CHAPTER-I
INTRODUCTION

1.1 BACKGROUND OF THE STUDY

The wave of rising expectation and ambition of people in the present context of society, realized the need for socio-economic development in the nation building process. The government felt to impart a dynamic role and charge the public sector with greater responsibility in fulfilling national goals and objectives. With this realization the government mushroomed into a number of establishments like agriculture, industry, commerce, public works, transport, and other sectors. In this circumstance, banking was seen as major industry to uplift the economic conditions of public, and country and the world as well. Therefore the government was forced to adopt a liberal economic policy regarding operation of banks. About the financial liberalization process it and said that "the interest rate deregulation curtailment or elimination of directed credits, lifting entry and exit barriers for financial intermediaries, restructuring of banking system and institution for regulatory and supervisory mechanism is some of the key components of such liberalization". This led to the influx of commercial banks in Nepal.

In the past, the goldsmith used to store people's goods and charge nominal rate against the deposit. At that time, people deposited their gold and valuable goods for security rather than earning. An efficient system of financial institution is obviously necessary not only for industrialization but also help for optimum utilization of financial resources of the community and economic prosperity "Tejarath Adda" is the father of modern banking system in Nepal which delivered a good service to government staffs and general public. In reality, the concept of modern banking was introduced when "Nepal Bank Limited" was established in 1994 B.S. Since 1994 B.S. NBL carried out the functions as a commercial bank. The mobilization and implementation of

efficient and effective monetary policy to upgrade the banking system was essential. For that Nepal Rastra Bank was established in 2013 BS. As per Nepal Rastra Bank Act 2012 BS. Since 2013 BS, it has been functioning as the government's bank and has contributed to the growth of financial sector. Up to this date 26 commercial bank, 59 development banks and 79 financial companies are providing service as financial institution in Nepal.

Nepal's economy is agro-based. Over 80 percent of the economically active population depends upon agriculture for livelihood. Contribution of agricultural sector to the gross domestic production of Nepal is about 40 percent. Due to poverty, Nepalese people could not adopt modern system of cultivation. To provide easy loan for development of agricultural sector and their people, the government established the 'Agricultural Development Bank.' The main objectives of the bank were well development of agricultural sector and boost up the economic condition of the people who are involved in agriculture. Prior to this banks, other two commercial banks, one central bank and one development corporation was established. The ADBL was established in 2024 B.S. as a development bank with 50 million initial capitals. Where 51 percent paid up capital invested by government and remaining capital invested by NRB, and public enterprise and from general public and other organization. The bank was established as 'B' class bank. It had certain sector to invest. The bank was mainly focused to invest in agriculture sector. ADBL has registered as limited company in 2062/03/11 as per company; Act 2053.It has got the license of 'A' class bank from NRB in 2062/12/03. Since that date, the bank is providing services to its clients as a commercial bank. "Its capital structure and ownership are as follow before and after the conversion in limited company. The ownership of changing structure will distribute in future."

Capital structure

(Rs. in millions)

Particular	Before amendment	After amendment
Authorized capital	1200	4000
Issued capital	1120	3200
Paid up capital	----	2077.5
Pref. share capital (govt.)irredeemable	870	6400
Pref. share capital (govt.) redeemable	250	2300
General share govt.	250	1625
General share public(class B shareholder)	-----	452.5

Sources: ADBL "As of September 2009"

Ownership Structure

Particular	Before amendment	After amendment
Nepal Government	65%.	50.78%
ADBL (staff)	--	5.08%
General public	5%	14.14%
Other General Public (to whom share will be issued through ipo)	30%	30%
Others	--	--

Sources: Journal of ADBL =Agriculture development bank of Nepal (ADBN)
ipo=initial public offering

Bank is one of the most reliable financial institutions. It collects huge amount of deposit from clients and disburse the funds as loan investment. Without disbursing the fund which is collected in the bank can not earn and run smoothly. The most important task of the bank or any financial institutions is to utilize or proper management of available fund. In the market, there are so many investment areas. A lot of clients want to take loan from bank. But a

bank should invest in that area and person where the interest amount and principle would recover easily. These all things are covered by "Loan Management". Loan management means disbursement of deposit fund in beneficial sectors as well as priority sector as per NRB directive and recover them in time properly. It is most important task for the bank or financial institutions. A bank should invest in those sectors where the investment wouldn't bad debt. If the fund would turn in to bad debt, the bank will Lose huge amount of fund. So, the bank should manage appropriate amount of loan loss provision. It reduces the high amount of losses in one single time period. Thus, loan management is one of very essential as well as crucial task.

Only a few studies have been conducted on "Loan management of ADBL". Except them, ADBL there are other development banks and micro finance institutions operating in Nepal but the financial problem especially in the field of development credit sector is not yet solved. So the necessity of study is felt and done. This study may be millstone in Nepalese context especially in the field of development credit and having significance and value to society.

1.2 STATEMENT OF THE PROBLEM

The bank cannot live without managing its liquidity position. This liquidity position depends on the management of disbursement loan in time and their self-standing capacity or all expenses. A bank or any financial institute can disburse necessary amount to their borrowers and collect the entire disbursement amount in time if there is a good loan management system, Without effective and proper loan management, In enterprise can not accomplish its predetermined goals and objectives. Hence, it is the life blood of any financial institutions.

It is a good and positive matter to all Nepalese that we can get loan from that kind of bank. But is the ADBL's program sufficient to provide adequate loan for all Nepalese? Why has the banks established its branches only in the urban

areas? Why don't they want to expand there branch in the rural and remote area? What is the problem for this?

This research paper attempts to show the effective application of loan management within the conceptual framework of loan disbursement and collection procedure. Beside this the present study, intends to explore the following basis research questions that seek to bridge banking institutions.

- ➢ What is the process of getting loan from ADBL and returning in time?
- ➢ What is the situation of outstanding loan?
- ➢ How can the bank manage the loan?
- ➢ What is the relationship between loan disbursement and recovery?

1.3 OBJECTIVES OF THE STUDY

To complete any work systematically, there must have some certain set of specific objectives. The basic objective of the study is to analyze the loan management aspects, which is related to disbursing loan and their recovery. For that, the study is to analyze and examine efficiency and effectiveness in disbursing and recovering the loan of ADBL. To achieve this objective, the following specific objectives have been set.

- ➢ To show the achievement of sector wise loan disbursement.
- ➢ To examine the loan disbursement, collection and outstanding of ADBL.
- ➢ To measure the relationship between loan disbursement and recovery.
- ➢ To measure the association between deposit collection and loan disbursement.
- ➢ To suggest some remedies for improving loan disbursement and collection procedure of ADBL.

1.4 SIGNIFICANCE OF THE STUDY

ADBL is one of the major financial institutions supporting to the rural and urban people for institutional credit. Many lending agencies are present in Nepal but agricultural financing problem has not been solved yet. In other words ADBL is contributing more than 79 percentage of institutional credit to the rural populace by strengthening its network in all over the country. Non-institutional financing still now plays a vital role in rural area. This study provides some information to analyze the data and some occurring problems for specific field. This study tries to focus the ADBL's disbursement and collection procedure so that all Nepalese farmers and other entrepreneur can get some knowledge about receiving the institutional credit form ADBL easily.

