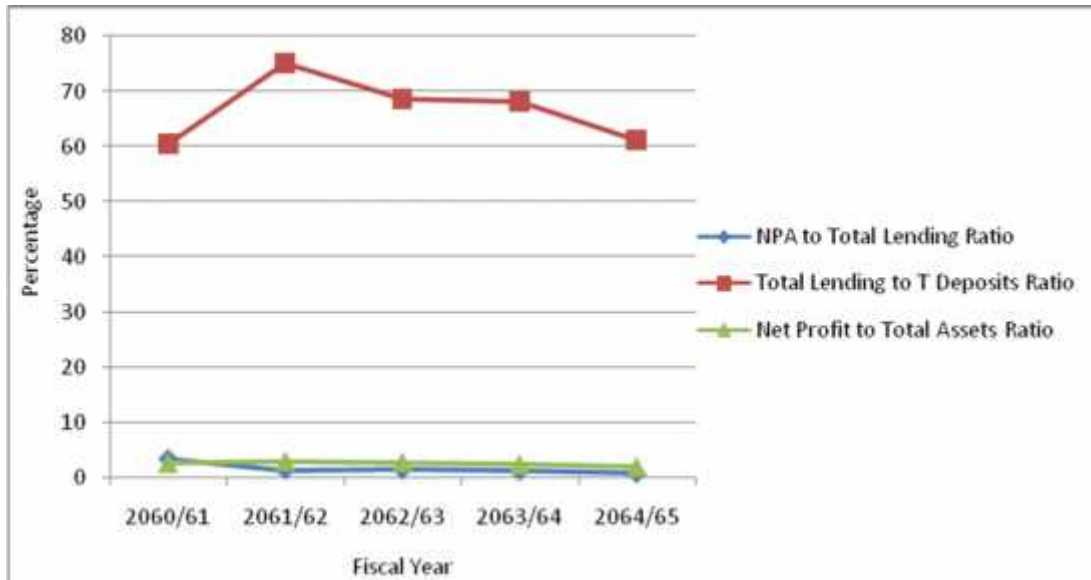
*Source: Annual Reports of FY 2060/61- 2064/65*

From the above table, it can be said that the ratio between the Non-Performing Assets and the total lending is decreasing during the year under the study. It is at 3.35 % for the FY 2060/61 which is decreased to 0.74 % at the end of FY 2064/65. Similarly, the total lending to total deposits ratio is also following the decreasing trend, although it has increased to 75.05% for the year 2061/62, which has decreased to 61.18 % at the year ended 2064/65, showing a sign of decrease in the lending of the bank. And the net profit to total assets ratio is also has decreased, except FY 2061/62 which increased to 3.02% but till the year 2064/65 it has decreased to 2.01%. It shows decreasing trend in the profit in comparison to the total assets of the organization.

**Figure 4.1**

**Trend Analysis of Level of NPA, ROA & Loan-Deposit Ratio**





The above figure shows that the total lending to total deposits ratio is above 60% for the FY 2060/61 that increased in the FY 2061/62. After that it is following the decreasing trend and has reached to around 61.18% in the FY 2064/65. The NPA to total lending ratio is has gradually decreased in the FY 2060/61 till the FY 2064/65 which shows that the efforts of the bank to manage the NPA is satisfactory. Similarly, the net profit to total assets ratio has also gradually decreased except in the FY 2061/62.

**Table 4.2****Total Assets, Total Deposits, Total Lending and Total NPA**

(in million)

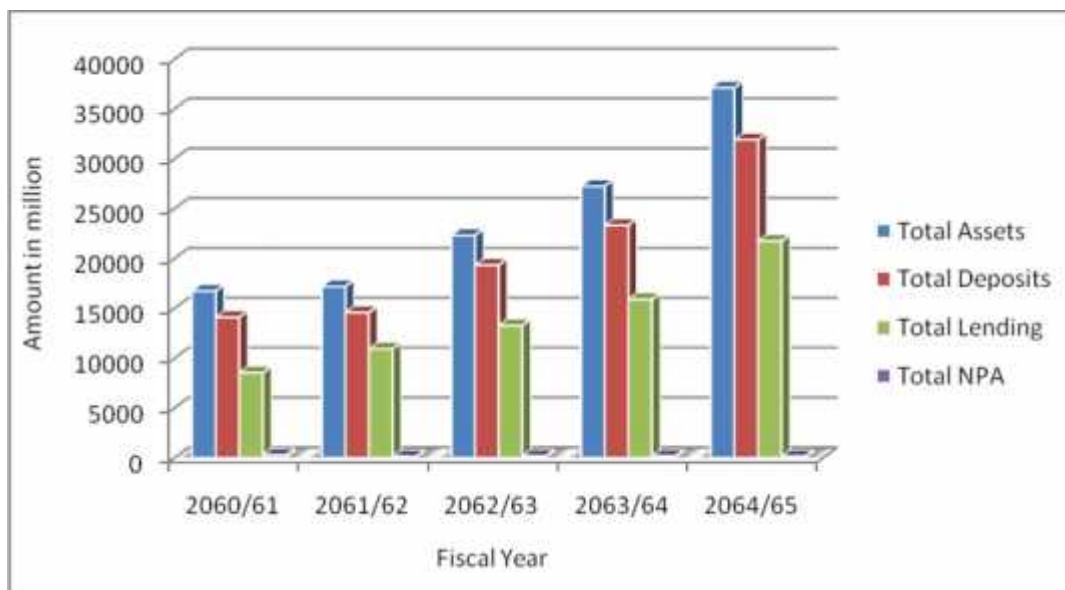
<b>Fiscal Year</b>	<b>Total Assets</b>	<b>Total Deposits</b>	<b>Total Lending</b>	<b>Total NPA</b>
2060/61	16745	14119	8549	286
2061/62	17186	14586	10946	144
2062/63	22330	19347	13278	183
2063/64	27253	23342	15903	178
2064/65	37133	31915	21759	161

*Source: Annual Reports of FY 2060/61-2064/65*

From the above table, we can clearly find that the total assets of the bank have followed increasing trend. The total asset of the bank is Rs. 16,745 millions in FY 2060/61 which has increased to Rs. 37,133 millions in FY 2064/65 showing the increasing trend. The total deposit is, as it has increased from Rs. 14,119 million in the FY 2060/61 to Rs. 31,915 million in the FY 2064/65. Similarly, total lending is also increasing, which has increased from Rs. 8,549 million in year 2060/61 to Rs. 21,759 million in FY 2064/65. The total Non-Performing Assets decreasing each year, except in FY 2062/63 as compared to its previous year which is Rs. 183 million. Total NPA of the bank was Rs. 286 million in FY 2060/61 and it is Rs. 161 million which shows the decreasing trend of it.

Figure 4.2

## Graphical Representation of TA, TD, TL and TNPA



It is clear from the above diagram that the bank efforts of reducing the NPA from the total lending has is satisfactory. Level of NPA is diminishing each year; where as the total lending is in increasing trend. The total assets have also followed similar trend in all the years. In case of total deposits, it is clear from the diagram that it in increasing trend.

Table 4.3

## Net Profit and Total NPA

(in million)

Fiscal Year	Net Profit	Total NPA
2060/61	455	287
2061/62	519	145
2062/63	635	183
2063/64	674	178

2064/65	746	161
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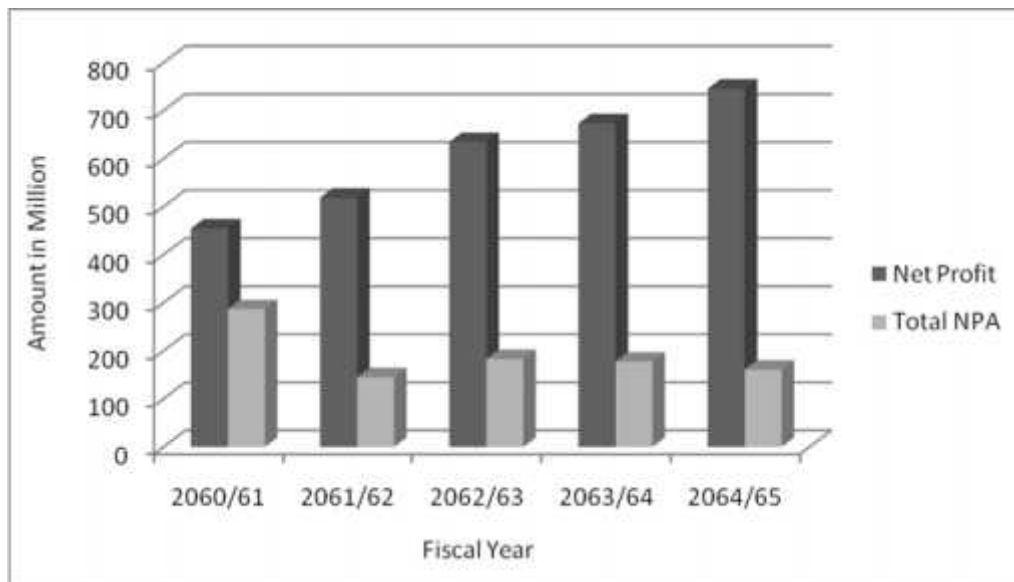
Source: Annual Reports of FY 2060/61-2064/65

From the above table, it is clear that the net profit is Rs. 455 million in the FY 2060/061, which has increased to Rs. 746 million in FY 2064/65.

Similarly, the total NPA of the bank also following a good trend, as it has been Rs. 287 million in the FY 2060/61, which has decreased to Rs. 161 millin in the FY 2064/65.

**Figure 4.3**

**Graphical Representation of Net Profit and TNPA**



The above diagram shows that the total profit is at a good level and it is in increasing trend, but where as the NPA is decreasing except in FY 2062/63 which is slightly increased as compared to its previous year. It shows that the workout of the bank in managing the NPA is satisfactory.

**b) Standard Chartered Bank Nepal Limited**

**Table 4.4**

**Relation between NPA, Net Profit, Total Lending and Total Deposits**

<b>Ratios/Year</b>	<b>2060/61</b>	<b>2061/62</b>	<b>2062/63</b>	<b>2063/64</b>	<b>2064/65</b>
NPA to Total Lending Ratio	3.77	2.69	2.13	1.83	0.92
Total Lending to Total Deposits Ratio	31.63	43.55	39.92	43.78	46.95
Net Profit to Total Assets Ratio	2.28	2.46	2.56	2.42	2.46

*Source: Annual Reports of FY 2060/61 - 2064/65*

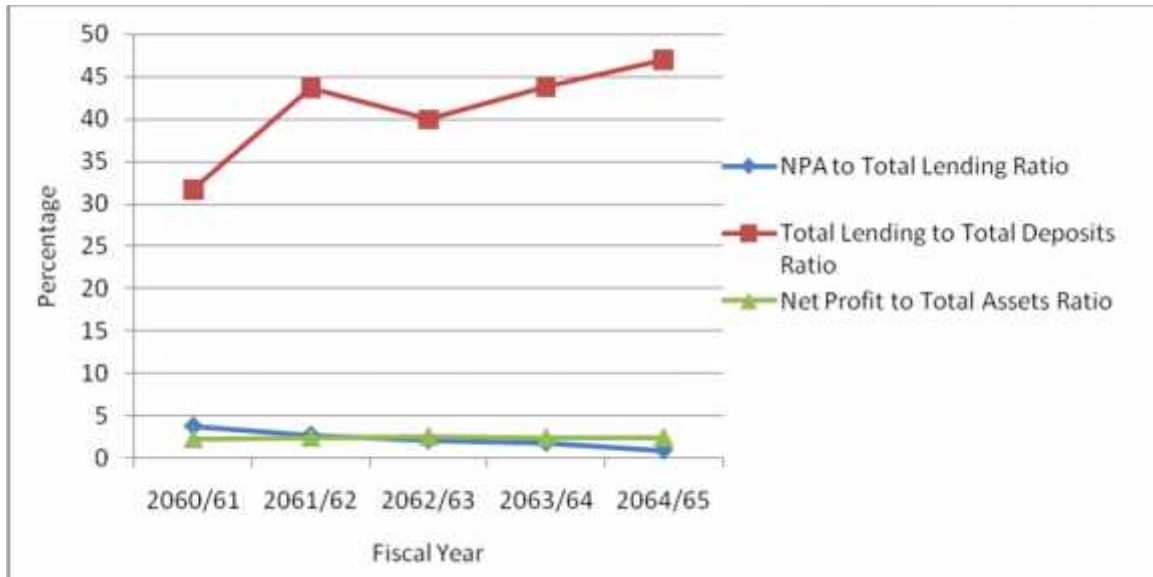
The above table clearly shows that the NPA to the total lending ratio is following the decreasing trend which is 3.77 % in FY 2060/61 and decreased to 0.92% in the FY 2064/65

The total lending to total deposit ratio is satisfactory. It has followed the increasing trend except in the FY 2062/63, which is slightly decreased as compared to the preceding year. In FY 2060/61 it is at 31.63 %, which is increased to 46.95% in the FY 2064/65.

Similarly, the net profit to the total assets ratio is also increasing except in FY 2063/64 which was slightly decreased to 2.42% as compared to previous year which was 2.56 %. It is 2.28% in the FY 2060/61 and increased to 2.46% in FY 2064/65.

Figure 4.4

## Trend Analysis of Level of NPA, ROA &amp; Loan-Deposit Ratio



The above diagram shows that the NPA to total lending ratio is in decreasing trend, which indicates the effectiveness in the management of the NPA. It is decreased from 3.77% in the FY 2060/61 to 0.92% in the FY 2064/65.

The total lending to total Deposits ratio is also in the increasing trend. It is gradually increased in the five year period, except in the FY 2062/63 which is slightly decreased as compared to its previous year.

The net profit to the total assets ratio has also followed the increasing trend. It is around 2.28% in the FY 2060/61, which has increased in the following years, showing the improvement in the profit of the bank.

**Table 4.5****Total Assets, Total Deposits, Total Lending and Total NPA**

(in million)

Fiscal Year	Total Assets	Total Deposits	Total Lending	Total NPA
2060/61	23,642	21,161	6,694	252
2061/62	21,894	19,335	8,421	226
2062/63	25,776	23,061	9,206	195
2063/64	28,597	24,647	10,790	197
2064/65	33,336	29,744	13,964	129

*Source: Annual Reports of FY 2060/61-2064/65*

As seen from above table that in the FY 2060/61, the total asset is Rs. 23,642 million, which has decreased in the FY 2061/62 to Rs. 21,894 million, and after that it is gradually increased and reached to Rs. 33,336 million in FY 2064/65. This shows that the total asset of the bank is increased in a significant manner.

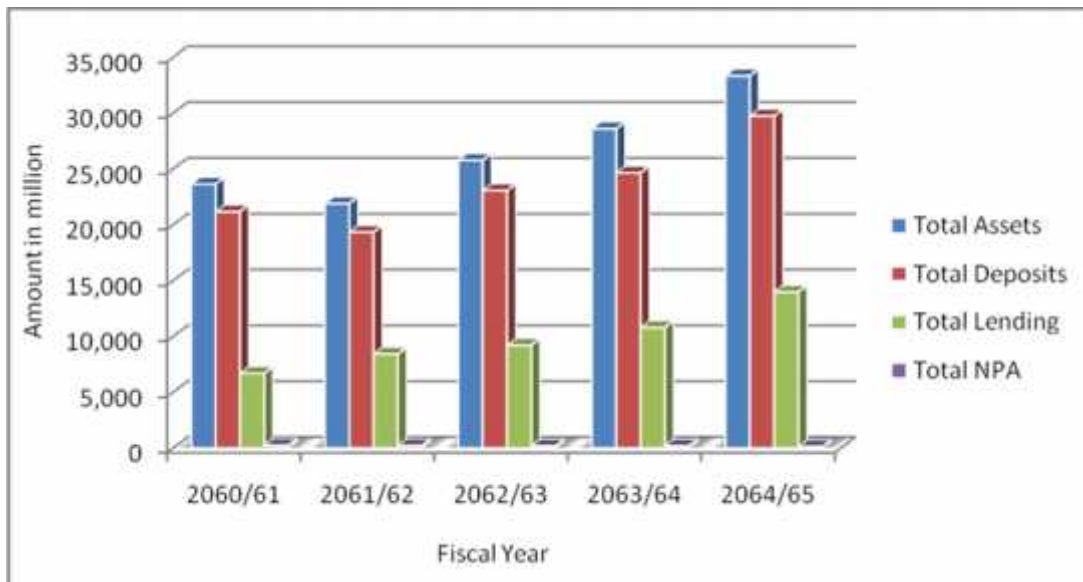
The total deposit in the first year of the study is Rs. 21,161 million which is slightly decreased in the following year to Rs 19,335 million. But the year after that it has followed the increasing trend and it became Rs. 29,744 million in the FY 2064/65, which shows a positive attitude of the customers towards the bank.

Similarly, the total lending of the bank is Rs. 6,694 million in the FY 2060/61 which has gradually increased the following years. The total lending of the bank is Rs. 13,964 million in the FY 2064/65.

The total Non-Performing Assets has decreased each year, except in FY 2063/64 which has increased as compared to its previous year, which is Rs. 197 million. Total NPA of the bank was Rs. 252 million in the FY 2060/61 and it is Rs. 129 million in FY 2064/65. This shows the decreasing trend of it.

**Figure 4.5**

**Graphical Representation of TA, TD, TL and TNPA**



The above figure shows that the total assets, total deposits and total lending of the bank are in increasing trends during the five FY of study period. Except in the FY 2061/62 the total assets and total deposit is slightly decreased as compared to its previous year.

On the other hand total NPA of the bank is in decreasing trend, which shows the bank has maintained its effectiveness in maintaining its NPA level.



**Table 4.6**  
**Net Profit and Total NPA**

(in million)

<b>Fiscal Year</b>	<b>Net Profit</b>	<b>Total NPA</b>
2060/61	538	252
2061/62	539	226
2062/63	659	196
2063/64	692	197
2064/65	819	129

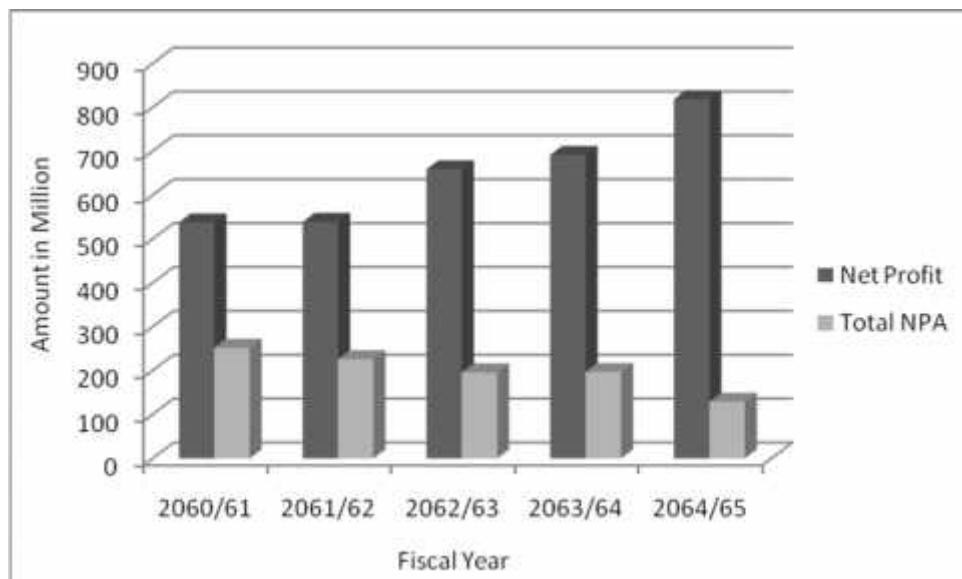
*Source: Annual Reports of FY 2060/61-2064/65*

The above table shows the relationship between the net profit and the total Non-Performing Assets. In the FY 2060/61 the net profit is Rs. 538 million and it increased to Rs. 539 million in the following year. By further increment in the net profit, in the third year of the study, it became Rs. 659 million in the FY 2062/63. It is increased to Rs. 819 million in the FY 2064/65.

Similarly the total NPA is has followed decreasing trend. It was Rs. 252 million in FY 2060/61, but in FY 2063/64 it is Rs. 197 million which has slightly increased as compared to its previous year, but after that it has again decreased and became Rs. 129 million in the FY 2064/65.

Figure 4.6

## Graphical Representation of Net Profit and TNPA



The above diagram shows that the total profit is in good level and it is in increasing trend, but whereas the NPA is decreasing trend, except in FY 2063/64 which has slightly increased as compared to its previous year. This shows that the workout of the bank in managing the NPA is satisfactory. The NPA has become very low in the FY 2064/65.

## c) Himalayan Bank Limited

Table 4.7

## Relation between NPA, Net Profit, Total Lending and Total Deposits

Ratios/Year	2060/61	2061/62	2062/63	2063/64	2064/65
NPA to Total Lending Ratio	8.88	7.44	6.60	3.61	2.35
Total Lending to T Deposits Ratio	58.70	54.21	59.50	59.22	63.37
Net Profit to Total Assets Ratio	1.06	1.11	1.56	1.47	1.76

Source: Annual Reports of FY 2060/61-2064/65

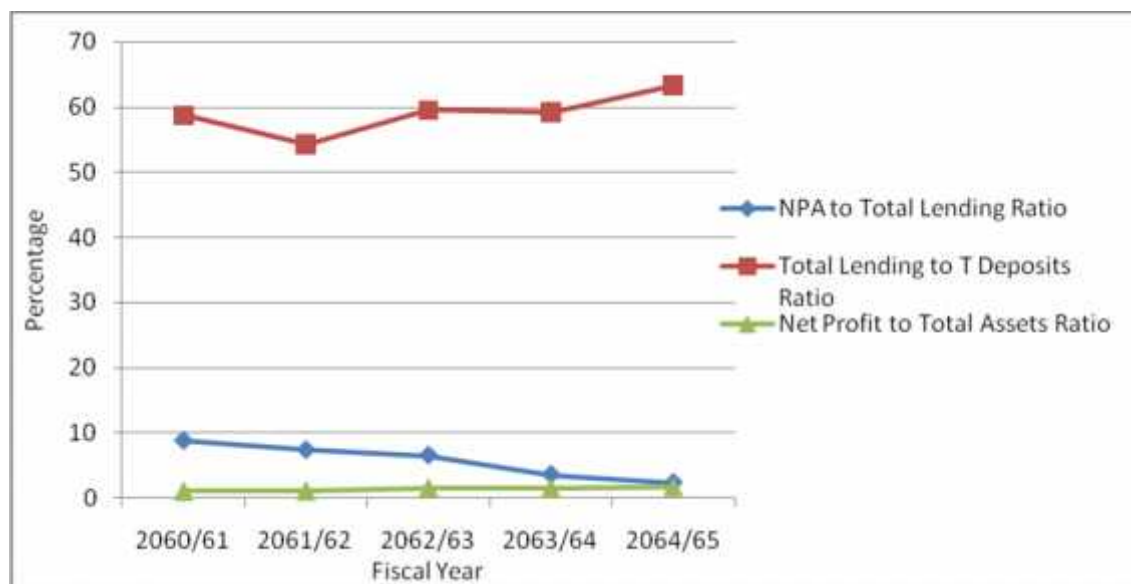
From the above table; it is clear that the Non-Performing Assets to total lending ratio of the bank had followed the decreasing trend. The NPA of the bank in FY 2060/61 is 8.88%, in the FY 2064/65, it has decreased to 2.35%.

The total lending to total deposits ratio in the FY 2060/61 is 58.70% and it is in increasing trend, except in year 2061/62 which was 54.21%, less than its previous year. At the end of FY 2064/65 it had increased to 63.37 %.

Similarly, the net profit to the total assets ratio is also increasing all of the years under the study. The ratio is 1.06% in FY 2060/61 which is increased to 1.11% in the FY following to that and had reached to 1.56% in FY 2062/63. But in FY 2063/64 it was 1.47% which is lower than its previous year, and in the year 2064/65 it again increased to 1.76%. This shows that the functioning of the organization is going well in this aspect.

**Figure 4.7**

**Trend Analysis of Level of NPA, ROA & Loan-Deposit Ratio**



From the above diagram, it is clearly seen that the NPA to total lending ratio is following the decreasing trend, which indicates the effectiveness in the management of the NPA of the bank. It had decreased from around 8.88% in the FY 2060/61 to around 2.35% in the FY 2064/65.

The total lending to total Deposits ratio had also followed the increasing trend. Except in the year 2061/62 it has gradually decreased as compared to its previous year, but the year after that it had again followed the increasing trend.

The net profit to the total assets ratio had also increased. It is at around 1.06% in the FY 2060/61, and had increased to 1.76% in the FY 2064/65. This shows the improvement in the profit of the bank.

**Table 4.8**

**Total Assets, Total Deposits, Total Lending and Total NPA**

(in million)

<b>Fiscal Year</b>	<b>Total Assets</b>	<b>Total Deposits</b>	<b>Total Lending</b>	<b>Total NPA</b>
2060/61	24817	22010	12920	1147
2061/62	27845	24814	13451	1001
2062/63	29460	26491	15762	1041
2063/64	33519	30048	17794	642
2064/65	36176	31843	20180	477

*Source: Annual Reports of FY 2060/61-2064/65.*

From the above table, we can see that the total assets of the bank had gradually increased over the years. In the FY 2060/61, it is Rs. 24,817 million, which has followed the increasing trend and had reached to Rs. 36,176 million in the FY 2064/65.

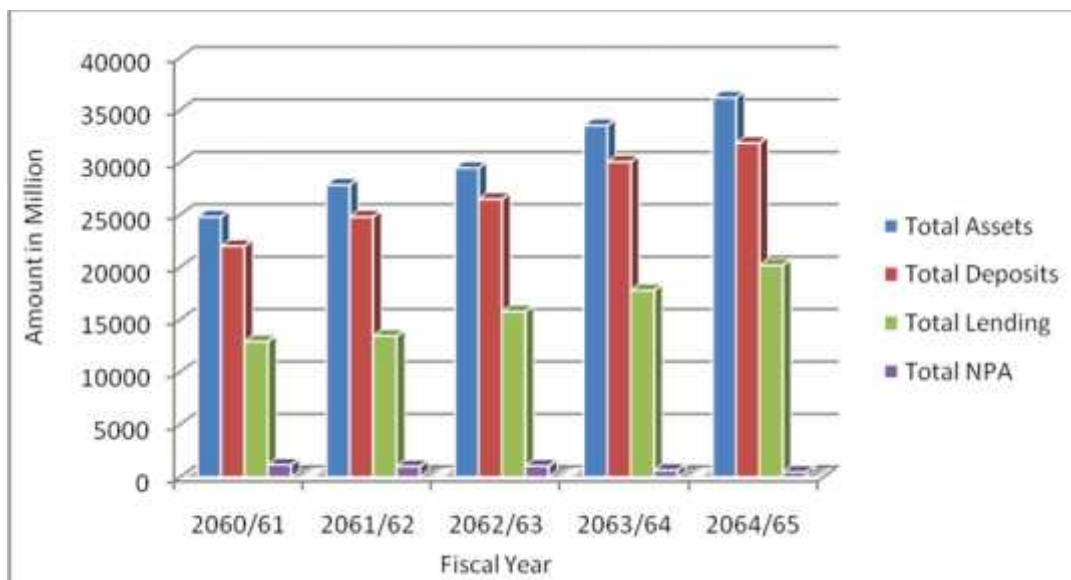
The total deposit of the bank had also followed the increasing trend as that of total assets. In the FY 2060/61, it is Rs. 22,010 million which increased till the FY 2064/65 and became Rs. 31,843 million, showing a good trend of increment in overall.

The total lending of the bank is also found to be following the same track. In the FY 2060/61 it is Rs. 12,920 million and it had followed the increasing trend and had reached to Rs. 20,180 million in the FY 2064/65.

The total Non-Performing Assets had decreased in each year, except in FY 2062/63 as compare to its previous year which was Rs. 1,041 million. Total NPA of the bank was Rs. 1,147 million in FY 2060/61 and it is Rs. 477 million which indicate the decreasing trend during the study period.

**Figure 4.8**

**Graphical Representation of TA, TD, TL and TNPA**



The above diagram shows that the relationship between the total assets, total deposits, totals lending and the total NPA of the bank. We can find from the above diagram that

total asset, total deposit and total lending had followed increasing trend, where as total NPA had followed decreasing trend except in the FY 2062/63 which has slightly increased as compared to its previous year.

**Table 4.9**  
**Net Profit and Total NPA**

(in million)

<b>Fiscal Year</b>	<b>Net Profit</b>	<b>Total NPA</b>
2060/61	263	1147
2061/62	308	1001
2062/63	457	1041
2063/64	492	642
2064/65	636	477

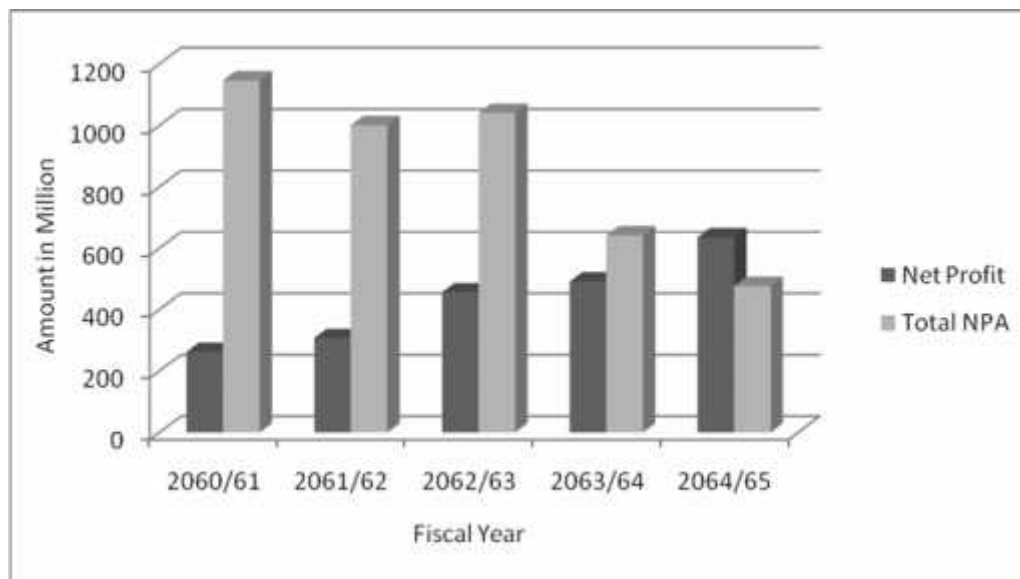
*Source: Annual Reports of FY 2060/61-2064/65.*

Form the above table; we can see that the net profit of the bank had followed a increasing trend. In the FY 2060/61 it is Rs. 263 million, which had increased in the following year and had reached to Rs. 636 million in the FY 2064/65, which shows that the bank is maintaining its standard over the years.

The total NPA of the bank in the FY 2060/61 is Rs. 1147 million, which had gone down the year following to that. In the FY 2064/65 it had reached to Rs. 477 million. This shows that the bank's effort in management of the NPA has proved to be efficient.

Figure 4.9

## Graphical Representation of Net Profit and TNPA



The above table shows that the total NPA is above the net profit throughout the study period except in the FY 2064/65. It is also seen that the NPA had followed the decreasing trend except in the year 2062/63, which had slightly increased as compared to its previous year and the net profit goes on increasing over the same period and at the FY 2064/65 it had reached over 636 million.

## d) Nepal Investment Bank

Table 4.10

## Relation between NPA, Net profit, Total Lending and Total Deposits

Ratios/Year	2060/61	2061/62	2062/63	2063/64	2064/65
NPA to Total Lending Ratio	2.47	2.69	2.07	2.37	1.12
Total Lending to T Deposits Ratio	63.68	73.34	69.63	72.56	79.91
Net Profit to Total Assets Ratio	1.15	1.43	1.64	1.82	1.79

Source: Annual Reports FY 2060/61-2064/65

From the above table we can see that the level of NPA i.e. the NPA to the total lending ratio is decreased over the five years time, except in the FY 2063/64 which is slightly increased to 2.37% as compared to its previous year. In the FY 2060/61 it was 2.47%, it has decreased to 1.12% till the year of 2064/65. This shows the efficiency of the bank to manage the NPA, as the lower level of NPA is desirable to the individual banks.

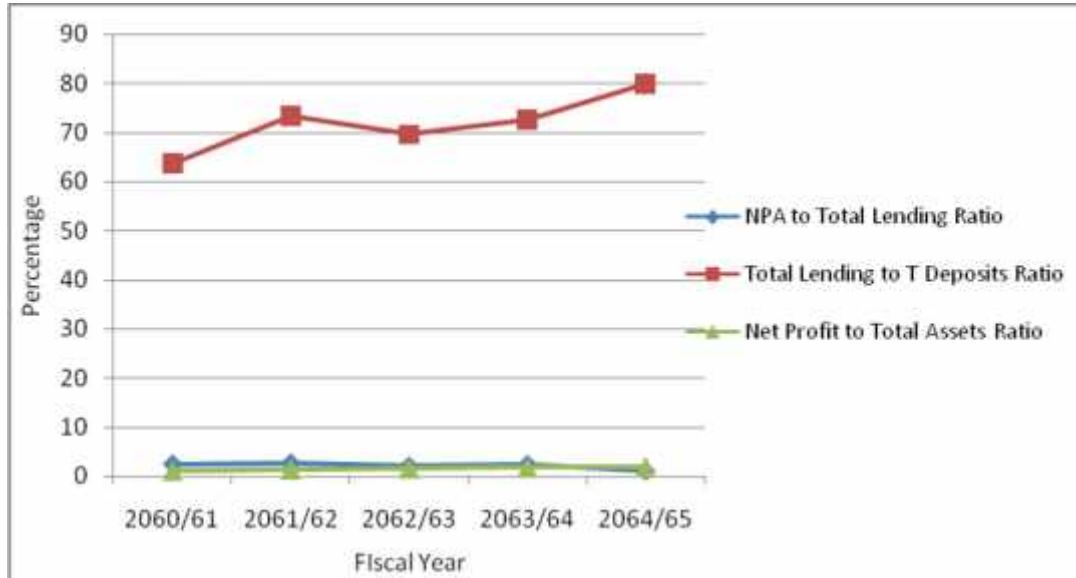
The total lending to the total deposits ratio had increased over the five years time. In the FY 2060/61 it was 63.68%, which is increased to 73.34% in the following year. The ratio had followed a good trend of increment; it was 79.91% in the FY 2064/65. But in the year 2062/63 it is slightly decreased to 69.63% as compared to its previous year. But the overall trend of the ratio had followed the increasing trend. This shows the efficiency of the bank in the expansion of total lending, which is always desirable by the bank and the Nepal Invest Bank is able to maintain it.

Similarly, the net profit to the total assets ratio is increased at the end of the study period of five years. In the FY 2060/61 the ratio is 1.15%, the ratio is 1.79% for the FY 2061/62. This shows that the bank is able to increase its profit over the years, which is desirable for the banks.



Figure 4.10

## Trend Analysis of Level of NPA, ROA &amp; Loan-Deposit Ratio



The above figure clearly shows the NPA to the total lending ratio had decreased over the five year period and had remain to its minimal position. The total lending to total deposits ratio is observed to be increased over the years except in FY 2062/63, which is lower than the previous year 2061/62. Similarly, the net profit to the total assets ratio had also increased over the years, it is 1.79% in the year 2064/65, which shows a good management of the bank.

**Table 4.11**  
**Total Assets, Total Deposits, Total Lending and Total NPA**

(in million)

<b>Fiscal Year</b>	<b>Total Assets</b>	<b>Total Deposits</b>	<b>Total Lending</b>	<b>Total NPA</b>
2060/61	13255	11525	7339	181
2061/62	16274	14255	10454	281
2062/63	21330	18927	13178	272
2063/64	27591	24489	17770	422
2064/65	38873	34452	27529	310

*Source: Annual Reports of FY 2060/61-2064/65*

Form the above table above; it is seen that the total asset of the bank in FY 2060/61 is Rs. 13,255 million which had increased in the following years tilt the FY 2064/65. In the FY 2062/63 it is Rs. 21,330 million and in the FY 2064/65 the amount had increased to Rs. 38,873 million, showing an increasing trend all of the years under the study.