In the context of Nepal, very few studies and research have been made related to loan disbursement and collection procedure of ADBL. Out of this, there is some importance of the study.
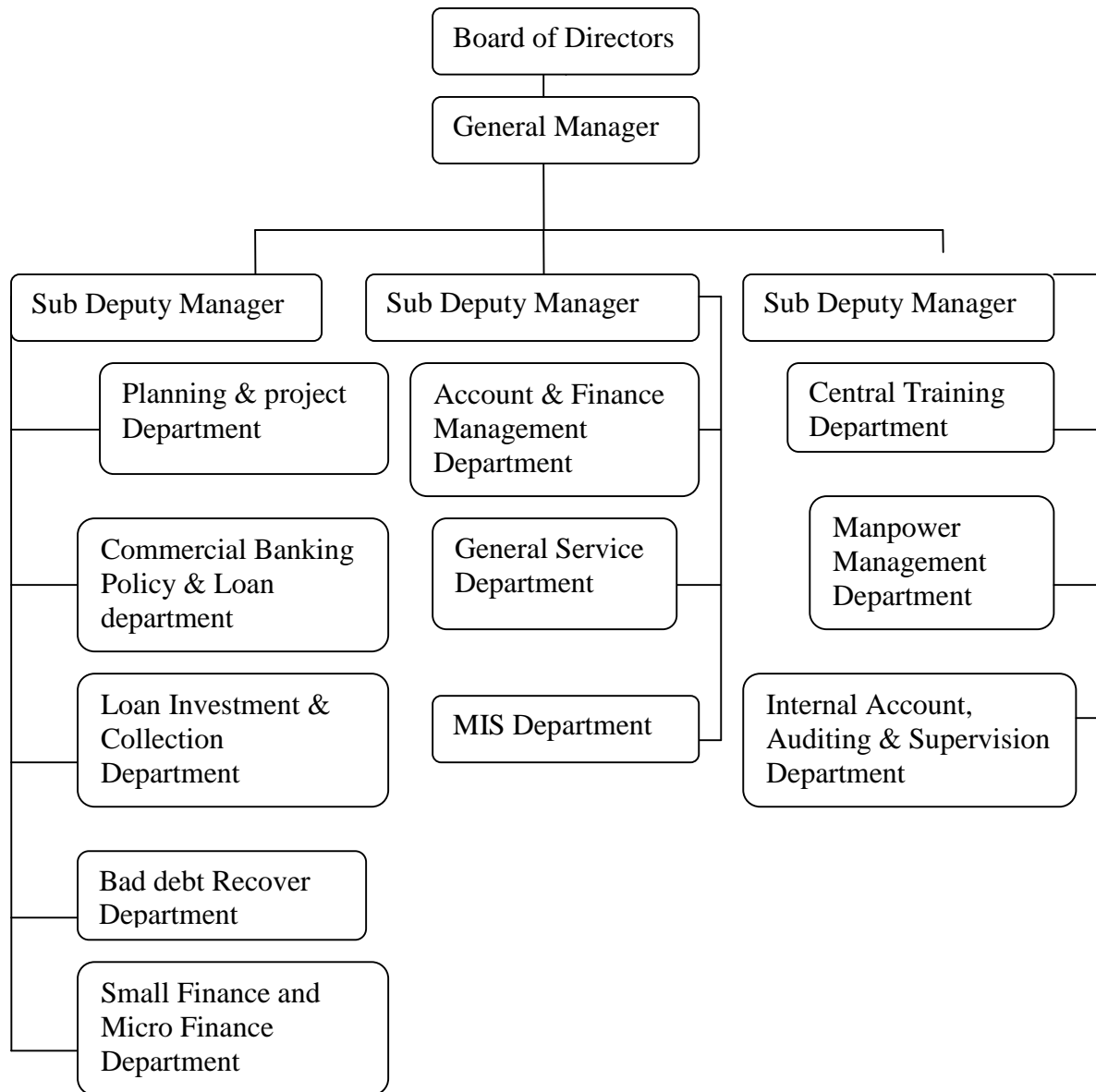
- ➢ To the bank (ADBL)
- ➢ To the targeted entrepreneur and farmers.
- ➢ To the policy makers
- ➢ To the interested person and scholars.

1.5 ORGANIZATION OF MANAGEMENT OF ADBL

The board of directors (BOD) is the apex body of the bank organization & its members are appointed by government. The major functions of BOD are
To formulate policies, strategies, rules and regulations of the institutions. The board consists of seven members including general manager of the ADBL.
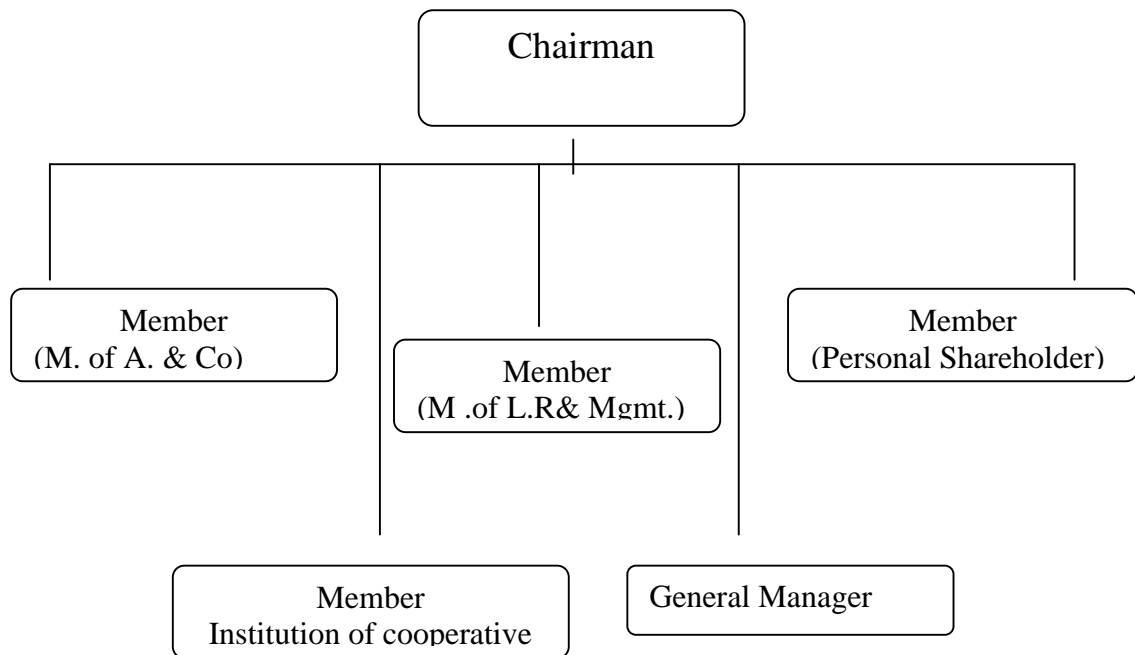
Other member include of representative each from ministry of finance, ministry of agriculture & cooperative , ministry of land reform and management, Nepal Rastra Bank, the cooperative societies & the individual shareholders .the government appoints one of the members as the chairmen of the board.

Organizational   Structure of ADBL

```
                    ┌─────────────────────┐
                    │  Board of Directors │
                    └─────────────────────┘
                    ┌─────────────────────┐
                    │   General Manager   │
                    └─────────────────────┘
```

Sub Deputy Manager	Sub Deputy Manager	Sub Deputy Manager
Planning & project Department	Account & Finance Management Department	Central Training Department
Commercial Banking Policy & Loan department	General Service Department	Manpower Management Department
Loan Investment & Collection Department	MIS Department	Internal Account, Auditing & Supervision Department
Bad debt Recover Department		
Small Finance and Micro Finance Department		

The general Manager is the executive head of the ADBL. As and institutional head, the general manager provides major decisions, executes day to day management of

the organization and smooth implementation of programs with the help of deputy general managers and other staffs perform day to day work decisions made by the board.

Board of Director of ADBL

```
                        ┌─────────────────┐
                        │    Chairman     │
                        └─────────────────┘
          ┌─────────────────────┼─────────────────────────┐
┌──────────────────┐   ┌──────────────────┐      ┌──────────────────────┐
│     Member       │   │     Member       │      │       Member         │
│  (M. of A. & Co) │   │ (M .of L.R& Mgmt.)│      │ (Personal Shareholder)│
└──────────────────┘   └──────────────────┘      └──────────────────────┘
          │
┌──────────────────────┐   ┌──────────────────┐
│       Member         │   │ General Manager  │
│ Institution of cooperative│ └──────────────────┘
└──────────────────────┘
```

1.6 LIMITATIONS OF THE STUDY

Today's world is dynamic; every thing existing here is of limited character. Likewise, this study is also surrounded by limitations. This study is for the partial fulfillment of MBS course of Tribhuvan University, so it may not be useful for the other aspects. The limitations of the study are as follows:

- ➢ Though there are twenty-six commercial bank operating in Nepal, this study considers only one commercial bank, i.e. Agriculture Development Bank Ltd. for the study.
- ➢ The study period covers only 5 years (2063/64-2067/68).
- ➢ This study focuses mainly on loan management function of ADBL.
- ➢ The data used in the study are both primary and secondary based on the information provided by the bank

1.7 ORGANIZATION OF THE STUDY

This study has been comprised into five chapters, each devoted to some aspects loan management of ADBL. The titles of each of these chapters are summarized and the contents of each of these chapters of this study are briefly mentioned here.

Chapter I: Introduction

This chapter deals with the meaning of bank, background of ADBL, statement of problem, objectives, importance and organization of the study.

Chapter II: Review of Literature

The chapter, review of literature, includes some work, analysis and discussion already made in the field of banks in various planning periods and finally, a brief review of previous research works specially made in respect of disbursement and collection procedure.

Chapter III: Research Methodology

The third chapter, research methodology deals with research design, period covered, types and sources of data, data collection procedure, method of analysis and analytical tools used

Chapter IV: Presentation and Analysis of Data

In this chapter collected data through various sources have been presented. It mainly consist the analysis of various types of data regarding disbursement and collection as well as recovery rate of ADBL.

Chapter V: Summary, Conclusion & Recommendations
The fifth and the final chapter is concerned with the suggestive framework that consists with the overall findings, issues and gaps, conclusions ,findings and recommendations of the study.

CHAPTER- II

REVIEW OF LITERATURE

This chapter, reviews literature on loan management. Review of literature is the preliminary search, which helps us to generate and refine our research idea on loan disbursement and collection (loan management). Many researches have conducted their research in the field of banking company especially financial performance, mobilization policy etc. Beside these, there are some books, articles, and other relevant studies concerned with the loan management. But still the loan management aspect of ADBL has not been found. Some of the relevant studies, their objectives, findings, and theoretical reviews have been made in this chapter. To insure the precious, lucid and concrete view about the stated topic, the entire review work is divided into point wise, which is given below:

➢ Review of conceptual framework.
➢ Review of previous related studies.

2.1 REVIEW OF CONCEPTUAL FRAMEWORK

In this section, various books are reviewed that are written by different writers that make clear about the conceptual foundation of loan management. It helps to assess new ideas by examining views of different writers and scholars.

2.1.1 Banks

Banks are those financial intermediaries that accept deposit and grant loan. In other words a bank may be defined as a financial mediator accepting deposits and granting loans, that offers the widest menu of services of any financial institution. Certainly the bank can be identified by the functions they perform in the economy. "Indeed many financial institutions including security dealers,

brokerage firms, mutual funds, and insurance companies are trying to be similar as possible to bank in the services they offer."

A bank plays the vital role in developing the economy of the country. It is a resource mobilizing institution which accepts deposit from various sources and invests such accumulated resources in the field of agriculture, trade, commerce, industry, tourism etc. "The banking sector is largely responsible for collecting household saving in term of different type of deposit and regulating it in the society by lending in different sectors of economy. By lending their resource in small scale industries under intensive banking program has enabled the banks to share in the economic growth of economy. (Peter s. Rose, 2009, p.2.)

2.1.2. Agricultural Development Bank Limited.

Agricultural Development Bank Limited (ADBL) is an autonomous organization largely owned by Government of Nepal. The bank has been working as a premier rural credit institution since last three decades. Hence, rural finance is the principal operational area of ADBL. Besides, it has also been executing Small Farmers Development Program (SFDP), the major poverty alleviation program launched in the country. Furthermore, the bank has also been involved in commercial banking operations since 1984.

Established in 1968 as an Agricultural Development Bank, Nepal but at present Agricultural Development Bank limited (ADBL), is a specialized agricultural and rural credit institution. This provides varied types of credit. Among them livestock credit has a considerable share for income generation activities. Of the outstanding loan Rs.30.19 billion, livestock loan comes to more than Rs. 4.98 billion (18 percent) as of 068/69), (ADBL/ Finance and Account Division 068). Particularly for the poor, ADBL provides live stock credit through Small Framer Development Program (SFDP) a pioneer poverty alleviation program of the Government in Nepal. Most of the small farmers raise cow and buffalo for milk production & goat for meat production. Some of the small farmers

have to face serious problem due to loss of their animals and they have to be indebted instead of improving their economic condition. In the same way, ADBL has also faced the problems in loan recovery due to animals' death. ("Souvenir Organization,"2068. p.209).

2.1.3 Commercial Banking Program

ADBL had initially opened its banking units attached with branches and sub-branch offices working in rural as well as urban areas aimed to provide banking facilities along with agricultural credit. Due to cost factor, the bank started to close down rural units gradually since 1989. The bank had established its first banking office at Ratnapark in 1984 and other more than 40 offices in urban areas.