On the other hand the total deposit of the bank in the FY 2060/61 is Rs. 11,524 million, which is again increased in the following FY. It had also is followed the increasing trend as that of total assets. In the FY 2062/63 it is Rs. 18,927 million and had reached to Rs. 34,452 million in the FY 2061/62.

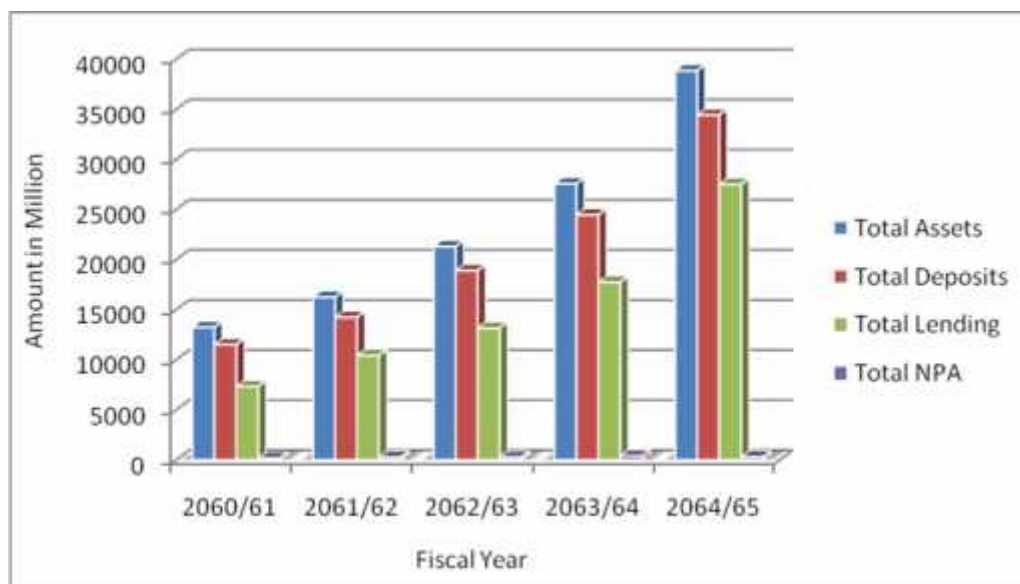
The total lending of the bank in the FY 2060/61 is Rs. 7,339 million, which had followed the increasing trend to all the years under the study. In the FY 2062/63 it is Rs. 13,178 million and in the FY 2064/65, the same for the Nepal Investment Bank is Rs. 27,529

million showing the increasing trend of the total lending, the efficiency of the management is also reflected from the lending of the commercial bank.

As for the total NPA of the bank, it had followed increasing trend. The total NPA of the bank in FY 2060/61 is Rs. 181 million and had increased to Rs. 422 million in FY 2063/64. But in the year 2064/65 it had slightly decreased to Rs. 310 million as compared to its previous year.

**Figure 4.11**

**Graphical Representation of TA, TD, TL and TNPA**



The above diagram clearly shows that all the variables shown in the diagram had gone well except total NPA. Total assets, total lending, total deposits are increased each year in a significant manner, and the total NPA is also increased, except for the year 2064/65 it is had decreased in comparison to its previous year.

**Table 4.12**  
**Net Profit and Total NPA**

(in million)

<b>Fiscal Year</b>	<b>Net Profit</b>	<b>Total NPA</b>
2060/61	153	181
2061/62	232	281
2062/63	351	272
2063/64	501	422
2064/65	697	309

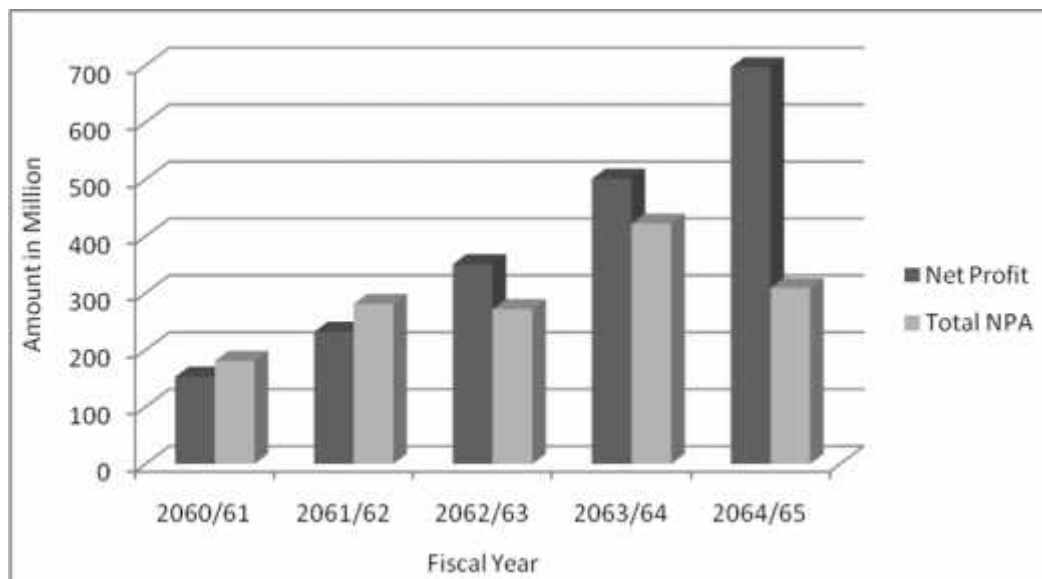
*Source: Annual Reports of FY 2060/61-2064/65*

The above table shows that the net profit of the bank in the FY 2060/61 is Rs. 153 million, which had followed an increasing trend till FY 2064/65. It is Rs. 351 million in the FY 2062/63 and had reached to Rs. 697 in the FY 2064/65, showing an efficiency of the bank in generating the profit.

Similarly the total NPA of the bank for the FY 2060/61 is Rs. 181 million, which is increased to Rs. 422 million in the FY 2063/64. It is then in the FY 2064/65 which decreased and reached to Rs. 309 million, which shows a fluctuation in the increment.

Figure 4.12

## Graphical Representation of Net Profit and TNPA



The above figure shows that the net profit of the bank had followed the increasing trend whereas NPA of the bank had shown the fluctuation nature. In the 2060/61 and 2061/62 the NPA of the bank is greater than the net profit and in the other years the total NPA has remained below the net profit. This shows the management is able to minimize the NPA of the bank later years.

## e) Bank of Kathmandu

Table 4.13

## Relation between NPA, Net Profit, Total Lending and Total Deposits

Ratios/Year	2060/61	2061/62	2062/63	2063/64	2064/65
NPA to Total Lending Ratio	6.66	4.99	2.72	2.51	1.76
Total Lending to T Deposits Ratio	77.61	69.13	71.42	78.25	80.51
Net Profit to Total Assets Ratio	1.34	1.42	1.65	1.80	2.04

Source: Annual Reports of FY 2060/61-2064/65.

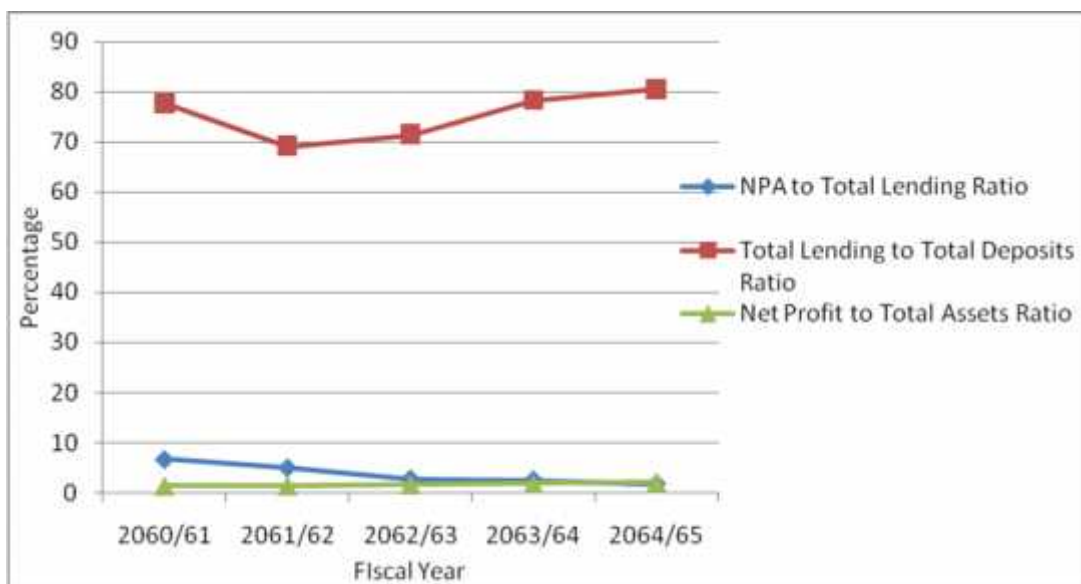
The above table shows that the NPA to the total lending ratio of the bank in the FY 2060/61 is 6.66% which had decreased each year and had reached to 4.99% in the following year and had reached to 1.76% in the FY 2064/65.

The total lending to total deposits ratio had fluctuated over the different years covered by the study. In the FY 2060/61 it is 77.61% and which had decreased in the following year and had reached to 69.13% and it is 71.42 % in the FY 2062/63 and finally reached to 80.51% in the FY 2064/65.

The net profit to the total assets ratio had increased over the years under the study. The ratio is 1.34% in the FY 2060/61 which had increased to 1.42% in the following year. The ratio is at 2.04% in the FY 2064/65.

**Figure 4.13**

**Trend Analysis of Level of NPA, ROA & Loan-Deposit Ratio**



The above table shows that the total lending to total deposit ratio had fluctuated since FY 2060/61 till FY 2064/65, but it is around 70% in all of the years under study, which is not satisfactory. On the other hand the NPA to the lending ratio is decreasing during the period of study and the net profit of the bank had followed the increasing trend over the study period, showing the good sign for the bank.

**Table 4.14**

**Total Assets, Total Deposits, Total Lending and Total NPA**

(in million)

<b>Fiscal Year</b>	<b>Total Assets</b>	<b>Total Deposits</b>	<b>Total Lending</b>	<b>Total NPA</b>
2060/61	9496	7742	6008	400
2061/62	9857	8943	6182	309
2062/63	12278	10485	7489	204
2063/64	14570	12389	9694	243
2064/65	17722	15833	12748	237

*Source: Annual Reports of FY 2060/61-2064/65*

The above table shows that the total assets of the bank had followed the increasing trend overall during the study period. In the FY 2060/61, the total assets is Rs. 9,496 million and which is increased to Rs. 12,278 million in the FY 2062/63 and had reached to Rs. 17,722 in the FY 2064/65, showing an increment and the efficiency of the organization in maximizing the wealth of the owner of the bank.

The total deposits of the bank had also followed the same track as the total assets. The total deposits had also increased over these years. In the FY 2060/61 it is Rs. 7,742

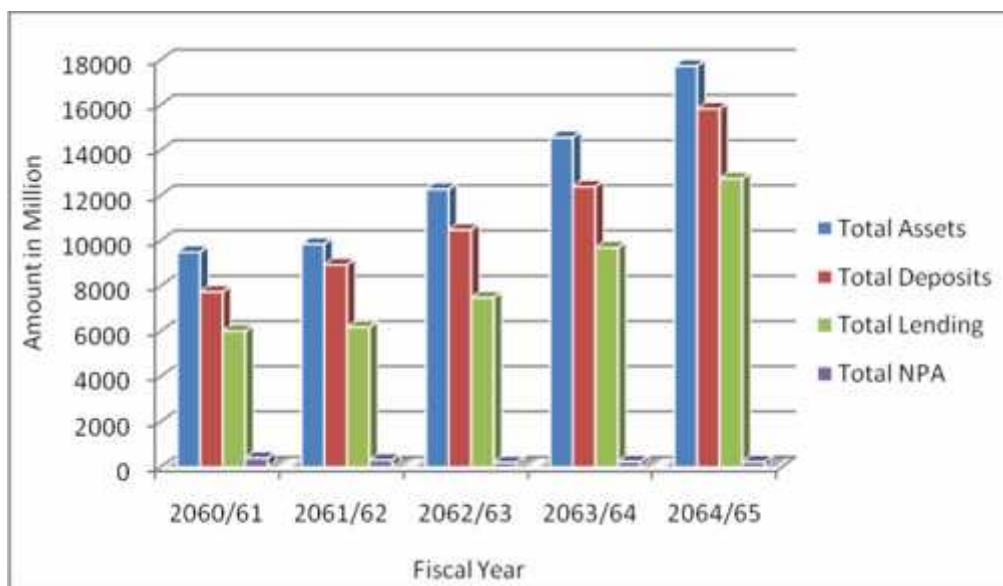
million and is increased to Rs. 8,943 million in the following year. It had reached to Rs. 15,833 million in the FY 2064/65 following an increasing trend all the way from FY 2060/61 to 2064/65.

In the FY 2060/61 the total lending of the bank is Rs. 6,008 million and it is increased to Rs. 6,182 million in the FY 2062/63 and it is increased all the way during five years time and had reached to Rs. 12,748 million in the FY 2064/65.

Similarly, the case of the total Non-Performing Assets has a little bit different from that of the above variables. The NPA of the bank for the FY 2060/61 is Rs. 400 million, whereas the NPA of the bank in FY 2062/63 is decreased to Rs. 204 million, which is then increased to Rs. 243 million in the following year to that, and had remained at Rs. 237 million in FY 2064/65.

**Figure 4.14**

**Graphical Representation of TA, TD, TL and TNPA**





The above diagram shows that all the variables had increased except that of the total NPA, which had followed decreasing trend. The total NPA is drastically decreased in FY 2064/65 as compared to the FY 2060/61. From this it can be traced out that the level of NPA is very low in comparison to the total lending of the bank.

**Table 4.15**

**Net Profit and Total NPA**

(in million)

<b>Fiscal Year</b>	<b>Net Profit</b>	<b>Total NPA</b>
2060/61	127	400
2061/62	140	309
2062/63	202	204
2063/64	262	243
2064/65	361	237

*Source: Annual Reports of FY 2060/61-2064/65.*

The above table shows the relationship between the total Non-Performing Assets and the net profit of the bank over the five years of time starting from the FY 2060/61 to 2064/65.

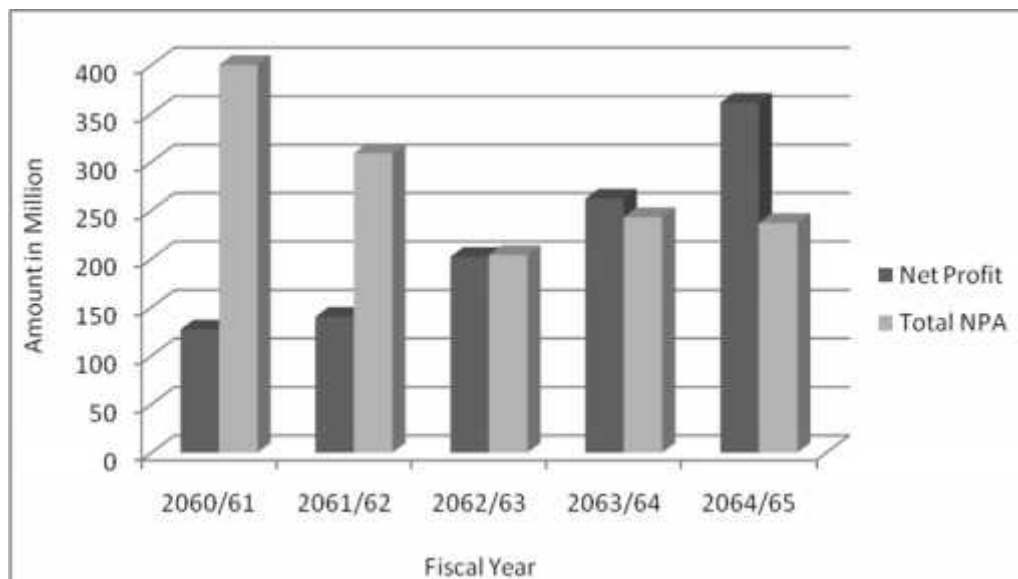
The net profit of the bank for FY 2060/61 is Rs. 127 million, which is increased to Rs. 140 million in the following year, and it had reached to Rs. 361 million in FY 2064/65.

Similarly, in the case of the total Non-Performing Assets is a little bit different. The NPA of the bank for FY 2060/61 is Rs. 400 and the NPA of the bank in FY 2061/62 is Rs. 309 million, which is again decreased to Rs. 203 million in the following year to that. But in the FY 2063/64 it has been increased to Rs. 243 million which is again decreased to Rs. 237 in FY 2064/65.



Figure 4.15

## Graphical Representation of Net Profit and TNPA



From the above figure we can see that the total NPA of the bank is fluctuating all over the study period, where as the net profit had followed the increasing trend. In the FY 2060/61 to FY 2062/63 it is more than the net profit and after that the bank had managed to keep it under its net profit but even though the health of total NPA is found bad.