Initially, the bank aimed to collect deposits as a source of fund to meet the increasing agricultural credit demand in rural sector. However, strengthen the resources base of bank, compensate the loss incurred by the development banking offices situated in rural areas and maintain liquidity the bank started commercial banking lending operation form 1991.It started to provide the loan in various activities through the different form such as overdraft, business loan, industrial loan, contract loan, hire purchasing loan and serviced loan. In addition to acceptance of deposit, commercial banks deliver the following services as well:

a) Issue of Bank Guarantee

b) Fax Transfer services

c) Draft and Mail transfer services

d) Collection of Cheque , Drafts and Bills

2.1.4. Meaning and Definition of Loan

Webster's Dictionary define loan as "something lent; esp. a sum of money lent, often for a specified period and repayable with interest" (Michael Agnes, 200:821). Financial institutions lend money out of deposits, they have received.

They must increase money by advancing loan since they get interests on deposit. It is apt to provoke: Deposits are children of loans and loans are the children of deposits.

Loan is financial assets resulting from the delivery of cash or other assets by a lender to a borrower in return for an obligation repay on specified date or demand. The bank or financial intuitions lend the fund as investment which fund is called loan. Banks do not keep cent percent reserve against deposit for meeting the demand of depositors. The excess reserve than depositors is granted as loan investment from banks. So, the term of loan play an improvement role in banking sector.

2.1.5. Concept of Loan Management

Loan and advance dominate the assets side of the balance sheet of any bank. Similarly, earnings from such loans and advances occupy a major space in income statement of the bank. Lending can be said to be the raison deter of a bank. However, it is very important to be remained that most of the banks failure in the word are due to shrinkage in the value of loan and advance (Dahal and Dahal, 2009, p.114). So the management of loan is the major task for any banks and financial institution. Let's bifurcate the term loan management in order to deliver the meaningful sense about the topic. Cambridge International Dictionary of English dubbed the term 'loan' as above and the 'management' is the control and organization of some thing. In other word "the management of a company is / are the group of people responsible for and controlling and organizing it". So, loan management means proper managing, organizing and controlling of lending money from the bank.

The 'loan management' term concerned matters are being presented as: loan administration involves the creation and management of risk assets, the process of lending takes into consideration the people and system required for the evaluation and approval of loan request, negotiation of terms, documentation, disbursement, administration of outstanding loans and workouts, knowledge of

the process and awareness of its strength and weakness are important in setting objective and goals for lending activities and for allocating available funds to various lending function such as commercial, installment and mortgage portfolios. (Johnson and Johnson, 1940, p.132)

From that we can conclude that loan management refers to systematic identification of needy on or required party, verifying their documents, pre and post site visit, disbursement of loan keeping collateral as cushion for giver and post-disbursement inspection cum sound recovery of granted loan as far as practicable.

2.1.6. Types of Loan

Banks makes a wide variety of loans to a wide variety of customers for many different purposes. For customers, the cause of loan purchasing may be investment in business, purchasing automobiles, taking dream reactions, pursuing college education, constructing home and office building etc. on the basis of loan purpose, bank loan can be divided into seven broad categories :(Singh, 2068, p. 197)

1. Real Estate Loan :

It is the credit extended to purchase or improve real property, such as land building. Such loans are secured by real property Land, buildings and other structures. Real estate loan includes long term loan to finance the purchase of farmland, houses, apartment's commercial structure and foreign properties.

2. Financial Institution Loan

It is the credit extended to banks and other financial service providers. Mostly, finance companies, insurance companies credit banks, co-operative firm saving and credit firms are the customers of financial institution loan provided by bank.

3. Agricultural Loans

Agricultural loan are the credit extended to support farm and branch operations. This loan is extended to assist in planting and harvesting crops, storing crops and marketing them. Agriculture loan also support the feeding and care of livestock.

4. Commercial and Industrial Loan

Commercial and industrial loan are extended to business firms to support the production and distribution of their products and services. It is granted businesses to cover. Such express as purchasing inventories, paying taxes and meeting payrolls too.

5. Individual Loans

This is the loans extended to private individuals for private and household purposes. Generally, individuals' loans are extended to finance the purchase of automobiles, appliance (TV, computer set, washing machine, refrigerator etc.). Customer can also use individual loans for medical care personal express.

6. Miscellaneous Loan

All those not classified above included in this category. Higher education loan, marriage loan, dreams tour loan can be included in miscellaneous loans.

7. Lease Financing Receivables

Bank can lend physical equipment to the customer, in addition to money lending. People do not buy the heavy and costly equipment that is seldom needed for them. For example: curser machine, pressing machine and other plants use for constructions etc. they prefer to get them on pledge. Such equipments and vehicles are providing on lease to customers by the bank.

2.1.7. Objectives of the Sound Loan Policy:

Considering the importance of lending to the individual bank and also the society it serve, it is imperative that the bank meticulously plans its credit operations sound credit policy, whose objectives are as follows, is a foundation in this direction (Dahal and Dahal 2002, p.115).

⟩ **To have Performing Assets**

Performing assets repays principal and interest to the bank from its generated cash flow. The objective of sound loan policy is to keep financial health of the bank meeting interest of depositors and share holders as well.

⟩ **To Contribute Economic Development**:

Sound loan policy says that loans are granted to productive sector of which provides multiple benefit to the society such as: direct and indirect employment generation, capital creation, tax paid to the government and uplift of living standard.

⟩ **To Set a Yardstick for Control:**

Periodic follow up is essential for proper implementation of any credit policy. Sound credit policy aids in identification of the deviation between actual and standard performance along with corrective action to be taken.

⟩ **To Provide Guidelines to Lending Officials:**

There should not be discrimination while dealing with borrower by one officer of another and one branch or another. Individual loan officer make inconsistent judgment from each other and also with organizational goals in the absence of credit policy.

2.1.8 Criteria for Providing Loan

Setup of well established criteria for disbursing advances and loan is the most essential to survive, thrive and enlargement of the banks. Loan should not be allowed to allow demanding parties. Actions and inactions taken in haunch to flow loan and advances without systematic, scientific and through study cum analysis may lead to ditch. Ergo well defined and setup criteria to grant loan must be visible to the personnel. These are positively demonstrated below: (Klisee.1978)

） Personal Character

Intensive analysis of loan demander is essential to determine loan disbursement policy; person's character must be studied to know the intention to pay the loan. There practice to repay loan creditworthiness, habit to use acquired fund, past trend regarding the receipt and payment of loan are to be reviewed. Dubious person's proposal should not be accepted.

） Capacity

Whether the person is capable in making contract, according to contract Act 2056 or not should be checked out at first considering the patent and expertise of person in concerned field, decision about the flow of loan is to be taken.

） Capital

Examination of loan demander is apt to match his demand with his status and business. This ultimately helps to know the amount of money he/she needs for investment. Indeed, their financial feasibility should be stronger than their demand to get the faith of the lenders.

） Security

Priority should be given to readily marketable and handy collateral. Decision about the flow of loan is made considering nature of business and types of

securities proposed. Accept loans having securities above and near about and denies the loan proposal containing inferior quality security.

﹚ Credit Information

It is appropriate to get the information relating with loan proponent form the person or businessmen working together in the concerned sectors. Credit information denotes knowing whether he is black listed or not his capacity and his demand etc. If information obtained is satisfactory, the proposal will be accepted and will be rejected in reverse plight.

﹚ External Environment

External environment if industry of business shown by loan proponent needs to be evaluated on the eve of providing loan to know the facts about use of right business. It is pivotal to evaluate external environment of business where business origins, thrives and survives, since modification of external environment is almost impossible in accordance with motto and plight.

2.1.9. Loan Approval Process:

Loan approving authentic approves only after beings convinced that the loan will be recovered along with interest. There may not be the same procedure for all kinds of loan. The process of accepting loan to industry or merchant differs with each other. Similarly, the approving process of loan concerning to primary sector and bigger project is also not similar. Approval of wrong loan proposal makes lending institution death knell. It entails the following sequences.

- ﹚ Application
- ﹚ Conducting the interview (loan purpose, amount of loan, repayment source, history of business, banking relationship)
- ﹚ Credit analysis (historical analysis, character, capacity conditions, collateral, and capital)
- ﹚ Forecast and risk rating system

〕 Return

〕 Liquidation

〕 Creditworthiness and debt structure

〕 Preparation of credit report.

2.1.10 Elements of Effective Loan Policy

Loan policy should be effective for the well management of loan, without effective loan policy, loan management of a bank can not be effective. For effective loan policy, the following elements should be continued in the loan policy as suggested by the Federal Deposit Insurance Corporation of United States: (Singh, 2003, p.199).

〕 **Characteristics of a Good Loan Portfolio**

The loan should specify the characteristic of good loan portfolio for the bank in term of types, maturities, size and quality of loans.

〕 **Specification of Lending Authority**

The specification of the lending authority should be given to each loan officer and loan committee. This helps to measure the maximum amount and type of loan that each person and committee can approve.

〕 **Line of Responsibility**

There should be the line of responsibility in making assignment and reporting information within the loan department.

〕 **Operating Procedures**

Appropriate operating procedure should be defined clearly for soliciting, reviewing, evaluating and making decisions to customer loan applications.

﹚ Documentation

All documentation required for loan determinate clearly. That is to accompany each loan application and bank's credit file. Basically, financial statement, security and agreements are the main documents to be attached with loan file.

﹚ Line of Authority to Review Credit Files

There should be clear line of authority within the bank, detailing who is responsible for maintaining and reviewing the bank's credit files.

﹚ Collateral Guidelines

All essential guidelines should be established for taking, evaluating and perfecting loan collateral.

﹚ Loan Procedures

There should be perfect policy and procedures for selling loan interest rates and files and the terms for repayment of loans.

﹚ Quality Standards

There should be statement of quality standard applications to all loans.

﹚ Loan Limit

The perfect upper limit for total loan outstanding should be determined in the loan management. It specifies the maximum ratio of total loans to total assets allowed.

Banks loan policy must be flexible due to continuous changes in economic conditions and fully documented and the reason why a variance from the loan policy was permitted should be listed in the loan file. The violation of a bank's loan policy should be infrequent events.

2.1.11 Necessary Documents While Receiving Loan Form ADBL

The following documents are needed while receiving the loan form ADBL.

- Copies of ownership certificates of land and building, receipt of land revenue and citizenship of Nepal citizen.
- Blue print of land and building.
- Firm registration certificate.
- Acceptance of owners while taking the collateral of other person
- Credit information from other related financial institutions
- Cost estimation of the project
- Quotation of the machinery while procuring it for the project
- Two copies passport size photo of client.
- Scheme and feasibility study report etc.

2.1.12 Lending Conditions

Whenever a bank offers credit facilities to the borrowers, it is always subject to the terms and conditions stipulated in the section letter. A bank being the creditor tries to insert the stringent conditions while the borrowers request the bank for lenient ones. If the borrower can Shop around, he succeeds in getting loan at lenient conditions. In short, every loan is sanctioned Subject to certain conditions which can be lenient or stringent depending upon the bargaining capacity of the bank and the borrower, but no way detrimental to the interest of the bank. Generally, bank Sanctions loan containing all or any of the following terms and Conditions:

- Interest rate
- Repayment frequency
- Disbursement frequency
- Expiry of the facility
- Commitment fee
- Documentation

- ⟩ Penal interest rate
- ⟩ Drawing power
- ⟩ Submission of statement/reports(types and frequency)
- ⟩ Bank's right of inspections(with or without notice)
- ⟩ Bank's rights to call back the facilities
- ⟩ Right of borrower to take loan from other financial institutions.

2.1.13. Pricing of Loan

Pricing commercial loan is a vague process that needs estimating. In return the bank should earn on a particular loan and then forming a loan agreement that will generate the desired return.

The yield on loan covers not only the interest rates charged for borrowed funds but also the charged bank males for commitment and compensating balance. In certain cases, service fee income also fall under total return.

The interest rate can either be fixed or variable rate term to check evaluation in the general level of interest that increase bank's cost of fund loan will be made on fixed rate if there is no possibility of rise in interest rate major pricing terms are (Subedi, 2009,p.35).

- ⟩ **Fixed Rate:**

Fixed interest rate is agreed at organization until maturity if there is no chance of in cline in rate of interest.

- ⟩ **Variable Rate**

Depending on the basis rate varying interest rate is installed. It is classified as:

- Z Prime base: Highest graded customer obtains it.
- Z Prime plus: Prime rate plus a fixed percentage is charged under it.
- Z Prime times: Under it the rate will mount by the multiple and prime rate time fixed multiple.

）Commitment Fees

It is levied by bank to customer for agreement to availed fund. It is charged on used and unused portion of a credit line.

）Compensating Balances

Deposit balance is to be kept as per the deed of lender until the laps of loan period. It is to be kept on average rather then at a strict minimum.

2.2. REVIEW OF PREVIOUS RELATED STUDIES

Some of relevant reviews of literature from journal, newspaper and text book are presented below within periphery of this research to known enough ness this original were.