## f) Nepal Bangladesh Bank Limited

Table 4.16

## Relation between NPA, Net Profit, Total Lending and Total Deposits

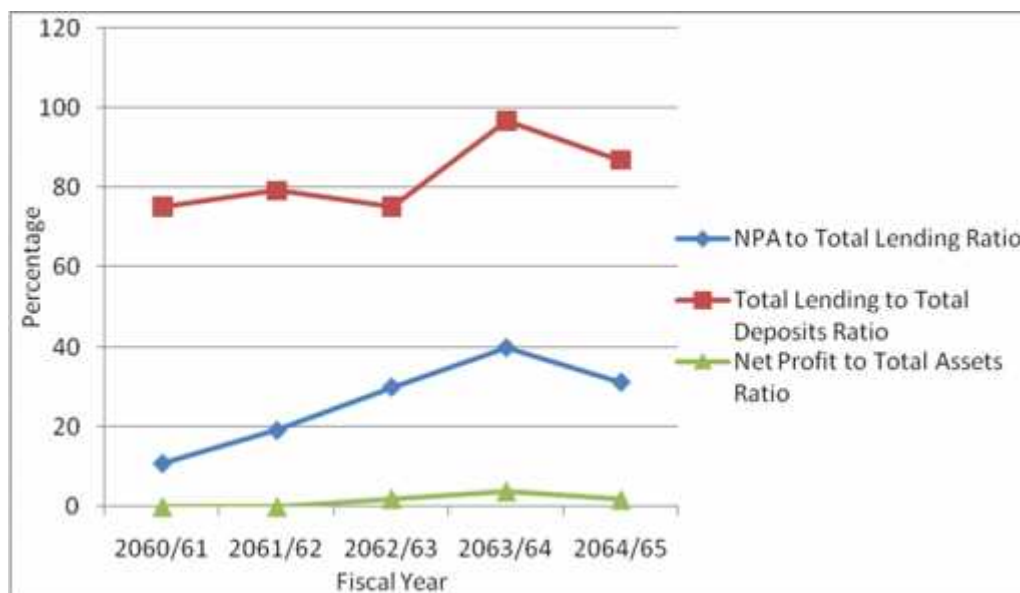
Ratios/Year	2060/61	2061/62	2062/63	2063/64	2064/65
NPA to Total Lending Ratio	10.80	19.04	29.88	39.76	31.10
Total Lending to Total Deposits Ratio	75.31	79.39	75.27	96.89	87.01
Net Profit to Total Assets Ratio	0.02	0.00	2.01	3.88	1.80

Source: Annual Reports of FY 2060/61-2064/65

The above table shows that the total Non-Performing Assets to total lending ratio is 10.80% in FY 2060/61 and it had increased during the following years. In the FY 2061/62 it became 19.04% and increased till the FY 2063/64 to 39.76% and it has slightly decreased to 31.10% in the FY 2064/65.

But as in the case of total lending to the total deposits ratio it had fluctuated throughout the five FY from 2060/61 to 2064/65. In the FY 2060/61 it is 75.31 %, which is increased to 79.39 % in the FY 2061/62, and after that it is decreased to 75.27% in FY 2062/63 and increased to 96.89% in the FY 2063/64 and which again decreased to 87.01% in the FY 2064/65.

The net profit to the total assets ratio had also fluctuated through the five year since FY 2060/61 to FY 2064/65. In the FY 2060/61 it is 0.02% which even became 0% in the FY 2061/62, this shows an ineffectiveness of the organization to maintain its profit level, but however after that the bank managed to increase its performance in the following year as shown by the ratio which reached to 2.01% in the FY 2062/63, in FY 2063/64 it has again increased to 3.88%, but the year after that it has again decreased to 0.80% in FY 2064/65.

**Figure 4.16****Trend Analysis of Level of NPA, ROA & Loan-Deposit Ratio**

Form the above figure it is clearly seen that the NPA to total lending ratio is increased over the study period, but whereas total lending to total deposit ratio and net profit to total ratio had found to be fluctuated. For total lending to total deposit ratio it had remained less in the FY 2062/63, but for net profit to total asset ratio it is reached zero in the FY 2061/64, which indicated the bank's inefficiency in maintain its profit level.

**Table 4.17****Total Assets, Total Deposits, Total Lending and Total NPA**

(in million)

<b>Fiscal Year</b>	<b>Total Assets</b>	<b>Total Deposits</b>	<b>Total Lending</b>	<b>Total NPA</b>
2060/61	14256	12807	9645	1042
2061/62	13277	12126	9627	1833
2062/63	14482	13015	9796	2927
2063/64	10118	9464	9169	3646
2064/65	10010	10883	9470	2945

Source: Annual Reports of FY 2060/61-2064/65

The above table shows the relationship of the total assets, total deposits, total lending, and total NPA. The total asset of the bank is decreased over the years. It is Rs. 1,426 million in the FY 2060/61 which is gradually decreased to Rs. 13,277 million in the following year. But in the FY 2062/63 it is slightly increased to Rs. 14,482 million as compared to its previous year showing some sign of improvement, but however the year following that it has again started to decrease, which finally reached to Rs. 10,010 million FY 2064/65.

The total deposits of the bank are fluctuated over the FY during the study period. It is Rs. 12,807 million in the FY 2060/61 which is decreased to Rs. 12,126 million in the following year. But in FY 2062/63 it is slightly increased to Rs. 13,015 million which is again decreased in the FY 2063/64 to Rs. 9,464 million and finally it reached to Rs. 10,883 million in the FY 2064/65.

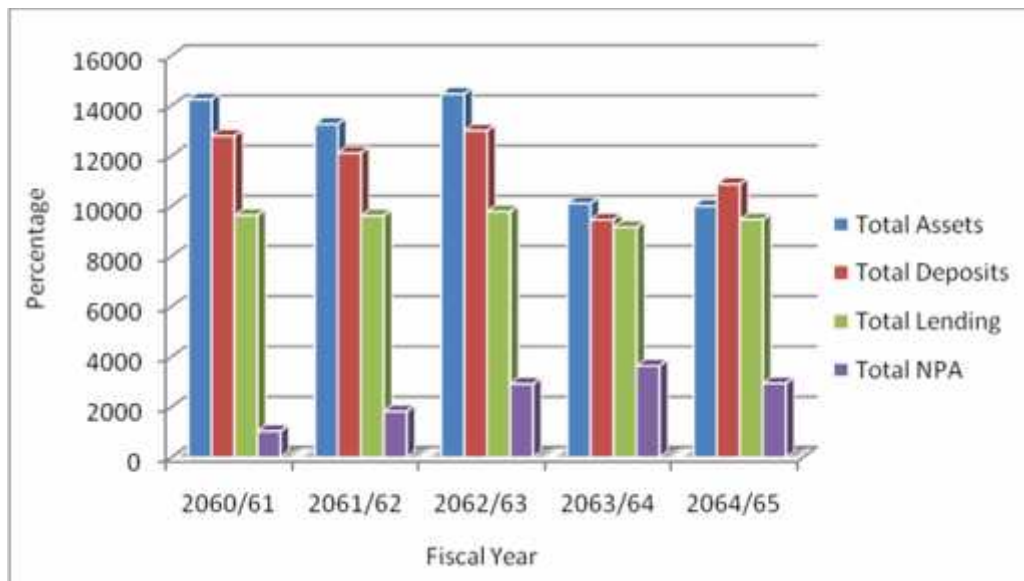
The total lending of the bank had also shown the fluctuating trends as its total deposits. It is Rs. 9,645 million in the FY 2060/61 which has slightly decreased to Rs. 9,627 million in the following year, thereafter reaching to Rs. 9,796 million in the FY 2062/63. In the FY 2063/64 it has again decreased to Rs. 9,169 million and increased to Rs. 9,470 million in the FY 2064/65. It is seen by this observation that the bank is showing its effectiveness in controlling its total lending.

Similarly, the Non-Performing Assets are increased over the years under the study. In the FY 2060/61 it is Rs. 1,042 million, which is increased to Rs. 2,927 million in FY 2061/62 and reached up to Rs. 3,646 million thousands in the FY 2063/64. Except in the FY

2064/65 which has slightly decrease to Rs. 2,945 million as compared to its previous year, the overall total NPA of the bank had followed the increasing trends.

**Figure 4.17**

**Graphical Representation of TA, TD, TL and TNPA**



The above diagram clearly shows that the total assets, total deposits and the total lending have been fluctuating over the different years under the study, whereas the Non-Performing Assets of the bank are increasing during the same period except in the FY 2064/65 which is decreased in comparison to its previous year.

**Table 4.18**  
**Net Profit and Total NPA**

(in million)

<b>Fiscal Year</b>	<b>Net Profit</b>	<b>Total NPA</b>
2060/61	3	1042
2061/62	-----	1833
2062/63	292	2927
2063/64	393	3646
2064/65	800	2945

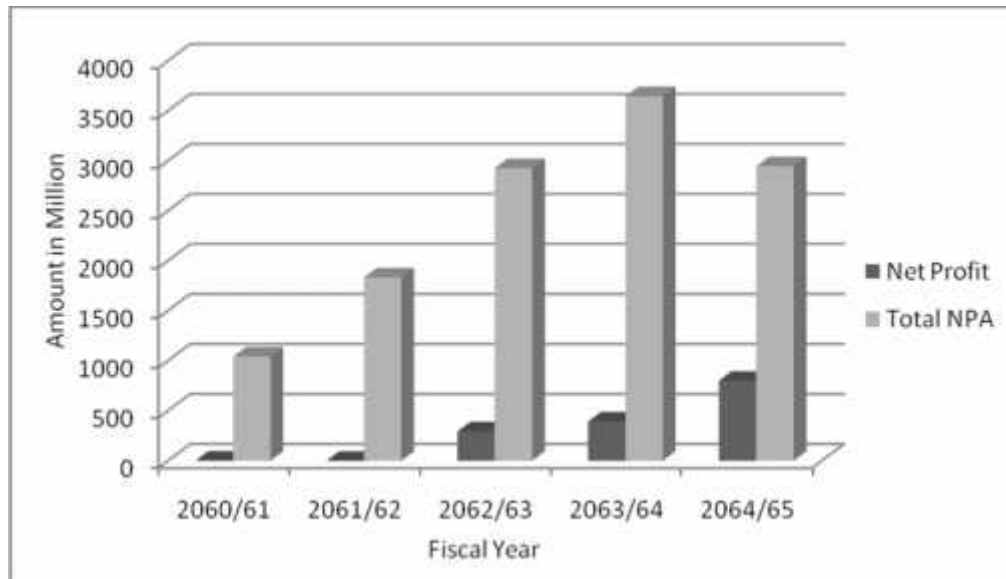
*Source: Annual Reports of FY 2060/61-2064/65*

The above table shows that the net profit of the bank had followed the fluctuating trend over all the five FY. In the FY 2060/61 it is Rs. 2 million, which fall to zero in the FY 2061/62. This shows the ineffectiveness of the bank on maintain its profit. But however it had increased to Rs. 292 million in FY 2062/63, showing the sign of improvement in the bank's working efficiency. And the years after that the net profit had followed increasing trends. The total NPA reached to Rs. 800 million in FY 2064/65.

Similarly, the NPA also fluctuated over the years under the study. In the FY 2060/61 it is Rs. 1,042 million, which increased to Rs. 3,646 million in FY 2063/64 and had again decreased in the next year to Rs. 2,945 million.



**Figure 4.18**  
**Graphical Representation of Net Profit and TNPA**



The above figure clearly shows that the net profit of the bank had increased over the years and the amount of Non-Performing Assets had followed the fluctuating trends. But however the bank has managed to keep it lower than its net profit.

#### 4.2 Correlation Analysis

Correlation Analysis is the statistical tool that can be used to describe the degree to which one variable is linearly related to other variable. Two or more variables are said to be correlated if change in the value of one variable appears to be related or linked with the change in the value of the other variable. Correlation is an analysis of the covariance between two or more variables and correlation analysis deals to determine the degree of relationship between two or more variables. It refers to the closeness of the relationship between the different variables. In the correlation analysis, only one variable is treated as the dependent variable and one or more variables are treated as independent.

Correlation Analysis generally used to describe the degree to which one variable is related to another, in statistics is used in order to depict the co-variance between two or more variables. It helps to determine whether

- ) A positive or negative relation exists
- ) The relation is significant or insignificant
- ) Establishes cause and effect relation if any.

The statistical tool, 'correlation analysis' is preferred in this study to identify the relationship between NPA and ROA and whether the relationship is significant or not. Here NPA denotes the percentage of NPA in total lending of the bank and ROA denotes the net profit as percentage of total assets of the bank.

**Table 4.19**

**Correlation between NPA and ROA of Sample Bank**

<b>Banks</b>	<b>Coefficient of correlation (r)</b>	<b>Relation ship</b>	<b>Coeff. Of Determination (r<sup>2</sup>)</b>	<b>Prob. Error (PE)</b>	<b>Significant/ Insignificant</b>
NABIL	0.38	Positive	0.14	0.2581	Insignificant
SCBNL	-0.62	Negative	0.39	0.1848	Insignificant
HBL	-0.86	Negative	0.73	0.0801	Significant
NIBL	-0.56	Negative	0.32	0.2055	Insignificant
BOK	-0.93	Negative	0.86	0.0416	Significant
NBBL	0.95	Positive	0.90	0.0307	Significant

*Source: Annex 1*

The above table is shows the correlation coefficient between the Non Performing Assets to the Return on Assets. The table shows that except NABIL and NBBL there is negative relationship between these two variables in other banks. The established theory also

states that the profit and the Non-Performing Assets also flow in the opposite directions. When the amount of NPA is lesser, profit is high and whenever the amount of NPA is more then profit goes on decreasing, which is truly explained by the above table.

HBL & BOK have the correlation coefficient of  $-0.86$  &  $-0.93$  which are categorized as having high degree of negative correlation. And 73% & 86% of the profitability is affected by the NPA to the respective banks and the rest are affected by the other factors. And the test so made for these two banks is significant as the correlation is greater than Probable Error [P.E.] multiplied by six times.

SCBNL and NIBL have the correlation coefficient of  $-0.62$  and  $-0.56$ , respectively which are categorized as having moderate degree of negative correlation. Only 39% and 32% of the relationship is affected by the NPA and the remaining 61% and 68% for the individual bank is affected by the other factors. Furthermore, the value of P.E. is 0.1848 and 0.2055 for each of the bank indicating an insignificant relationship between them.

Similarly, NABIL have the positive correlation of only 0.38. Only 14% in the relationship is affected by the NPA and remaining 86% of the change is by other factors. Since the P.E. for the bank is more than the 'r' it, too, is insignificant.

NBBL have a correlation coefficient 0.95. This shows that NBBL possess the highest degree of positive correlation. The table also indicates that 90% of the relationship is affected by its NPA where as remaining 10% of the change is caused by other factors. The observation is significant as the value of P.E is only 0.0307.

From the above calculations, we can conclude that the profitability of the individual bank is fully dependent in the Non-Performing Assets of the respective banks. Higher the NPA lower will be the net profit and vice-versa.

**Table 4.20**

**Correlation between Total Lending and NPA of Sample Banks**

Banks	Coefficient of correlation (r)	Relation ship	Coeff. Of Determination (r <sup>2</sup> )	Prob. Error (PE)	Significant/ Insignificant
NABIL	-0.56	Negative	0.31	0.2086	Insignificant
SCBNL	-0.98	Negative	0.95	0.0138	Insignificant
HBL	-0.94	Negative	0.89	0.0334	Insignificant
NIBL	0.56	Positive	0.31	0.2085	Insignificant
BOK	-0.58	Negative	0.34	0.1985	Insignificant
NBBL	-0.57	Negative	0.32	0.2045	Insignificant

*Source: Annex 2*

The table above presented shows the relationship between the total lending and the total NPA of the different commercial banks under study. It shows how much is NPA related with the lending of the bank. The table shows the correlation of the NABIL, BOK and NBBL to be -0.56, -0.58 and -0.57 respectively, a moderate degree negative correlation, meaning hereby, the negative relation between the two variables. This shows that whenever the total lending of the bank goes in increasing the NPA of the bank decreasing. But this particular factor affects the NPA of NABIL, BOK and NBBL only by 31%, 34% and 32 % and remaining 69%, 66% and 68% respectively is caused by the other factors. And it is insignificant as the probable error of the bank is less than correlation.

The above table also shows that the correlation of the SCBNL and HBL to be  $-0.98$  and  $-0.94$ , a high degree negative correlation. This shows that whenever the total lending of the bank goes in increasing the NPA of the bank decreasing. And this particular factor affects the NPA by 95% and 89% respectively and remaining 5% and 11% is caused by the other factors. It indicates insignificant result as the probable error of the bank is less than correlation.

Similarly, correlation of the NIBL and EBL has positive relation, having  $0.56$  &  $0.33$  respectively. This shows the positive relation between the total lending and the Non Performing Assets; i.e., whenever the total lending of the bank goes on increasing the total NPA of the bank is too goes on increasing. But only 31% and 11% respectively for the each bank is caused by this particular factor and the remaining 69% & 89% respectively is caused by the other factors. And the relation for the all these banks is insignificant, as the P.E. for each of the bank is less than the correlation.

**Table 4.20**

**Correlation Coefficient between NPA of Sample Bank and the Population**

<b>Banks</b>	<b>Coefficient of correlation (r)</b>	<b>Relation ship</b>	<b>Coeff. Of Determination (r<sup>2</sup>)</b>	<b>Prob. Error (PE)</b>	<b>Significant/ Insignificant</b>
NABIL	0.49	Positive	0.24	0.2302	Insignificant
SCBNL	0.99	Positive	0.97	0.0087	Significant
HBL	0.92	Positive	0.84	0.0480	Significant
NIBL	-0.50	Negative	0.25	0.2275	Insignificant
BOK	0.65	Positive	0.42	0.1752	Insignificant
NBBL	-0.67	Negative	0.45	0.1669	Insignificant

*Source: Annex 3*

The table above shows the relationship between the Non-Performing Assets of the sample Banks with that of the total population i.e. all the twenty five commercial banks of the industry. The theory suggests that whenever the NPA of the individual bank goes on increasing there will be corresponding movement in the NPA of the population too.

The correlation coefficient of the NABIL and BOK is 0.49 and 0.65 respectively meaning hereby, whenever the NPA of the population is increased, the NPA of the banks is also increased and vice-versa. But this change is caused only 24% and 42% respectively by the overstated factor and remaining 76% and 58% are caused by other factors.

The correlation coefficient of the SCBNL and HBL is 0.99 and 0.92 respectively, indication the banks having high degree of positive relation. This states that whenever the NPA of the population is increased, the NPA of the bank is also increased. And this change is caused by 97% and 84% respectively by the overstated factor and remaining is caused by other factors.

Similarly, the correlation of NIBL and NBBL are  $-0.50$  and  $-0.67$ , which are categorized as the having negative correlation. It explains that whenever the amount in the NPA of the population is decreased over the years, the amount of NPA of the individual sample banks has increased and vice-versa. But, this change is effected by 25% and 16% respectively only, and the remaining 75% and 84% are the cause of other factors for these banks.

### 4.3 Test of Hypothesis

The main objective of this test is to test the significance regarding the parameters of the population on the basis of sample drawn from the population. In this study the following hypothesis is set:

#### a. Test of hypothesis between NPA and Total Lending of the Banks:

Is there any significant relation between total lending of commercial banks and the amount of the Non-Performing Assets?

Null Hypothesis,  $H_0: \rho=0$ , i.e. there is not any significant relation between total lending of commercial banks and the amount of the Non-Performing Assets.

Alternative hypothesis,  $H_1: \rho \neq 0$ , i.e. there is significant relation between total lending of commercial bank and the amount of the Non-Performing Assets.

#### T-Test for Nabil Bank Limited:

Here using the notation often use in testing the hypothesis

Mean of NPA  $\bar{X} = 1.91$

Mean of Total Lending of the Bank  $\bar{Y} = 140.87$

$$S X \sqrt{\frac{(X - \bar{X})^2 \Gamma (Y - \bar{Y})^2}{n_1 \Gamma n_2 Z^2}} \quad X \sqrt{\frac{1.24 \Gamma 10335 .23}{5 \Gamma 5 Z^2}}$$

$$= 35.95$$

Then,

$$t = \frac{\bar{X} - \bar{Y}}{\sqrt{S^2 \left( \frac{1}{n_1} + \frac{1}{n_2} \right)}} = \frac{1.91 - 140.87}{\sqrt{35.95^2 \left( \frac{1}{5} + \frac{1}{5} \right)}} = -6.113$$

... / t / X 6.1128

Degree of freedom, d.f = n-1 = 5-1 = 4

Now the tabulated values of 't' at 5% level of significance and 4 degree of freedom, for two tailed test is 2.776

### Decision

Since the calculated value of 't' i.e. /t/ is more than tabulated value [6.1128 > 2.776], the relationship is significant and H1 is accepted. There is significant relationship between the amount of Non-Performing Assets of sample bank and its total lending.

The 't' value for all the banks is also higher than that given in the table; so, it is concluded that there is significant relationship between the amount of Non-Performing Assets of sample banks and its total lending (Source: Annex 4).

### b. Test of hypothesis between NPA of the Bank and the population:

Is there any significant relationship between the amount of Non-Performing Assets of sample banks and the population?



Null hypothesis,  $H_0: \rho=0$ , i.e. there is not any significant relationship between the amount of Non-Performing Assets of sample banks and the population.

Alternative hypothesis,  $H_1: \rho \neq 0$ , i.e. there is significant relationship between the amount of Non-Performing Assets of sample banks and the population.

### T-Test for Nabil Bank Limited

Here using the notation often use in testing the hypothesis:

Mean of NPA  $\bar{X} = 1.91$

Mean of NPA of Population Bank  $\bar{Y} = 250.51$

$$S_X \sqrt{\frac{(X - \bar{X})^2 \Gamma + (Y - \bar{Y})^2}{n_1 \Gamma n_2 \Gamma 2}} \quad X \sqrt{\frac{1.24 \Gamma 6503 .229}{5 \Gamma 5 \Gamma 2}}$$

$$= 28.51$$

Then,

$$t = \frac{\bar{X} - \bar{Y}}{\sqrt{S^2 \left( \frac{1}{n_1} + \frac{1}{n_2} \right)}} = \frac{1.91 - 250.51}{\sqrt{28.51^2 \left( \frac{1}{5} + \frac{1}{5} \right)}}$$

$$= -13.79$$

$$\therefore |t| = 13.786$$

Degree of freedom, d.f = n-1 = 5-1 = 4

Now the tabulated values of 't' at 5% level of significance and 4 degree of freedom, for two tailed test is 2.776.

**Decision:**

Since the calculated value of 't' i.e. /t/ is more than tabulated value [13.786>2.776}, the relationship is significant and H1 is accepted. There is significant relationship between the amount of Non-Performing Assets of sample bank and the population.

The t value for all the banks are also higher than that given in the table; so, it is concluded that there is significant relationship between the amount of Non-Performing Assets of sample banks and the population (Source: Annex 4).

**4.4 Major Findings****4.4.1 Finding from Trend Analysis, and Correlation Analysis****Nabil Bank Limited**

The total assets, total deposits, total lending and net profit of Nabil Bank are in increasing Trend marginallt. Each of these variables has increased by three times more. On the other hand NPA trend is decreasing.

The level of NPA i.e. NPA to the total lending ratio has decreased over the period due to increase in the total lending and also decrease in the NPA. The profitability of the bank has decreased over the period. In the FY 2060/61 it was only 2.72% and is decreased to 2.01% in the FY 2064/65.

The result obtained through analysis between the level of NPA and ROA, total lending and NPA, NPA of the banks and population have insignificant correlation.

The relation between NPA and ROA has positive correlation. It concludes that whenever the level of NPA has increased ROA has also increased. On the other hand the correlation between total lending and NPA of the bank is found negative. Thus it can be induce total lending do not have much bearing on the rise of NPA. In case of NPA of the bank and the population has positive correlation. This shows that the NPA of the bank has followed the trend that of the total NPA of population banks.

### **Standard Chartered Bank Nepal Limited**

SCBNL has increasing total assets, total deposits, total lending and net profit trend. Simultaneously, along with them NPA trend also can be seen decreasing.

The NPA to total lending ration has decreased but whereas the total lending to total deposit and net profit to total assets it has shown the fluctuating nature.

As far as, it is concerned, with view from correlation analysis; it shows that the results obtained has insignificant correlation between Level of NPA and ROA. Furthermore they have negative correlation between them.

Total lending also indicate an increasing trend but haven't shown any significant correlation between increases of NPA. Moreover they have negative correlation between them showing that every time the Lending of the bank has increased the NPA has decreased at same time.

As far as NPA of the bank and the NPA of population banks is concerned they have positive correlation between them, and the result so obtained is found significant.

### **Himalayan Bank Limited**

SCBNL has raising total assets, total deposits and total lending. On the other hand NPA and net profit trend can be seen fluctuating at same time. The net profit of the bank has remained less than its NPA in FY 2060/61 to 2063/64, only at the FY 2064/65 the bank has managed to increase its net profit beyond its NPA. As the ratio between NPA to total lending, total lending to total deposits and net profit and total assets it has followed the fluctuating trend from FY 2060/61-2064/65.

The result obtained through the correlation analysis of Level of NPA and ROA has significant relation. Furthermore they have high degree of negative correlation between them.

Similarly the relation between total lending and NPA has also high degree of negative correlation. This shows whenever the Lending of the bank has increased the NPA has decreased. And the result so obtained is found is insignificant.

Finally, the relation between NPA of the bank and the population has high degree of positive correlation. And the result so obtained is significant.

### **Nepal Investment Bank Limited**

NIBL has raising total assets, total deposits, total lending and net profit trend. But at the same time NPA has shown the fluctuating trend. In FY 2060/61 and 2061/62 the NPA is more than its net profit, but in later year it has remained less than its net profit.

The NPA to total lending ration has decreased from 2.47% to 1.12% from FY 2060/61 to 2064/65. On the other hand the total lending to total deposit ratio it has followed the fluctuating trend and at the same time net profit to total assets ratio it has increased from 1.15% to 1.79 in the FY 2060/61 to FY 2064/65.

As far as, it is concerned, with view from correlation analysis; it shows that the results obtained has insignificant correlation between Level of NPA and ROA. Furthermore they have negative correlation between them.

Total Lending also indicate an increasing trend but haven't shown any significant correlation between increases of NPA. But they have positive correlation between them, showing that every time the Lending of the bank has increased the NPA has also increased.

As far as NPA of the bank and the NPA of population banks is concerned they have negative correlation between them, and the result so obtained is found insignificant.

### **Bank of Kathmandu**

In the case of BOK the total lending, total deposit, total lending and net profit have gone on increasing but whereas the NPA of the bank is concerned it has fluctuated over the

five year period. At the FY 2060/61 and 2061/62 the NPA of the bank was very high and it was more than its net profit. At FY 2062/63 it has decreased but after that it has again increased in the FY 2063/64 and thereafter slightly decreased in FY 2064/65.

The ratio between NPA to total lending is found very high in FY 2060/61 and 2061/62 i.e. 6.66 % and 4.99 respectively, but it has decreased to 1.76% in the FY 2064/65. But the total lending to total deposits and net profit to total assets ratio have increased in FY 2060/61 to 2064/65.

The result obtained through analysis between the level of NPA and ROA has significant, but whereas relation between total lending and NPA, and NPA of the banks and population have insignificant correlation.

The relation between NPA and ROA has negative correlation. It concludes that whenever the level of NPA has increased ROA has decreased. Similarly, the correlation between total lending and NPA of the bank is found negative. In case of NPA of the bank and the population has positive correlation. This shows that the NPA of the bank has followed the trend that of the total NPA of population banks.

### **Nepal Bangladesh Bank**

In case NBBL all the variables total assets, total deposits, total lending and net profit is fluctuating over the FY 2060/61 to 2064/65. On the other hand the NPA of the bank has increased. The net profit of the bank is very poor in the FY 2060/61 and 2061/62. In FY 2061/62 it reached to zero.

All the ratios via, NPA to total lending, total lending to total deposit and net profit to total assets ratio are found fluctuating. In the FY 2063/64 the entire ratio has slightly increased as compared to its previous year but in the FY 2064/65 it has again decreased.

As far as, it is concerned, with view from correlation analysis; it shows that the results obtained has significant correlation between Level of NPA and ROA. Furthermore they have positive correlation between them.

The relation between total lending and NPA has negative correlation. This shows whenever the Lending of the bank has increased the NPA has decreased. And the result so obtained is found is insignificant.

As the NPA of the bank and the NPA of population banks is concerned they have negative correlation between them, and the result so obtained is found insignificant.

#### **4.4.2 Finding through Test of Hypothesis:**

- i. Result from the test of hypothesis between NPA and total Lending:

The 't' value for all the banks is higher than that given in the table; so it is concluded that there is significant relationship between the amount of NPA and total Lending.

- ii. Result from the test of hypothesis between NPA of the bank and the population:

The 't' value for all the banks are higher than that given in the table; so it is concluded that there is significant relationship the amount of NPA of the sample banks and the population.

## **CHAPTER - V**

### **SUMMARY, CONCLUSION AND RECOMMENDATIONS**

#### **5.1 Summary**

A Commercial Bank means the bank, which deals with exchanging currency, accepting deposits, giving loans and doing other various commercial transactions. Therefore, the major function of commercial bank is to accept deposits and provide loans.

There is not so long history of commercial bank in Nepal. Nepal Bank Limited established in 1994 B.S. was the first commercial bank of the kingdom. But now there are seventeen commercial banks all over the country and they have been expanding their services by establishing branches in every corner of the country.

The assets of a commercial bank indicate the manner in which the funds entrusted to the bank are employed. The successful working of the bank depends on ability of the management to distribute the fund among the various kind of investments known as assets outstanding loan and advances of the bank. These assets constitute primary source of income to the bank. As being a business unit, a bank aims at making huge profit since loan and advances are more profitable than any other assets of the bank, it is willing to lend as much its fund as possible. But the bank has to be careful about the safety of such loans and advances. It means the bank has to be careful about the repayment of loan and



interest giving loan. If a bank is too timid, it may fail to obtain the adequate return on the fund, which is confined to it for use. Similarly, if the bank is too liberal, it may easily impair its profits by bad debts. Therefore, banks should not forget the reality that most of the bank failures in the world are due to shrinkage in the value of the loan and advances.

Despite of being loan and advances more profitable than other assets, it creates risk of non-repayment for the bank. Such risk is known as credit risk or default risk. Therefore, like other assets, the loan and advances are classified into performing and non-performing on the basis of overdue aging schedule. If the dues in the form of principal and the interest are not paid, by the borrower within a maturity period, that amount of principal and interest is called non-performing loan or assets. It means NPAs could wreck banks profitability both through loss of interest income and need to write off the principal loan amount. Performing Assets have multiple benefits to the company as well as to the society while non performing assets erode even existing capital of the bank.

Escalating level of NPAs has been becoming great problem in banking business in the world. In this context, Nepal cannot be run off from this situation. The level of NPA in Nepalese banking business is very alarming. It is well known fact that the bank and financial institution in Nepal have been facing the problem of swelling non-performing assets and the issue is becoming more and more unmanageable day by day. We are well known from different financial reports, newspapers and news that the total NPA in Nepalese banking system is about 30 Billion (Nepal Rastra Bank, 2005: 45), while it is very worse in case of two largest commercial banks RBB and NBL.

Therefore, this study is concerned to find out the level of NPA and its effects on the return on assets and the other factors of the Nepalese commercial banks. This study especially focuses on six commercial banks of Nepal, viz. NABIL, SCBNL, HBL, BOK, NBBL and NIBL only, out of the 25 commercial banks operating in the banking industry of Nepal.

## **5.2 Conclusion**

The Correlation coefficient between NPA and ROA mostly came out to be negative except for NABIL and NBBL. This shows that increase in profitability is affected by the amount on Non Performing Assets. These finding supports the theory that, higher the NPA lower will be the ROA and vice-versa.

The correlation coefficient between Total Lending and NPA is negative for most of the banks except for NIBL. Negative correlation explains that if the Total Lending increases it leads to decrease in NPA. These finding came out to be insignificant for most of the banks. This leads us to the induction, that NPA and Total Lending were two different entities of the bank, which had little or no relation to each other in the progression or digression of their values.

The correlation between NPA of sample and population banks are positive except than that of NIBL and NBBL. The positive relationship explain that increase in NPA of sample banks also leads to the increase in NPA of the population, which is agreed upon with the practice.

Finally, the test of hypothesis between NPA and Total Lending of the banks is found true. Thus there is a significance relation between these two variable are significant. On the other hand the test of hypothesis between NPA and that of population is found acceptable. This shows that there is a significance relation between two. That is every raise or fall in the NPA of sample banks has also effect in the NPA of the total population.

### **5.3 Step that were taken for the control of NPA in Different Countries**

) China :

- Reducing risk by strengthening banks, raising disclosure standards and spearheading reforms of the SOE's by reducing their level of debt.
- Laws were passed allowing the creation of asset management companies, foreign equity participation in securitisation and asset-backed securitisation.
- The government, which bore the financial loss of debt 'discounting'. Debt/equity swaps were allowed in case a growth opportunity existed.
- Incentives like tax breaks, exemption from administration fees and clear-cut asset evaluation norms were implemented.

) Thailand

- Amendments were made to the Bankruptcy Act.
- Corporate Debt Restructuring Plan (1998) focused on capital support facilities for Bank recapitalization and setting up of AMC's
- New rules governing NPA exit procedures based on international standards were introduced.

- Privatization of government entities was mooted, but faced strong political opposition for fear of a social backlash.
- Adoption of international standards for loan classification and provisioning.
- Caps on Foreign equity ownership in financial institutions were removed.

## ) Korea

- *Speed of action*- the speedy containment of systemic risk and the domestic credit crunch problem with the injection of large public funds for bank recapitalization were critical steps towards normalizing the financial system.
- Corporate Restructuring Vehicles (CRVs) and Debt/Equity swaps were used to facilitate the resolution of bad loans.
- Creation of the Korea Asset Management Corporation (KAMCO) and a NPA fund to fund to finance the purchase of NPA's.
- Securitisation KAMCO's recoveries came through asset-backed securitisation and outright sales. International investors like the Lone Star Fund participated in the process.
- Strengthening of Provision norms and loan classification standards based on forward-looking criteria (like future cash flows) were implemented.
- The objective of the Central Bank was solely defined as maintaining price stability. The Financial Supervisory Commission (FSC) was created (1998) to ensure an effective supervisory system in line with universal banking practices.

## ) Japan

- Amendment of foreign exchange control law (1997) and the threat of suspension of banking business in case of failure to satisfy the capital adequacy ratio prescribed. Legislation to improve information flow has been passed.
  - Accounting standards- Major business groups established a private standard setting vehicle for Japanese accounting standards (2001) in line with international standards.
  - Government Support- The government's committed public funds to deal with banking sector weakness.
- J) U.S. the financial crisis of 2007–2009
- Central banks should take steps to expand money supplies to avoid the risk of a [deflationary spiral](#), in which lower wages and higher unemployment lead to a self-reinforcing decline in global consumption.
  - Establish resolution procedures for closing troubled financial institutions in the [shadow banking system](#), such as investment banks and hedge funds.
  - Restrict the [leverage](#) that financial institutions can assume. Require executive compensation to be more related to long-term performance.
  - Banks should have a stronger capital cushion, with graduated regulatory capital requirements (i.e., capital ratios that increase with bank size), to "discourage them from becoming too big and to offset their competitive advantage."
  - Reduce mortgage balances to assist homeowners, giving the lender a share in any future home appreciation.

This study reflects and has considered some of the successful samples and measures adopted by countries stated above

#### **5.4 Recommendations**

High level of non-performing assets not only decreases the profitability of the banks but also affect the entire financial as well as operational health of the country. If the NPA were not controlled immediately, it would be proved as a curse for the banks in near future. Therefore, following are some of the recommendations, which will help to reduce the level of NPA of the Nepalese commercial banks:

##### **➤ Take Necessary Steps Toward Recovering Bad Debt**

NPA has the direct effect on its profitability. More the NPA of the bank the less will be its profitability. Those banks, which have high level of NPA, should take necessary action towards recovering their bad loans as soon as possible. In case of default to repay the loan by the borrowers, the banks should dispose of the collateral taken from them and recover the principal and the interest amount thereof. Similarly, write-off should be done regularly. Once the account of a borrower gets downgraded, it's a business loss. It has to provide for and removed from the assets without bailing out the default borrower.

##### **➤ Take Proper Control in Loan Management**

The increase in the volume of total lending is not the reason in decrease of NPA or increment of the profitability of the banks. As seen in the case of BOK and NBBL there has been increase in the level of NPA even then total lending has increased. This is due the effect of the bad loans provided by the banks.

- ) Being loan a risky asset, efforts should be made to have proper control in every steps of loan management. The banks should establish separate department for credit appraisal, documentation, disbursement, rapport building, inspection and recovery of loan which have possibility of finding mistakes of one department by the others, so that the effectiveness can be achieved.
- ) Loan must be given only if the banker is satisfied that the borrower can repay money from the cash flow generated from operating activities. However, the banks want to ensure that their loan is repaid even in case of failure of business. To protect banks from such happenings, the banks take collateral from the borrower so that in the event of default this collateral is disposed for the recovery of loan. Therefore, banks should take enough collateral so that the Bank at least will be able to recover its principal and interest amount in case of failure of the borrower to repay the loan.
- ) Financial analysis of the borrower should be further strengthened by the banks, is one of the major cause behind increasing NPA of Nepalese commercial banks. Therefore, proper financial analysis should be performed before giving loan to the borrower.