2.2.1 Review of Books

Agricultural is the most important occupation in Nepal and plays a vital role in economic development. It is generally acknowledged that an efficient system of agricultural credit is necessary to sustain, stimulate and strengthen agriculture. The sector money lenders took advantages of the situation and extracted various rates of interest. The high rate of interest, coupled with the borrowing for meeting day to day family expenses resulted in a mounting volume of indebts. Ultimately, this resulted in the transfer of land to the creditor. The outcomes of indebt was not only the loss of land for the actual tiller but also resulted in large scale emigration of people, from one part of the country to another and also outside the country especially to India. Slow progress of cooperative movement in Nepal may be attributed mainly to the lack of sufficient and administration difficulty in making and recovering loans. Thus, all other Nepal credit and indebt were urgent problem. Most of the farmers are not able to save anything from their farm income and they are perpetually in debt with result that the conditions of land cultivated by an average farmer in Nepal stand hardly any change of improvement.(Jha,1978:p.1-2)

The main principles of a sound balancing loan may be summed up in the three words: safety, liquidity and profitability. It is obvious that unless a loan yield income, it will be foolish on the part of the banker to part with the possession of his money and undertake the trouble and expenses involved in ensuring the safety of its recovery. Moreover, it is essential for a bank to earn income to be able to meet its operational expenses and to pay dividend to their shareholders. The question of safety requires no collaboration, unless the money lent is safe and sure to come back, the lending banker will drift in to bankruptcy. As regards liquidity, it has been noted that deposits provide almost the whole of the resource available for being lent out. Bank deposits are subjected to a continuous process of turnover, the banker will not be in a position to meet demands for withdraw of deposits and consequently, will be forced out of business. (Mitra; 1966: p 239)

Let's bifurcate the term 'loan management in to the two separate terms: loan and management in order to deliver the meaningful sense about the topic: Oxford Advanced Learners' Dictionary dubbed the term loan a, "A thing that is lent, especially a sum of money" (Oxford Learner's Dictionary, 1997) Similarly, the term management is defined as "The control and making decisions in a business or similar organization: and further says "the process of dealing with or controlling people or thing" (Oxford Learner's Dictionary, 1997).

Book named "Banking management" says that in banking sector or transaction, an inviolableness of loan management and its methodology (working method) is regarded very important. Under this management, many subject matters are considered and thought. For example, there are subject matters like the policies of loan flow, the documents of loan flow, loan administration, and audit of loan, renewal of loan, the conditions of loan flow, and the provision of security, the provision of the payment of capital and its interest and other such

procedures. This management plays a great role in healthy competitive activities. (Bhandari, 2009: 170)

A Government bank is established either by the government for (certain) balanced the development of that country or private sector tries to do they should necessary funds them. But we need to know, what are their functions, duties and responsibilities. We also describe their policies, strategies and procedures for long run effectiveness. This should be under stable point.

General Principal of a development bank is to provide loan to needy persons/ group who want to develop their socio-economic condition. The Government Bank will serve such people by providing loans. A development bank must care the operation of the loaned. Their supervision and inspections should play a significant role after disbursement of the loan to them". So an important task of a development financial institution is to establish close and constructive contracts with its clients. (Diamond William; 1960. p 58)

2.2.2 Review of Journal

Among the reviewed of articles from various journals pertaining to the study, the major and mostly contributing to the study have been outlined below.

Sunil Chopra in his article "Role of Foreign Banks in Nepal" published in Nepal Rastra Bank samachar about the joint venture banks in Nepal has concluded that the existence of the joint venture banks in Nepal seems crucial as they have been playing an increasingly dynamic and vital role in the economic development of the country that will undoubtedly go on increasing with time. (Chopra 1989. page 1-2)

The expansion of commercial banks branches in rural areas have been repaid after the initiation of peace process in the country following the people's movement II in April 2006. The NRB has also issued new directives relating to

the opening of branches by commercial banks, which helped to expand branches from a number of 452 in mid July 2007 to 555 in mid July 2008, excluding one hundred bank branches of Agriculture Development Bank Nepal (ADNN) involved in non banking transactions.

The expansion of branches by commercial banks are concentrated in the urban areas. For example, the number of bank branches in Kathmandu valley increased by 24.6 percent in the review year from the total branches of 126 as at mid July 2007 to 157 as at mid July 2008 followed by the expansion in the Terai region, by 22.8 percent from 197 branches as at mid July 2007 242 branches as at mid-July 2008. Realizing the concentration of banking activities in the urban areas the newly issued directive required commercial bank to open a branch outside the Kathmandu valley for opening a branch within the valley. (Nepal Rastra Bank, 2007\08 Economic Report P. 62)

It is especially concerned on some issues that need to be taken area of while carrying out these reform programs. These issues broadly classified into external or structural and internal or operational like shifting & replication of all bank head offices from the present regional political center to other viable & business center will automatically help to reduce overstaffing and posting problem in all bank head offices & help them to achieve sound working condition. It is very helpful for loan disbursement & collection department of the bank.

Due to this loan disbursement & collection department staff can get direct contract with the real client of the banks in the market which helps them to achieve sound working condition in the management of loan. (Bista -2065 No 212 ADBN. P.97)

Some analysis says banking is nothing but management of risk. Banks are exposed to mainly credit operational market & liquidity risk. Taking risk by

choice not by chance is the main mantras of banking unfortunately; risk management system in all those banks was poor due to poor corporate government. Like most other public sector enterprise, government owned banks were not professionally run resulting in huge non-performing loans (NPL). Similarly, NBBL, NCC & LNL have negative net worth due to under interference of the promotes\directors in credit operational causing huge NPL. (Dahal, 20 July 2009, P.59)

Banks and financial institutions while providing margin lending to the concerned borrowers on the security of share of the listed companies in Nepal stock Exchange limited are required to follow certain provisions. In the first place, the amount of margin lending to be provided on the security of share is limited to the fifty percent of the average price of closing price of at least 180 working days or fifty percent of the current market price, which ever is lower. The amount if margin lending once accepted to the borrower can't be further extended through revaluation of the share under securities. If the amount of the margin lending exceeds the stipulated limit of 50%, the lending should be regulated to the limit of 50%, or the maturity period of the margin lending should not be more than a year and such lending should not be more than a year and such lending is not allowed for renewal, rescheduling and restructuring. Thirdly, banks and financial institutions, which have a level of capital less than that fixed by the NRB, have negative net worth, are deloused by Nepal stock exchange ltd, and are unable to complete annual audit even after one year from the end of the fiscal years. (NRB, Economic report, 2008, P-72)

2.2.3. Review of Theses

There are various theses about loan management of banks written by various researchers in the past. Some of the dissertations are about the loan disbursement and collection of commercial banks but rarely are there any about Agriculture Development Bank limited. However, these are several

dissertations written in the past which are close to the topic some of such dissertations are reviewed here.

Nirmal Subedi has submitted a thesis named "Loan Management of HISEF Finance Limited" on December 2003n. The main objectives of the study are below.

- To analyze the interest rate structure on loan to be issued.
- To analyze the loans and advances provided by HISEF Limited from F.Y. 2064/65
- To analyze the recovery or repayment if the loans disbursed.
- To study the effectiveness of HISEF Ltd. In relation to realest & recovery of loans.
- To study the attitudes of employees and clients of HISEF Limited in regard to the performance of the right instruction

Major finding about loan disbursement & recovery management are as fallow.

- Current ratio of HISEF is relatively greater than standard. Its average is 2.89
- Loan and advances to total deposit ratio ranges is between 78.49% to 95.41%, the average of this ratio is 85.93%, 78.49% to 95.41%. The average of this ratio is 85.93%.
- Average loan & advance of HISEF during research period is greater than finance companies industry.
- The performing loan is 60% during study period except 3rd years where this is 50.51%.
- The maximum & minimum interest rate is all types of loan is 21% to 12.5% respectively an diminishing basis in aggregate to all finance companies where as it is 15% & 17% respectively on diminishing basis in case in of HISEF.

Ritcha Sharma has submitted a thesis named, "Loan Disbursement & Collection of NBBL" on January 2005 to the main objective of this study is to evaluate loan disbursement and loan collection condition of NBBL. The general objectives of this study are as follow.

⟩ To analyze the trend of very year's deposit collection.

⟩ To measure total amount of loan disbursed out of total deposit.

⟩ To analyze the different types of loan disbursed.

⟩ To measure the status of loan recovery out of total loan disbursed.

By taking these objectives, the researcher find following in her thesis,

⟩ The deposit collected by the bank during the six year period is in increasing trend. The highest percentage increase in increasing in deposit collection in the years 1999 i.e. by 75.56%. Similarly, the amount of loan disbursed has increase every year except in 2009.

⟩ The loan disburse by NBBL is also affected by factors other than the amount the of deposit collected like the poor economic state with less investment of opportunities. HMG regulation provision.

⟩ NBBL disburses highest amount of overdraft loan then other types of the non specific nature of overdraft loan.

⟩ The amount of loan recovered every year has increased with each subsequent year but the percentage increase does not follow the same increasing trend.

⟩ The loan which are easier to recover include specific loan like hire purchase, housing, education loan etc. Because of the selected group of customers.

⟩ NBBL has followed NRB directives and lent almost 12% each year in priority & deprived sector.

⟩ The deposit collected & the loan disbursed increase or decrease irrespective of the increase or interest rate as it has been analyzed by the

comparative study of the rate of interest & the amount of deposit collected & loan disbursed.

Punya Prashad khanal has submitted a thesis named "A Study of Loan Management of Agricultural Development Bank Nepal" The main objectives of the study are below

)　To examine the achievement of purpose wise, term and development region wise loan investment, collection and outstanding.

)　To analyze the relationship between targeted and achievement of loan investment and collection.

)　To study lending policy, loan recovery procedure interest rebel and discount, interest rate changed by ADBN.

)　To analyze the relationship between the loan outstanding and collection.

Major finding about the loan management of the study are below

)　Targeted loan investment and collection is increasing every year and weight age growth rate in fluctuating percent of collection to investment is in fluctuating trend.

)　The highest investment has been in agriculture input marketing and lowest investment in horticulture. Investment growth rate was increasing/decreasing trend. The investment table emphasizes incremental trend of investment except in the total portfolio like irrigation, biogas, housing and land development.

)　The total loan collection of the development financing increased by 12.73%. The highest collection has been in agriculture input marketing in amount and lowest collection in amount tea and coffee purpose, however, collection growth rate was highest in tea and coffee followed by marketing and lowest in irrigation.

⟩ Generally, ADBL's loan is not impress good behavior in the borrower. Most of the borrower does not know about the interest rate, repayment period, type of loan, calculating the transaction, penalty of late paying amount etc.

Basu Dev Sigdel has submitted a thesis named "A study on Loan Management of ADBL" on August 2009. The main objectives of the study are:-

⟩ To evaluate the trend of loan disbursement & collection.

⟩ To study target & actual loan disbursement & collection.

⟩ To examine the achievement of purpose wish, term wise & development region wish loan disbursement outstanding & collection of ADBL.

⟩ To provide suggestion to the ADBL on the basis of findings

From his study the major finding about disbursement & recovery management are as follow

⟩ Actual loan disbursement, outstanding and collection of marketing purpose is increased every year. Percentage (%) of loan collection to disbursement is increasing every year. Like wise the highest percentage of loan collection to outstanding is 67.74% in f/y064/65it is increasing trend. Because of significant relationship existed increase in loan disbursement increase loan collection?

⟩ Actual loan disbursement of loan term is in decreasing trend but loan outstanding and collection is in increasing & fluctuating trend respectively. And disbursement of the outstanding and collection of short term is increased every year the lower percentage.

⟩ The highest actual loan outstanding of eastern, center western, mid western and far western development regions are 29%, 33.35%, 22.73%, 8.69%, & 9.12% in total loan outstanding.

⟩ The targeted loan disbursement & collection is in increasing trend similarly, the actual loan disbursement & collection is also in increasing trend. There is small % of fluctuating trend in targeted & actual loan disbursement & collection.

Prem Raj Dawadi has submitted a thesis named "Loan Management of Banking Company (A case study of ADBL) on July 2008. His research objectives are as follows relevant to loan.

⟩ To analyze the management of loan disbursement.

⟩ To analyze the recovery management of disbursed loan.

⟩ To measure association between deposit collection & loan disbursement.

⟩ To measure relationship between loan disbursement & recovery.

Major finding about loan management of ADBL are as follow

⟩ The ADBL bank divides their loan disbursement amount in categories. The miscellaneous loan category is included such types of loans, which are not categorized, especially the highest potion of the loan is disbursed in overdraft banking. In average around 38% of the total loan disbursed in this category.

⟩ The average cash and bank balance of the bank is 12.67% with total deposit, like this the standard deviation & coefficient of variation of this ratio are 1.76% & 13.96% is 56.76% where its standard deviation & coefficient of variation are 4.20% & 7.40% respectively.

⟩ The all year's loan management target is less than their actual achievement. The calculated value of t-test is 1.828 degree of freedom is 2.306. So there is no significance difference to t-test.

⟩ The loan outstanding amount depends upon loan disbursement & loan collection amount. From the multiple regression analysis he can find that both variables have positive relation with outstanding loan. If the amount changes in these two variables by

Re 1 the loan outstanding amount will be changed by Re.0.4560 & 0.1815 respectively. If both amounts are few the loans outstanding amount would Es. 53.4795 cores.

) The non performing asset of the bank is highest in 2064/65 i.e. Rs 1092777 thousand. In this year the amount of NPA is increased by Rs 294723 thousand. The NPA ratios with loan disbursement are 2.97%, 3.56, 4.32%, 4.62% and 6.26% respectively during study period etc.

2.3 Research Gap

The purpose of this research is to develop some expertise in one's area, to see what new contribution can be made and to receive some ideas, knowledge and suggestions in relation to 'Loan Management of ADBL'. Thus, the previous studies can't be ignored because they provide the foundation to the present study. In other words, there has to continuity in research. This continuity in research is ensured by linking the present study with the past research studies. To fulfill this gap, this research is selected. To complete this research work: many books journals, articles and various published and unpublished dissertations are followed as guideline to make the research easier and smooth. In this regard, here we are going to analyze the different procedure of loan management, which is considered only on ADBL. In this thesis some loan security aspects are also included to clarify the disbursement and collection of loan aspect. Recent five years data (FY 2064/65-2067/68) has been used to get more accurate conclusion. Primary data obtained from face to face interaction with the employee of ADBL.