➤ **Others**

In addition following are some other points that should be taken for the control of NPA in the bank.

- ) Control mechanism of the bank should be enforced properly. Black listed customers should not be given the new loan, as it would lead to the same situation to the bank.

- ) Diversification of the loan should be managed by the individual banks. In the context of Nepal it is provided to the borrowers who often go to the bank not in the new financial sector. Default by the older borrower should be avoided.
- ) Political influences in the loan disbursement should be avoided as it may further aggravate the NPA problem.

### **5.5 Future Scope of Research**

Present study lacks depthness and exposition of the actual individual policies of the sample banks, due to specific monitoring and evaluation of the NPA and profitability of the commercial banks. Additional inquiries could not be carried out due to concealed nature of the banks' individual policies and unwillingness on the part of the banks to disclose them. Thus, actual specific policies of each individual bank couldn't be obtained. Future studies are suggested to determine, if possible analyze such individual bank policies. Due to time constraint and data this study has not analyzed each and every aspect relating to commercial bank's the NPA. This leaves the door open for further research on the subject.



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[http:// www.nibl.com.np/](http://www.nibl.com.np/)

## Annexure I

**Calculation of the correlation coefficient between the NPA to total lending and the ROA of different Banks:**

**a. Nabil Bank Limited:**

Where, X= NPA to Total Lending, Y= Net Profit to Total Assets

<u>Fiscal Year</u>	<b>X</b>	<b>Y</b>	<b>X<sup>2</sup></b>	<b>Y<sup>2</sup></b>	<b>XY</b>
<b>2060/61</b>	3.35	2.72	11.22	7.40	9.11
<b>2061/62</b>	1.32	3.02	1.74	9.12	3.99
<b>2062/63</b>	1.38	2.85	1.90	8.12	3.93
<b>2063/64</b>	1.12	2.47	1.25	6.10	2.77
<b>2064/65</b>	0.74	2.01	0.55	4.04	1.49
<b>Summation</b>	<b>7.91</b>	<b>13.07</b>	<b>16.67</b>	<b>34.8</b>	<b>21.29</b>

$$r_{xy} = \frac{n \sum XY - \sum X \sum Y}{\sqrt{[n \sum X^2 - (\sum X)^2] [n \sum Y^2 - (\sum Y)^2]}}$$

$$r_{xy} = \frac{5 \times 21.29 - 7.91 \times 13.07}{\sqrt{[5 \times 16.67 - (7.91)^2] [5 \times 34.8 - (13.07)^2]}} = 0.38$$

**Coefficient of Determination**

$$(r)^2 \times (r_{xy})^2 = 0.14$$

**Calculation of P.E**

$$S.E. = \frac{1 - r^2}{\sqrt{n}} \times \frac{1}{\sqrt{5}} \times 0.14$$

$$= 0.383$$

$$\dots P.E. = 0.6745 \times S.E.$$

$$0.6745 \times 0.383 = 0.2581$$

**b. Standard Chartered Bank:**

Where, X= NPA to Total Lending, Y= Net Profit to Total Assets

<b>Fiscal Year</b>	<b>X</b>	<b>Y</b>	<b>X<sup>2</sup></b>	<b>Y<sup>2</sup></b>	<b>XY</b>
<b>2060/61</b>	3.77	2.28	14.21	5.20	8.60
<b>2061/62</b>	2.69	2.46	7.24	6.05	6.62
<b>2062/63</b>	2.13	2.56	4.54	6.55	5.45
<b>2063/64</b>	1.83	2.42	3.35	5.86	4.43
<b>2064/65</b>	0.92	2.46	0.85	6.05	2.26
<b>Summation</b>	<b>11.34</b>	<b>12.18</b>	<b>30.18</b>	<b>29.7</b>	<b>27.36</b>

$$r_{xy} = \frac{n \sum XY - \sum X \sum Y}{\sqrt{[n \sum X^2 - (\sum X)^2][n \sum Y^2 - (\sum Y)^2]}}$$

$$= \frac{5 \times 27.36 - 11.34 \times 12.18}{\sqrt{[5 \times 30.18 - (11.34)^2][5 \times 29.7 - (12.18)^2]}} = -0.62$$

**Coefficient of Determination**

$$(r_{xy})^2 = 0.39$$

**Calculation of P.E**

$$S.E. = \frac{\sum Z^2}{\sqrt{n}} = \frac{0.39}{\sqrt{5}} = 0.274$$

$$P.E. = \frac{S.E.}{r} = \frac{0.274}{0.62} = 0.4419$$

**c. Himalayan Bank Limited:**

Where, X= NPA to Total Lending, Y= Net Profit to Total Assets

<b>Fiscal Year</b>	<b>X</b>	<b>Y</b>	<b>X<sup>2</sup></b>	<b>Y<sup>2</sup></b>	<b>XY</b>
<b>2060/61</b>	8.88	1.06	78.85	1.12	9.41
<b>2061/62</b>	7.44	1.11	55.35	1.23	8.26
<b>2062/63</b>	6.6	1.56	43.56	2.43	10.30

<b>2063/64</b>	3.61	1.47	13.03	2.16	5.31
<b>2064/65</b>	2.35	1.76	5.52	3.10	4.14
<b>Summation</b>	<b>28.88</b>	<b>6.96</b>	<b>196.32</b>	<b>10.0</b>	<b>37.41</b>

$$r_{xy} = \frac{n \sum XY - \sum X \sum Y}{\sqrt{[n \sum X^2 - (\sum X)^2][n \sum Y^2 - (\sum Y)^2]}}$$

$$= \frac{5 \times 37.41 - 28.88 \times 6.96}{\sqrt{[5 \times 196.32 - (28.88)^2][5 \times 10 - (6.96)^2]}} = -0.86$$

$$(r_{xy})^2 = 0.73$$

### Calculation of P.E

$$S.E. = \frac{1 - r^2}{\sqrt{n}} \times \frac{1}{\sqrt{5}} \times 0.73$$

$$= 0.119$$

$$P.E. = \frac{0.6745}{0.119} \times 0.73$$

$$= 0.0801$$

### d. Nepal Investment Bank Limited:

Where, X= NPA to Total Lending, Y= Net Profit to Total Assets

<b>Fiscal Year</b>	<b>X</b>	<b>Y</b>	<b>X<sup>2</sup></b>	<b>Y<sup>2</sup></b>	<b>XY</b>
<b>2060/61</b>	2.47	1.15	6.10	1.32	2.84
<b>2061/62</b>	2.69	1.43	7.24	2.04	3.85
<b>2062/63</b>	2.07	1.64	4.28	2.69	3.39
<b>2063/64</b>	2.37	1.82	5.62	3.31	4.31
<b>2064/65</b>	1.12	1.79	1.25	3.20	2.00
<b>Summation</b>	<b>10.72</b>	<b>7.83</b>	<b>24.49</b>	<b>12.6</b>	<b>16.40</b>

$$r_{xy} = \frac{n \sum XY - \sum X \sum Y}{\sqrt{[n \sum X^2 - (\sum X)^2][n \sum Y^2 - (\sum Y)^2]}}$$

$$= -0.56$$

$$r_{xy} = \frac{5 \cdot 16.40 \cdot 10.72 - 7.83 \cdot \sqrt{5 \cdot 24.49 \cdot 10.72^2}}{\sqrt{5 \cdot 12.6 \cdot 7.83^2}}$$

### Calculation of P.E

$$S.E. = \frac{1}{\sqrt{n}} \cdot Z \cdot 0.32$$

$$= 0.305$$

$$\dots P.E. = \frac{0.6745}{0.2000} \cdot 0.305$$

### e. Bank of Kathmandu Limited:

Where, X= NPA to Total Lending, Y= Net Profit to Total Assets

Fiscal Year	X	Y	X <sup>2</sup>	Y <sup>2</sup>	XY
2060/61	6.66	1.34	44.36	1.80	8.92
2061/62	4.99	1.42	24.90	2.02	7.09
2062/63	2.72	1.65	7.40	2.72	4.49
2063/64	2.51	1.8	6.30	3.24	4.52
2064/65	1.76	2.04	3.10	4.16	3.59
<b>Summation</b>	<b>18.64</b>	<b>8.25</b>	<b>86.05</b>	<b>13.9</b>	<b>28.61</b>

$$r_{xy} = \frac{5 \cdot 28.61 - 18.64 \cdot 8.25}{\sqrt{5 \cdot 86.05 \cdot 13.9}}$$

### Coefficient of Determination

$$(r)^2 = (r_{xy})^2 = 0.86$$



### Calculation of P.E

$$S.E. X \frac{1Zr^2}{\sqrt{n}} \quad X \frac{1Z0.86}{\sqrt{5}}$$

$$= 0.062$$

$$\dots P.E. X 0.6745 \mid S.E. (r)$$

$$X 0.6745 \mid 0.062$$

$$=$$

$$0.0416$$

### f. Nepal Bangladesh Bank Limited:

Where, X= NPA to Total Lending, Y= Net Profit to Total Assets

<b>Fiscal Year</b>	<b>X</b>	<b>Y</b>	<b>X<sup>2</sup></b>	<b>Y<sup>2</sup></b>	<b>XY</b>
<b>2060/61</b>	10.80	0.02	116.64	0.00	0.22
<b>2061/62</b>	19.04	0.00	362.52	0.00	0.00
<b>2062/63</b>	29.88	2.01	892.81	4.04	60.06
<b>2063/64</b>	39.76	3.88	1580.86	15.05	154.27
<b>2064/65</b>	31.10	1.80	967.21	3.24	55.98
<b>Summation</b>	<b>130.58</b>	<b>7.71</b>	<b>3920.04</b>	<b>22.33</b>	<b>270.52</b>

$$r_{xy} = \frac{\frac{\sum XY}{n} - \frac{\sum X}{n} \frac{\sum Y}{n}}{\sqrt{\left[ \frac{\sum X^2}{n} - \left( \frac{\sum X}{n} \right)^2 \right] \left[ \frac{\sum Y^2}{n} - \left( \frac{\sum Y}{n} \right)^2 \right]}}$$

$$= \frac{X \frac{5 \mid 270.52 \mid 130.58 \mid 7.71}{\sqrt{5 \mid 3920.04 \mid 130.58^2 \mid 5 \mid 22.33 \mid 7.71^2}}}{\sqrt{5 \mid 3920.04 \mid 130.58^2 \mid 5 \mid 22.33 \mid 7.71^2}}$$

$$= 0.95$$

### Coefficient of Determination

$$(r)^2 \times (r_{xy})^2 = 0.90$$

### Calculation of P.E

$$S.E. X \frac{1Zr^2}{\sqrt{n}} \quad X \frac{1Z0.90}{\sqrt{5}}$$

$$= 0.045$$

$$\dots P.E. X0.6745 \mid S.E. (r)$$

$$X0.6745 \mid 0.045$$

$$= 0.307$$

## Annexure II

### Calculation of the correlation coefficient between the Total Lending and the NPA of different Banks:

#### a. Nabil Bank Limited:

Where, X= NPA of the bank, Y= Total Lending of the Bank

<b>Fiscal Year</b>	<b>X</b>	<b>Y</b>	<b>X<sup>2</sup></b>	<b>Y<sup>2</sup></b>	<b>XY</b>
<b>2060/61</b>	2.87	85.49	8.22	7307.95	245.07
<b>2061/62</b>	1.45	109.47	2.09	11983.10	158.19
<b>2062/63</b>	1.83	132.79	3.34	17632.61	242.50
<b>2063/64</b>	1.78	159.03	3.18	25290.62	283.54
<b>2064/65</b>	1.61	217.59	2.59	47347.41	350.51
<b>Summation</b>	<b>9.53</b>	<b>704.37</b>	<b>19.42</b>	<b>109561.7</b>	<b>1279.82</b>

<b>X Z <math>\bar{X}</math></b>	<b>Y Z <math>\bar{Y}</math></b>	<b>(X Z <math>\bar{X}</math>)<sup>2</sup></b>	<b>(Y Z <math>\bar{Y}</math>)<sup>2</sup></b>
0.9604	-55.39	0.9224	3067.69
-0.461	-31.41	0.2128	986.334
-0.08	-8.085	0.0064	65.3753
-0.123	18.157	0.0152	329.674
-0.296	76.721	0.0873	5886.16
		<b>1.24</b>	<b>10335.2</b>

$$\bar{X} = \frac{\sum X}{n}$$

$$\bar{Y} = \frac{\sum Y}{n} = 138.7$$

$$r_{xy} = \frac{n \sum XY - \sum X \sum Y}{\sqrt{[n \sum X^2 - (\sum X)^2] [n \sum Y^2 - (\sum Y)^2]}}$$

$$= \frac{5 \mid 1279.82 - 9.53 \mid 704.37}{\sqrt{[5 \mid 19.42 - 9.53^2] [5 \mid 109561.7 - 704.37^2]}}$$

$$= -0.56$$

### Coefficient of Determination

$$(r)^2 \text{ X}(r_{xy})^2 = 0.31$$

### Calculation of P.E

$$S.E. X \frac{1Zr^2}{\sqrt{n}} \quad X \frac{1Z0.31}{\sqrt{5}}$$

$$\dots P.E. X 0.6745 \mid S.E. (r)$$

$$= \frac{X 0.6745 \mid 0.309}{0.2000}$$

### b. Standard Chartered Bank:

Where, X= NPA of the bank, Y= Total Lending of the Bank

<b>Fiscal Year</b>	<b>X</b>	<b>Y</b>	<b>X<sup>2</sup></b>	<b>Y<sup>2</sup></b>	<b>XY</b>
<b>2060/61</b>	2.52	66.94	6.36	4480.78	168.82
<b>2061/62</b>	2.26	84.21	5.12	7091.10	190.57
<b>2062/63</b>	1.96	92.06	3.84	8475.56	180.38
<b>2063/64</b>	1.97	107.90	3.88	11642.73	212.58
<b>2064/65</b>	1.29	139.64	1.66	19499.28	179.74
<b>Summation</b>	<b>10.00</b>	<b>490.75</b>	<b>20.86</b>	<b>51189.5</b>	<b>932.10</b>

$X - \bar{X}$	$Y - \bar{Y}$	$(X - \bar{X})^2$	$(Y - \bar{Y})^2$
0.5216	-31.21	0.2721	974.168
0.2627	-13.94	0.0690	194.368
-0.041	-6.087	0.0017	37.0575
-0.03	9.7512	0.0009	95.0858
-0.713	41.49	0.5086	1721.38
		<b>0.85</b>	<b>3022.06</b>

$$\bar{X} = \frac{\sum X}{n} = \frac{10.00}{5} = 2.00$$

$$\bar{Y} = \frac{\sum Y}{n} = \frac{490.75}{5} = 98.15$$

$$r_{xy} = \frac{n \sum XY - \sum X \sum Y}{\sqrt{[n \sum X^2 - (\sum X)^2][n \sum Y^2 - (\sum Y)^2]}}$$

$$= \frac{5 \cdot 932.10 - 20.86 \cdot 490.75}{\sqrt{[5 \cdot 20.86 - (20.86)^2][5 \cdot 51189.5 - (490.75)^2]}}$$

$$= -0.98$$

### Coefficient of Determination

$$(r)^2 = (-0.98)^2 = 0.95$$

### Calculation of P.E

$$S.E. = \frac{\sum Z^2 r^2}{\sqrt{n}} = \frac{1 \cdot 0.95}{\sqrt{5}} = 0.020$$

$$\dots P.E. = 0.6745 \cdot S.E. = 0.6745 \cdot 0.020 = 0.0135$$

### c. Himalayan Bank Limited:

Where, X= NPA of the bank, Y= Total Lending of the Bank

<u>Fiscal Year</u>	<u>X</u>	<u>Y</u>	<u>X<sup>2</sup></u>	<u>Y<sup>2</sup></u>	<u>XY</u>
2060/61	11.47	129.20	131.67	16691.69	1482.48
2061/62	10.01	134.51	100.27	18093.39	1346.93
2062/63	10.41	157.62	108.32	24843.99	1640.44
2063/64	6.42	177.94	41.17	31661.66	1141.67
2064/65	4.77	201.80	22.77	40721.68	963.03
<b>Summation</b>	<b>43.08</b>	<b>801.06</b>	<b>404.20</b>	<b>132012.4</b>	<b>6574.55</b>

<u>X - <math>\bar{X}</math></u>	<u>Y - <math>\bar{Y}</math></u>	<u>(X - <math>\bar{X}</math>)<sup>2</sup></u>	<u>(Y - <math>\bar{Y}</math>)<sup>2</sup></u>
2.8578	-31.02	8.16703	961.987
1.3966	-25.7	1.95063	660.518
1.7908	-2.592	3.2068	6.72087

-2.201	17.725	4.84296	314.176
-3.845	41.584	14.7804	1729.22
		<b>32.95</b>	<b>3672.62</b>

$$\bar{X} = \frac{\sum X}{n} = \frac{8.62}{5} = 1.724$$

$$\bar{Y} = \frac{\sum Y}{n} = \frac{160.21}{5} = 32.042$$

$$r_{xy} = \frac{\sum XY - n\bar{X}\bar{Y}}{\sqrt{(\sum X^2 - n\bar{X}^2)(\sum Y^2 - n\bar{Y}^2)}}$$

$$= \frac{32.95 - 5(1.724)(32.042)}{\sqrt{(404.20 - 5(1.724)^2)(132012.4 - 5(32.042)^2)}}$$

### Coefficient of Determination

$$(r)^2 = (0.89)^2 = 0.7921$$

### Calculation of P.E

$$S.E. = \frac{\sum Y^2 - \frac{(\sum Y)^2}{n}}{n-1}$$

$$= \frac{132012.4 - \frac{(160.21)^2}{5}}{5-1} = 0.049$$

$$P.E. = S.E. \times r = 0.049 \times 0.89 = 0.04361$$

$$= 0.04361$$

### d. Nepal Investment Bank Limited:

Where, X= NPA of the bank, Y= Total Lending of the Bank

<u>Fiscal Year</u>	<b>X</b>	<b>Y</b>	<b>X<sup>2</sup></b>	<b>Y<sup>2</sup></b>	<b>XY</b>
<b>2060/61</b>	1.81	73.39	3.29	5385.46	133.15
<b>2061/62</b>	2.81	104.54	7.89	10928.95	293.63
<b>2062/63</b>	2.72	131.78	7.43	17366.37	359.10
<b>2063/64</b>	4.22	177.69	17.81	31574.09	749.81
<b>2064/65</b>	3.09	275.29	9.58	75786.26	851.95

<b>Summation</b>	<b>14.66</b>	<b>762.69</b>	<b>45.99</b>	<b>141041.1</b>	<b>2387.63</b>
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$X - \bar{X}$	$Y - \bar{Y}$	$(X - \bar{X})^2$	$(Y - \bar{Y})^2$
-1.118	-79.15	1.2502	6265.18
-0.124	-48	0.0153	2303.71
-0.208	-20.76	0.0431	430.855
1.2872	25.152	1.6570	632.644
0.1622	122.75	0.0263	15068.7
		<b>2.99</b>	<b>24701</b>

$$\bar{X} = \frac{\sum X}{n} = \frac{2387.63}{5} = 477.526$$

$$\bar{Y} = \frac{\sum Y}{n} = \frac{141041.1}{5} = 28208.22$$

$$r_{xy} = \frac{\sum (X - \bar{X})(Y - \bar{Y})}{\sqrt{\sum (X - \bar{X})^2 \sum (Y - \bar{Y})^2}}$$

$$= \frac{2387.63 \times 762.69 - 5 \times 141041.1}{\sqrt{2.99 \times 24701}} = 0.31$$

### Coefficient of Determination

$$(r)^2 = (0.31)^2 = 0.0961$$

### Calculation of P.E

$$S.E. = \sqrt{\frac{\sum (Y - \hat{Y})^2}{n}} = \sqrt{\frac{24701 - 5 \times 0.0961 \times 24701}{5}} = 12.309$$

$$\dots P.E. = 0.6745 \times S.E. = 0.6745 \times 12.309 = 8.309$$

### e. Bank of Kathmandu Limited:

Where, X= NPA of the bank, Y= Total Lending of the Bank

<u>Fiscal Year</u>	<u>X</u>	<u>Y</u>	<u>X<sup>2</sup></u>	<u>Y<sup>2</sup></u>	<u>XY</u>
<b>2060/61</b>	4.00	60.08	15.99	3609.98	240.29
<b>2061/62</b>	3.09	61.82	9.52	3821.77	190.72
<b>2062/63</b>	2.04	74.89	4.15	5608.06	152.49
<b>2063/64</b>	2.43	96.94	5.92	9397.56	235.85
<b>2064/65</b>	2.37	127.48	5.61	16250.44	301.99

<b>Summation</b>	<b>13.92</b>	<b>421.21</b>	<b>41.19</b>	<b>38687.8</b>	<b>1121.35</b>
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$X - \bar{X}$	$Y - \bar{Y}$	$(X - \bar{X})^2$	$(Y - \bar{Y})^2$
1.2148	-24.16	1.4759	583.640
0.3005	-22.42	0.0903	502.715
-0.748	-9.355	0.5599	87.5114
-0.352	12.699	0.1236	161.271
-0.416	43.235	0.1727	1869.3
		<b>2.42</b>	<b>3204.44</b>

$$\bar{X} = \frac{\sum X}{n} = \frac{207.8}{5} = 41.56$$

$$\bar{Y} = \frac{\sum Y}{n} = \frac{417.2}{5} = 83.44$$

$$r_{xy} = \frac{\sum (X - \bar{X})(Y - \bar{Y})}{\sqrt{\sum (X - \bar{X})^2 \sum (Y - \bar{Y})^2}}$$

$$= \frac{2.42}{\sqrt{2.42 \times 3204.44}} = 0.27$$

### Coefficient of Determination

$$(r^2) = (0.27)^2 = 0.0729$$

### Calculation of P.E

$$S.E. = \sqrt{\sum (Y - \hat{Y})^2 / n}$$

$$= \sqrt{0.0729 \times 3204.44} = 0.294$$

$$P.E. = S.E. \times 0.6745$$

$$= 0.294 \times 0.6745 = 0.1983$$

### f. Nepal Bangladesh Bank Limited:

Where, X= NPA of the bank, Y= Total Lending of the Bank

<b>Fiscal Year</b>	<b>X</b>	<b>Y</b>	<b>X<sup>2</sup></b>	<b>Y<sup>2</sup></b>	<b>XY</b>
<b>2060/61</b>	10.42	96.45	108.58	9302.60	1005.01
<b>2061/62</b>	18.33	96.27	335.99	9267.91	1764.63

<b>2062/63</b>	29.27	97.96	856.73	9596.16	2867.29
<b>2063/64</b>	36.46	91.69	1329.33	8407.06	3343.02
<b>2064/65</b>	29.45	94.70	867.30	8968.09	2788.92
<b>Summation</b>	<b>123.93</b>	<b>477.07</b>	<b>3497.93</b>	<b>45541.82</b>	<b>11768.86</b>

$X - \bar{X}$	$Y - \bar{Y}$	$(X - \bar{X})^2$	$(Y - \bar{Y})^2$
-14.366	1.036	206.3820	1.0733
-6.456	0.856	41.6799	0.7327
4.484	2.546	20.1063	6.4821
11.674	-3.724	136.2823	13.8682
4.664	-0.714	21.7529	.5098
		<b>426.20</b>	<b>22.66612</b>

$$\bar{X} = \frac{\sum X}{n} = \frac{623.965}{25} = 24.79$$

$$\bar{Y} = \frac{\sum Y}{n} = \frac{2375.5}{25} = 95.41$$

$$r_{xy} = \frac{\sum (X - \bar{X})(Y - \bar{Y})}{\sqrt{\sum (X - \bar{X})^2 \sum (Y - \bar{Y})^2}} = \frac{5 \times 11768.86 - 123.93 \times 477.07}{\sqrt{5 \times 426.20 \times 5 \times 22.66612}} = 0.32$$

### Coefficient of Determination

$$(r)^2 \times (r_{xy})^2 = 0.32$$

### Calculation of P.E

$$S.E. = \frac{1 - r^2}{\sqrt{n}} = \frac{1 - 0.32}{\sqrt{5}} = 0.303$$

$$P.E. = 0.6745 \times S.E. = 0.6745 \times 0.303 = 0.204$$

$$P.E. = 0.6745 \times 0.303 = 0.204$$

## Annexure III



## Calculation of the correlation coefficient between the NPA of the bank and the population:

### a. Nabil Bank Limited:

Where, X= NPA of the bank, Y= Total NPA Population of Banks

Fiscal Year	X	Y	X <sup>2</sup>	Y <sup>2</sup>	XY
2060/61	2.87	289.34	8.22	83717.64	829.48
2061/62	1.45	278.78	2.09	77718.29	402.86
2062/63	1.83	255.8	3.34	65433.64	467.15
2063/64	1.78	242.16	3.18	58641.47	431.76
2064/65	1.61	186.49	2.59	34778.52	300.41
<b>Summation</b>	<b>9.53</b>	<b>1252.6</b>	<b>19.42</b>	<b>320289.5</b>	<b>2431.65</b>

$X - \bar{X}$	$Y - \bar{Y}$	$(X - \bar{X})^2$	$(Y - \bar{Y})^2$
0.9604	38.826	0.9224	1507.46
-0.461	28.266	0.2128	798.967
-0.08	5.286	0.0064	27.9418
-0.123	-8.354	0.0152	69.7893
-0.296	-64.02	0.0873	4099.07
		<b>1.24</b>	<b>6503.23</b>

$$\bar{X} = \frac{\sum X}{n} = \frac{9.53}{5} = 1.91$$

$$\bar{Y} = \frac{\sum Y}{n} = \frac{1252.6}{5} = 250.51$$

$$r_{xy} = \frac{\sum (X - \bar{X})(Y - \bar{Y})}{\sqrt{\sum (X - \bar{X})^2} \sqrt{\sum (Y - \bar{Y})^2}}$$

$$= \frac{5 \times 2431.65}{\sqrt{5 \times 19.42} \sqrt{5 \times 6503.23}}$$

### Coefficient of Determination

$$(r)^2 = (r_{xy})^2 = 0.24$$

### Calculation of P.E

$$S.E. = \frac{1 - r^2}{\sqrt{n}} = \frac{1 - 0.24}{\sqrt{5}}$$

$$= 0.341$$

...P.E. X0.6745 | S.E.<sub>(r)</sub>

$$= \frac{X0.6745}{0.2302} | 0.341$$

### **b. Standard Chartered Bank:**

Where, X= NPA of the bank, Y= Total NPA Population of Banks

<b>Fiscal Year</b>	<b>X</b>	<b>Y</b>	<b>X<sup>2</sup></b>	<b>Y<sup>2</sup></b>	<b>XY</b>
<b>2060/61</b>	2.52	289.34	6.36	83717.64	729.71
<b>2061/62</b>	2.26	278.78	5.12	77718.29	630.90
<b>2062/63</b>	1.96	255.8	3.84	65433.64	501.19
<b>2063/64</b>	1.97	242.16	3.88	58641.47	477.10
<b>2064/65</b>	1.29	186.49	1.66	34778.52	240.05
<b>Summation</b>	<b>10.00</b>	<b>1252.6</b>	<b>20.86</b>	<b>320289.5</b>	<b>2578.95</b>

$X - \bar{X}$	$Y - \bar{Y}$	$(X - \bar{X})^2$	$(Y - \bar{Y})^2$
0.5216	38.826	0.2721	1507.46
0.2627	28.266	0.0690	798.967
-0.041	5.286	0.0017	27.9418
-0.03	-8.354	0.0009	69.7893
-0.713	-64.02	0.5086	4099.07
		<b>0.85</b>	<b>6503.23</b>

$$\bar{X} = \frac{\sum X}{n} = \frac{10.00}{5} = 2.00$$

$$\bar{Y} = \frac{\sum Y}{n} = \frac{1252.6}{5} = 250.51$$

$$r_{xy} = \frac{\sum (X - \bar{X})(Y - \bar{Y})}{\sqrt{\sum (X - \bar{X})^2 \sum (Y - \bar{Y})^2}} = \frac{0.85}{\sqrt{0.85 \times 6503.23}} = 0.99$$

### **Coefficient of Determination**

$$(r)^2 \text{ or } (r_{xy})^2 = 0.97$$

### **Calculation of P.E**

$$S.E. X \frac{1Zr^2}{\sqrt{n}} \quad X \frac{1Z0.97}{\sqrt{5}}$$

$$= 0.013$$

$$\dots P.E. X 0.6745 \mid S.E. (r)$$

$$X 0.6745 \mid 0.013$$

$$= 0.0087$$

### c. Himalayan Bank Limited:

Where, X= NPA of the bank, Y= Total NPA Population of Banks

<b>Fiscal Year</b>	<b>X</b>	<b>Y</b>	<b>X<sup>2</sup></b>	<b>Y<sup>2</sup></b>	<b>XY</b>
<b>2060/61</b>	11.47	289.34	131.67	83717.64	3320.07
<b>2061/62</b>	10.01	278.78	100.27	77718.29	2791.56
<b>2062/63</b>	10.41	255.8	108.32	65433.64	2662.26
<b>2063/64</b>	6.42	242.16	41.17	58641.47	1553.74
<b>2064/65</b>	4.77	186.49	22.77	34778.52	889.98
<b>Summation</b>	<b>43.08</b>	<b>1252.6</b>	<b>404.20</b>	<b>320289.5</b>	<b>11217.60</b>

$X - \bar{X}$	$Y - \bar{Y}$	$(X - \bar{X})^2$	$(Y - \bar{Y})^2$
2.8578	38.826	8.16703	1507.46
1.3966	28.266	1.95063	798.967
1.7908	5.286	3.2068	27.9418
-2.201	-8.354	4.84296	69.7893
-3.845	-64.02	14.7804	4099.07
		<b>32.95</b>	<b>6503.23</b>

$$\bar{X} = \frac{\sum X}{n} = \frac{43.08}{5} = 8.616$$

$$\bar{Y} = \frac{\sum Y}{n} = \frac{1252.6}{5} = 250.52$$

$$r_{xy} = \frac{n \sum XY - \sum X \sum Y}{\sqrt{[n \sum X^2 - (\sum X)^2] [n \sum Y^2 - (\sum Y)^2]}}$$

$$= \frac{5 \times 11217.60 - 43.08 \times 1252.6}{\sqrt{[5 \times 404.20 - (43.08)^2] [5 \times 320289.5 - (1252.6)^2]}}$$

$$= \frac{5000.00}{\sqrt{[5 \times 404.20 - 1855.8264] [5 \times 320289.5 - 1568000.76]}}$$

$$= \frac{5000.00}{\sqrt{[2021.1736] [1601447.25]}}$$

$$= \frac{5000.00}{\sqrt{3244444.44}} = \frac{5000.00}{1801.23} = 2.775$$

### Coefficient of Determination

$$(r)^2 \times (r_{xy})^2 = 0.84$$

### Calculation of P.E

$$S.E. \times \frac{1 - Zr^2}{\sqrt{n}} \times \frac{1 - Z0.84}{\sqrt{5}}$$

$$= 0.071$$

$$\dots P.E. \times 0.6745 \mid S.E. (r)$$

$$\times 0.6745 \mid 0.071$$

$$= 0.0480$$

### d. Nepal Investment Bank Limited:

Where, X= NPA of the bank, Y= Total NPA Population of Banks

<u>Fiscal Year</u>	<b>X</b>	<b>Y</b>	<b>X<sup>2</sup></b>	<b>Y<sup>2</sup></b>	<b>XY</b>
<b>2060/61</b>	1.81	289.34	3.29	83717.64	524.96
<b>2061/62</b>	2.81	278.78	7.89	77718.29	783.02
<b>2062/63</b>	2.72	255.8	7.43	65433.64	697.04
<b>2063/64</b>	4.22	242.16	17.81	58641.47	1021.85
<b>2064/65</b>	3.09	186.49	9.58	34778.52	577.13
<b>Summation</b>	<b>14.66</b>	<b>1252.6</b>	<b>45.99</b>	<b>320289.5</b>	<b>3604.00</b>

$X - \bar{X}$	$Y - \bar{Y}$	$(X - \bar{X})^2$	$(Y - \bar{Y})^2$
-1.118	38.826	1.2502	1507.46
-0.124	28.266	0.0153	798.967
-0.208	5.286	0.0431	27.9418
1.2872	-8.354	1.6570	69.7893
0.1622	-64.02	0.0263	4099.07
		<b>2.99</b>	<b>6503.23</b>

$$\bar{X} = \frac{\sum X}{n}$$

$$= \frac{14.66}{6} = 2.4433$$

$$\bar{Y} = \frac{\sum Y}{n}$$

$$= \frac{1252.6}{6} = 208.7667$$

$$r_{xy} = \frac{\sum (X - \bar{X})(Y - \bar{Y})}{\sqrt{\sum (X - \bar{X})^2 \sum (Y - \bar{Y})^2}}$$

$$r = \frac{5 \times 3604.00 - 14.66 \times 1252.6}{\sqrt{5 \times 45.99 - 14.66^2} \sqrt{5 \times 320289.5 - 1252.6^2}}$$

### Coefficient of Determination

$$(r)^2 \times (r_{xy})^2 = 0.25$$

### Calculation of P.E

$$S.E. = \frac{1}{\sqrt{n}} \times \frac{1}{\sqrt{r^2}} \times \frac{1}{\sqrt{0.25}}$$

$$= 0.337$$

$$\dots P.E. = 0.6745 \times S.E. = 0.337$$

$$= 0.2213$$

### e. Bank of Kathmandu Limited:

Where, X= NPA of the bank, Y= Total NPA Population of Banks

<u>Fiscal Year</u>	<u>X</u>	<u>Y</u>	<u>X<sup>2</sup></u>	<u>Y<sup>2</sup></u>	<u>XY</u>
2060/61	4.00	289.34	15.99	83717.64	1157.18
2061/62	3.09	278.78	9.52	77718.29	860.05
2062/63	2.04	255.8	4.15	65433.64	520.87
2063/64	2.43	242.16	5.92	58641.47	589.17
2064/65	2.37	186.49	5.61	34778.52	441.79
<b>Summation</b>	<b>13.92</b>	<b>1252.6</b>	<b>41.19</b>	<b>320289.5</b>	<b>3569.06</b>

<u>X - Z<math>\bar{X}</math></u>	<u>Y - Z<math>\bar{Y}</math></u>	<u>(X - Z<math>\bar{X}</math>)<sup>2</sup></u>	<u>(Y - Z<math>\bar{Y}</math>)<sup>2</sup></u>
1.2148	38.826	1.4759	1507.458
0.3005	28.266	0.0903	798.967
-0.748	5.286	0.5599	27.9418

-0.352	-8.354	0.1236	69.7893
-0.416	-64.02	0.1727	4099.07
		<b>2.42</b>	<b>6503.23</b>

$$\bar{X} = \frac{\sum X}{n} = \frac{2.78}{5} = 0.556$$

$$\bar{Y} = \frac{\sum Y}{n} = \frac{250.51}{5} = 50.102$$

$$r_{xy} = \frac{\sum XY - n\bar{X}\bar{Y}}{\sqrt{[\sum X^2 - n\bar{X}^2][\sum Y^2 - n\bar{Y}^2]}}$$

$$= \frac{5[3569.06 - 5(0.556)^2] - 5(2.78)(250.51)}{\sqrt{[5(41.19 - 5(0.556)^2)][5(320289.5 - 5(250.51)^2)]}}$$

### Coefficient of Determination

$$(r)^2 = (0.42)^2 = 0.1764$$

### Calculation of P.E

$$S.E. = \sqrt{\frac{\sum Y^2 - n\bar{Y}^2}{n-2}}$$

$$= \sqrt{\frac{5(320289.5 - 5(250.51)^2)}{5-2}}$$

$$= 0.260$$

$$P.E. = 0.6745 \times S.E. = 0.6745 \times 0.260 = 0.1752$$

### f. Nepal Bangladesh Bank Limited:

Where, X= NPA of the bank, Y= Total NPA Population of Banks

<u>Fiscal Year</u>	<u>X</u>	<u>Y</u>	<u>X<sup>2</sup></u>	<u>Y<sup>2</sup></u>	<u>XY</u>
<b>2060/61</b>	10.42	289.34	108.58	83717.64	3014.92

<b>2061/62</b>	18.33	278.78	335.99	77718.29	5110.04
<b>2062/63</b>	29.27	255.8	856.73	65433.64	7487.27
<b>2063/64</b>	36.46	242.16	1329.33	58641.47	8829.15
<b>2064/65</b>	29.45	186.49	867.30	34778.52	5492.13
<b>Summation</b>	<b>123.93</b>	<b>1252.6</b>	<b>3497.93</b>	<b>320289.5</b>	<b>29933.51</b>

$X - \bar{X}$	$Y - \bar{Y}$	$(X - \bar{X})^2$	$(Y - \bar{Y})^2$
-14.366	38.826	206.3820	1507.458
-6.456	28.266	41.6799	798.9668
4.484	5.286	20.1063	27.9418
11.674	-8.354	136.2823	69.7893
4.664	-64.02	21.7529	4099.073
		<b>426.20</b>	<b>6503.229</b>

$$\bar{X} = \frac{\sum X}{n} = \frac{619.73}{5} = 123.93$$

$$\bar{Y} = \frac{\sum Y}{n} = \frac{1252.6}{5} = 250.51$$

$$r_{xy} = \frac{\sum (X - \bar{X})(Y - \bar{Y})}{\sqrt{\sum (X - \bar{X})^2 \sum (Y - \bar{Y})^2}}$$

$$= \frac{426.20}{\sqrt{426.20 \times 6503.229}}$$

### Coefficient of Determination

$$(r)^2 = (r_{xy})^2 = 0.45$$

### Calculation of P.E

$$S.E. = \frac{1 - r^2}{\sqrt{n}} = \frac{1 - 0.45}{\sqrt{5}}$$

$$\dots P.E. = 0.6745 \times S.E. = 0.6745 \times 0.247$$

$$= 0.1669$$

## Annexure IV

### Test of Hypotesis

1. Is there any significant relation between total lending of commercial banks and the amount of the Non-Performing Assets?

Null Hypothesis,  $H_0: \rho=0$ , i.e. there is not any significant relation between total lending of commercial banks and the amount of the Non-Performing Assets.

Alternative hypothesis,  $H_1: \rho \neq 0$ , i.e. there is significant relation between total lending of commercial bank and the amount of the Non-Performing Assets.

#### **a. T-Test for Nabil Bank Limited:**

Here,  $\bar{X}$  X Mean NPA of bank

$\bar{Y}$  X Mean Total Lending bank

Here using the notation often use in testing the hypothesis

$$\begin{aligned}\bar{X} &= 1.91 \\ \bar{Y} &= 140.87\end{aligned}$$

$$S = \sqrt{\frac{(X - \bar{X})^2 + (Y - \bar{Y})^2}{n_1 + n_2 - 2}} = \sqrt{\frac{1.24 + 10335.23}{5 + 5 - 2}} = 35.95$$

Then,

$$t = \frac{\bar{X} - \bar{Y}}{\sqrt{S^2 \left( \frac{1}{n_1} + \frac{1}{n_2} \right)}} = \frac{1.91 - 140.87}{\sqrt{35.95^2 \left( \frac{1}{5} + \frac{1}{5} \right)}} = -6.113$$

$$|t| = 6.1128$$

Degree of freedom, d.f = n-1 = 5-1 = 4



Now the tabulated values of 't' at 5% level of significance and 4 degree of freedom, for two tailed test is 2.776

**Decision:**

Since the calculated value of 't' i.e. /t/ is more than tabulated value [6.1128>2.776}, the relationship is significant and H<sub>1</sub> is accepted. There is significant relationship between the amount of Non-Performing Assets of sample Bank and its Total lending.

**b. T-Test for Standard Chartered Bank:**

Here using the notation often use in testing the hypothesis:

$$\begin{array}{l} \bar{X} = 2.00 \\ \bar{Y} = 98.15 \end{array}$$

$$S = \sqrt{\frac{(X - \bar{X})^2 + (Y - \bar{Y})^2}{n_1 + n_2 - 2}} = \sqrt{\frac{0.85 + 3022.062}{5 + 5 - 2}} = 19.44$$

Then,

$$t = \frac{\bar{X} - \bar{Y}}{\sqrt{S^2 \left( \frac{1}{n_1} + \frac{1}{n_2} \right)}} = \frac{2.00 - 98.15}{\sqrt{19.44^2 \left( \frac{1}{5} + \frac{1}{5} \right)}} = -7.821$$

$$\dots / t / = 7.8208$$

Degree of freedom, d.f = n-1 = 5-1 = 4

Now the tabulated values of 't' at 5% level of significance and 4 degree of freedom, for two tailed test is 2.776

**Decision:**

Since the calculated value of 't' i.e. /t/ is more than tabulated value [7.8208>2.776}, the relationship is significant and H<sub>1</sub> is accepted. There is significant relationship between the amount of Non-Performing Assets of sample Bank and ist Total lending.

### **c. T- Test for Himalayan Bank Limited:**

Here using the notation often use in testing the hypothesis:

$$\begin{aligned} \bar{X} &= 8.62 \\ \bar{Y} &= 160.21 \end{aligned}$$

$$S = \sqrt{\frac{(X - \bar{X})^2 + (Y - \bar{Y})^2}{n_1 + n_2 - 2}} = \sqrt{\frac{32.95 + 3672.623}{5 + 5 - 2}} = 21.52$$

Then,

$$t = \frac{\bar{X} - \bar{Y}}{\sqrt{S^2 \left( \frac{1}{n_1} + \frac{1}{n_2} \right)}} = \frac{8.62 - 160.21}{\sqrt{21.52^2 \left( \frac{1}{5} + \frac{1}{5} \right)}} = -11.14$$

$$\dots / t / X_{11.137}$$

Degree of freedom, d.f = n-1 = 5-1 = 4

Now the tabulated values of 't' at 5% level of significance and 4 degree of freedom, for two tailed test is 2.776

### **Decision:**

Since the calculated value of 't' i.e. /t/ is more than tabulated value [11.137>2.776}, the relationship is significant and H<sub>1</sub> is accepted. There is significant relationship between the amount of Non-Performing Assets of sample Bank and ist Total lending.

**d. T-Test for Nepal Investment Bank Limited:**

Here using the notation often use in testing the hypothesis:

$$\begin{aligned} \bar{X} &= 2.93 \\ \bar{Y} &= 152.54 \end{aligned}$$

$$S = \sqrt{\frac{(X - \bar{X})^2 + (Y - \bar{Y})^2}{n_1 + n_2 - 2}} = \sqrt{\frac{2.99 + 24701.05}{5 + 5 - 2}} = 55.57$$

Then,

$$t = \frac{\bar{X} - \bar{Y}}{\sqrt{S^2 \left( \frac{1}{n_1} + \frac{1}{n_2} \right)}} = \frac{2.93 - 152.54}{\sqrt{55.57^2 \left( \frac{1}{5} + \frac{1}{5} \right)}} = -4.257$$

$$|t| = 4.2568$$

Degree of freedom, d.f = n-1 = 5-1 = 4

Now the tabulated values of 't' at 5% level of significance and 4 degree of freedom, for two tailed test is 2.776

**Decision:**

Since the calculated value of 't' i.e. |t| is more than tabulated value [4.2568 > 2.776], the relationship is significant and H<sub>1</sub> is accepted. There is significant relationship between the amount of Non-Performing Assets of sample Bank and its Total lending.

**e. T-Test for Bank of Kathmandu Limited:**

Here using the notation often use in testing the hypothesis:

$$\begin{aligned}\bar{X} &= 2.78 \\ \bar{Y} &= 84.24\end{aligned}$$

$$S = \sqrt{\frac{(X - \bar{X})^2 + (Y - \bar{Y})^2}{n_1 + n_2 - 2}} = \sqrt{\frac{2.42 + 3204.442}{5 + 5 - 2}} = 20.02$$

Then,

$$t = \frac{\bar{X} - \bar{Y}}{\sqrt{S^2 \left( \frac{1}{n_1} + \frac{1}{n_2} \right)}} = \frac{2.78 - 84.24}{\sqrt{20.02^2 \left( \frac{1}{5} + \frac{1}{5} \right)}} = -6.433$$

$$|t| = 6.4329$$

Degree of freedom, d.f = n-1 = 5-1 = 4

Now the tabulated values of 't' at 5% level of significance and 4 degree of freedom, for two tailed test is 2.776

**Decision:**

Since the calculated value of 't' i.e. |t| is more than tabulated value [6.4329 > 2.776}, the relationship is significant and H<sub>1</sub> is accepted. There is significant relationship between the amount of Non-Performing Assets of sample Bank and its Total lending.

**f. T-Test for Nepal Bangladesh Bank Limited:**

Here using the notation often use in testing the hypothesis

$$\begin{aligned} \bar{X} &= 24.79 \\ \bar{Y} &= 95.41 \end{aligned}$$

$$S = \sqrt{\frac{(X - \bar{X})^2 + (Y - \bar{Y})^2}{n_1 + n_2 - 2}} = \sqrt{\frac{426.20 + 2.6661}{5 + 5 - 2}} = 7.49$$

Then,

$$t = \frac{\bar{X} - \bar{Y}}{S \sqrt{\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}} = \frac{24.79 - 95.41}{\sqrt{7.49^2 \left(\frac{1}{5} + \frac{1}{5}\right)}} = -14.91$$

$$|t| = 14.91$$

Degree of freedom, d.f = n-1 = 5-1 = 4

Now the tabulated values of 't' at 5% level of significance and 4 degree of freedom, for two tailed test is 2.776

**Decision:**

Since the calculated value of 't' i.e. |t| is more than tabulated value [14.91 > 2.776], the relationship is significant and H<sub>1</sub> is accepted. There is significant relationship between the amount of Non-Performing Assets of sample Bank and its Total lending.

2. Is there any significant relation between the amount of non-performing assets of sample banks and the population?

Null hypothesis,  $H_0$ :  $\rho=0$ , i.e. there is significant relation between the amount of non-performing assets of sample banks and the population.

Alternative hypothesis,  $H_1$ :  $\rho \neq 0$ , i.e. there is not any significant relation between the amount of non-performing assets of sample banks and the population.

**a. T-Test for Nabil Bank Limited:**

Here,  $\bar{X}$  Mean NPA of bank

$\bar{Y}$  Mean NPA of the population banks

Here using the notation often use in testing the hypothesis:

$$\begin{array}{l} \bar{X} = 1.91 \\ \bar{Y} = 250.51 \end{array}$$

$$S = \sqrt{\frac{(X - \bar{X})^2 + (Y - \bar{Y})^2}{n_1 + n_2 - 2}} = \sqrt{\frac{1.24 + 6503.229}{5 + 5 - 2}} = 28.51$$

Then,

$$t = \frac{\bar{X} - \bar{Y}}{\sqrt{S^2 \left( \frac{1}{n_1} + \frac{1}{n_2} \right)}} = \frac{1.91 - 250.51}{\sqrt{28.51^2 \left( \frac{1}{5} + \frac{1}{5} \right)}} = -13.79$$

$$\dots / t / X = 13.786$$

Degree of freedom,  $d.f = n-1 = 5-1 = 4$

Now the tabulated values of 't' at 5% level of significance and 4 degree of freedom, for two tailed test is 2.776.

**Decision:**

Since the calculated value of 't' i.e.  $|t|$  is more than tabulated value  $[13.786 > 2.776]$ , the relationship is significant and  $H_1$  is accepted. There is significant relationship between the amount of Non-Performing Assets of sample Bank and its Total lending.

**b. T-Test for Standard Chartered Bank:**

Here using the notation often use in testing the hypothesis:

$$\begin{aligned} \bar{X} &= 2.00 \\ \bar{Y} &= 250.51 \\ S &= \sqrt{\frac{(X - \bar{X})^2 + (Y - \bar{Y})^2}{n_1 + n_2 - 2}} = \sqrt{\frac{0.85 + 6503.229}{5 + 5 - 2}} \\ &= 28.51 \end{aligned}$$

Then,

$$\begin{aligned} t &= \frac{\bar{X} - \bar{Y}}{\sqrt{S^2 \left( \frac{1}{n_1} + \frac{1}{n_2} \right)}} = \frac{2.00 - 250.51}{\sqrt{28.51^2 \left( \frac{1}{5} + \frac{1}{5} \right)}} \\ &= -13.78 \end{aligned}$$

$$\dots \quad |t| = 13.781$$

Degree of freedom,  $d.f = n-1 = 5-1 = 4$

Now the tabulated values of 't' at 5% level of significance and 4 degree of freedom, for two tailed test is 2.776.

**Decision:**

Since the calculated value of 't' i.e.  $|t|$  is more than tabulated value  $[13.781 > 2.776]$ , the relationship is significant and  $H_1$  is accepted. There is significant relationship between the amount of Non-Performing Assets of sample Bank and its Total lending.

**c. T- Test for Himalayan Bank Limited:**

Here using the notation often use in testing the hypothesis:

$$\begin{aligned} \bar{X} &= 8.62 \\ \bar{Y} &= 250.51 \\ S &= \sqrt{\frac{(X - \bar{X})^2 + (Y - \bar{Y})^2}{n_1 + n_2 - 2}} = \sqrt{\frac{32.95 + 6503.229}{5 + 5 - 2}} \\ &= 28.58 \end{aligned}$$

Then,

$$\begin{aligned} t &= \frac{\bar{X} - \bar{Y}}{\sqrt{S^2 \left( \frac{1}{n_1} + \frac{1}{n_2} \right)}} = \frac{8.62 - 250.51}{\sqrt{28.58^2 \left( \frac{1}{5} + \frac{1}{5} \right)}} \\ &= -13.38 \end{aligned}$$

$$\dots / t / X \quad 13.381$$

Degree of freedom, d.f = n-1 = 5-1 = 4

Now the tabulated values of 't' at 5% level of significance and 4 degree of freedom, for two tailed test is 2.776

**Decision:**

Since the calculated value of 't' i.e. /t/ is more than tabulated value [13.381 > 2.776}, the relationship is significant and H<sub>1</sub> is accepted. There is significant relationship between the amount of Non-Performing Assets of sample Bank and its Total lending.



**d. T-Test for Nepal Investment Bank Limited:**

Here using the notation often use in testing the hypothesis:

$$\begin{aligned} \bar{X} &= 2.93 \\ \bar{Y} &= 250.51 \\ S &= \sqrt{\frac{(X - \bar{X})^2 + (Y - \bar{Y})^2}{n_1 + n_2 - 2}} = \sqrt{\frac{2.99 + 6503.229}{5 + 5 - 2}} \\ &= 28.52 \end{aligned}$$

Then,

$$\begin{aligned} t &= \frac{\bar{X} - \bar{Y}}{\sqrt{S^2 \left( \frac{1}{n_1} + \frac{1}{n_2} \right)}} = \frac{2.93 - 250.51}{\sqrt{28.52^2 \left( \frac{1}{5} + \frac{1}{5} \right)}} \\ &= -13.73 \end{aligned}$$

$$\dots / t / X \quad 13.727$$

Degree of freedom, d.f = n-1 = 5-1 = 4

Now the tabulated values of 't' at 5% level of significance and 4 degree of freedom, for two tailed test is 2.776.

**Decision:**

Since the calculated value of 't' i.e. /t/ is more than tabulated value [13.727 > 2.776}, the relationship is significant and H<sub>1</sub> is accepted. There is significant relationship between the amount of Non-Performing Assets of sample Bank and its Total lending.

**e. T-Test for Bank of Kathmandu Limited:**

Here using the notation often use in testing the hypothesis:

$$\begin{aligned} \bar{X} &= 2.78 \\ \bar{Y} &= 250.51 \\ S &= \sqrt{\frac{(X - \bar{X})^2 + (Y - \bar{Y})^2}{n_1 + n_2 - 2}} = \sqrt{\frac{2.42 + 6503.229}{5 + 5 - 2}} \\ &= 28.52 \end{aligned}$$

Then,

$$\begin{aligned} t &= \frac{\bar{X} - \bar{Y}}{\sqrt{S^2 \left( \frac{1}{n_1} + \frac{1}{n_2} \right)}} = \frac{2.78 - 250.51}{\sqrt{28.52^2 \left( \frac{1}{5} + \frac{1}{5} \right)}} \\ &= -13.74 \end{aligned}$$

$$\dots / t / X \quad 13.736$$

Degree of freedom, d.f = n-1 = 5-1 = 4

**Decision:**

Since the calculated value of 't' i.e. /t/ is more than tabulated value [13.736 > 2.776}, the relationship is significant and H<sub>1</sub> is accepted. There is significant relationship between the amount of Non-Performing Assets of sample Bank and its Total lending.

**f. T-Test for Nepal Bangladesh Bank Limited:**

Here using the notation often use in testing the hypothesis:

$$\begin{aligned} & \bar{X} = 24.79 \\ & \bar{Y} = 250.51 \\ S & \times \sqrt{\frac{(X - \bar{X})^2 + (Y - \bar{Y})^2}{n_1 + n_2 - 2}} = \sqrt{\frac{426.20 + 6503.229}{5 + 5 - 2}} \\ & = 29.43 \end{aligned}$$

Then,

$$\begin{aligned} t & = \frac{\bar{X} - \bar{Y}}{\sqrt{S^2 \left( \frac{1}{n_1} + \frac{1}{n_2} \right)}} = \frac{24.79 - 250.51}{\sqrt{29.43^2 \left( \frac{1}{5} + \frac{1}{5} \right)}} \\ & = -12.13 \end{aligned}$$

$$\dots / t / X \quad 12.13$$

Degree of freedom, d.f = n-1 = 5-1 = 4

Now the tabulated values of 't' at 5% level of significance and 4 degree of freedom, for two tailed test is 2.776.

**Decision:**

Since the calculated value of 't' i.e. /t/ is more than tabulated value [12.13 > 2.776], the relationship is significant and H<sub>1</sub> is accepted. There is significant relationship between the amount of Non-Performing Assets of sample Bank and its Total lending.