This study has used all possible financial and statistical tools to cover the objectives of this study. Researcher used correlation coefficient to check the relationship between the sampled variables, coefficient of determination to

know about the dependency of dependent variable on independent variable and hypothesis test (T-test) to prove significant or insignificant relationship between correlated variables. Hence, this study is significantly different form previous study. Effort on this particular subject will be found properly genuine and it will be recognized valuable study in this particular subject.

CHAPTER – III
RESEARCH METHODOLOGY

3.1 Introduction

This chapter explains the overall framework for conducting, processing, analyzing and present data on table and diagrams to find answer of this research problem questions. In other words various steps that are adopted by the researcher in studying his research problem have been described along with the logic behind them. The basic objectives of this study are to highlight the loan management of ADBL.

For this chapter, an attempt has been made to describe the methods of process applied in the entire study. This research is concerned with primary and secondary data. For the purpose of achieving the objective the following research methodology has been purposed. This includes research design, population and sample source of data, data collection technique and data analysis tools.

3.2 Research Design

Research design is an organized approach and not a collection of loose, unrelated part. It is an integrated system that guides the researcher in formulating, implementing and controlling the study. Useful research design can produce the answers to the proposed research questions. The research design is thus an integrated frame that guides the researcher in planning and executing the research works.

Research design is the plan, structure and strategy of investigation conceived so as to obtain answer to research questions and control variance. The plan is the overall scheme or program of research. It includes an outline of what the

investigator will do from writing the hypothesis and their operational implication to the final analysis of data (Wolf and Pant, 2007: 92). To achieve the goal of the study, the study has used descriptive and statistical research design. This study is made to study the loan management of ADBL, so far the purpose of the study it has used descriptive and statistical method.

Descriptive Method

Descriptive research design involves the systematic collection and presentation of data to give a clear picture of a particular situation. This study attempts to obtain a complete and accurate description of a situation. To fulfill the objective of this study, the case of non and delayed repayment of loan in ADBL has to be analyzed for that the descriptive type of research design is adopted.

Statistical Method

It is a method which concerns with the question of how many items are to observe and how the information and data items are to be analyzed. This process of analysis is adopted to see the trend situation of loan disbursement and collection of ADBL from the year 2063/064to 2067/68.

3.3 Population and Sample

All the 27 Nepalese commercial banks, 58 development banks, 78 finance companies and development institutions such as co-operatives, NGOs i.e. micro finance institutions are the population of the study and here only one ADBL has been taken as a sample for research purpose.

⟩ Population and sample of Primary Data

The present study a time period of five years forms FY 2063/64 to FY 2067/68. The analysis is mainly based on these last 5 years data and information. As much as possible unpublished but available data from the concerned department of ADBL are used in analysis process.

⟩ **Population and Sample of Primary Data**

Loan investment and collection data of ADBL from the data of its establishment is considered as the population of the study. Out of this FY 2063/64to 2067/68period is taken as only sample for this research purpose.

3.4 Nature and Source of Data

Secondary as well as primary sources of data are used in this research

i.   Secondary Source of Data

Secondary source of data are the information received from books, journals, newspaper, reports, official records etc. the major source of secondary data are as follows:

⟩ NRB Directives

⟩ Annual general reports of ADBL

⟩ Journal of ADBL's Union

⟩ National newspapers, Journals and Magazines

ii. Primary Source of Data

In this research, primary data are collected through the observation and interviews with the staff of ADBL.

3.5 Data Collection Procedure

Data collection is the most important part of the research, consists of obtaining information from some body's hand. It is therefore very difficult activity of the whole research process. In order to collect the required data from the official record of the ADBL, I have visited the bank many times personally.

Published documents, books articles, magazine are collected from library and. For the primary source personal observation and interviews methods are used.

3.6 Data Analysis Tools

After the collection of data, data analysis has been performed. For the purpose of data analysis, statistical tools have been used to make the analysis more effective, convenient, reliable and authentic. To evaluate the financial condition and solving the problem of the analytical tools can be used.

For the purpose of the study, all collected primary as well as secondary data are arranged, scanned tabulated under various heads and then descriptive and statistical analysis have been carried out to enlighten the study. In this study correlation regression, trend analysis, hypothesis is being used under statistical analysis. Besides this proper tabular formats and diagrams are interpreted and explained where never necessary. Financial tools and statistical tools are explained as below, which are used in the study.

3.6.1 Statistical Tools

For supporting the study statistical tools such as correlation coefficient, regression, trend analysis hypothesis table diagrams, have been used under it.

Ñ Correlation Analysis

Correlation analysis measures the relationship between the variables. There are several methods of measuring correlation. In this research, Karl Person's correlation is used Karl Person correlation is simply denoted by the symbol 'r'.

The closer 'r' is +1b to -1, the relationship between the variables and the closer is to 0, the less close the relationship study of the correlations between two makings. In this research, the correlation between two variables is examined applying following formula;

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}}$$

Where,

X and Y are two variables

r = coefficient of variations

N = No. of observation

Also, in this research probable error is calculated to measure the extent of dependent variable that can be explained by the independent variable. Probable error (PE) is calculated as following

$$PE = 0.6745\frac{1-r^2}{\sqrt{N}}$$

Where,

PE = Probable Error

Ñ **Regression Analysis**

Regression equation is the least square relation of dependent variable in respect to independent variable. In this study collection is termed as dependent variable and disbursement is assumed as independent variable. The parameter of regression equation indicates the fixed volume of dependent variable when independent variable is zero and changes in independent variable with per rupee change in independent variable. In the study an attempt will be made to measure the changes in collection with a change in loan disbursement. The normal regression equation is;

Let the line between the dependent variable 'Y' and the independent variable 'X' be represented by

Y = a+bX……………… (i)

Where,

a = Value of y when X=0

b = amount of change that comes y for a unit change in X or slope of line.

To determine the straight line, we have to determine the value of 'a' and 'b'.

To find the value of 'a' and 'b' we have to solve the following equation,

$$\sum Y = na + b\sum X$$

And, $\sum XY = a\sum X + b\sum X^2$

Where,

n = No. of Observation

Ñ   **Test of Hypothesis**

Hypothesis is a conjectural statement about the relationship between two or more variables, which needs to be investigated for the truth by valid and reliable data. The research of this study strong holds that the hypothesis formulated meet the above mentioned. In this study t- test is shown the effectiveness of planning and project department of the ADBL because test is operated to measure that there is any significant different in target and achievement of loan collection and disbursement of the bank. The hypothesis of this research work is;

Null Hypothesis (Ho): There is no significant difference between the mean ratio of targeted and actual loan disbursement.

Alternative Hypothesis (H$_1$): There is significant difference between the mean ratio of target and actual loan disbursement.

And,

Null Hypothesis (H$_o$): There is no significant difference between the mean ratio of target and actual loan collection.

Alternatives Hypothesis (H1): There is significant difference between the mean ratio of target actual loan collection.

Test statistic under Ho, the test statistic;

$$|t| = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{s^2\left(\frac{1}{N_1} + \frac{1}{N_2}\right)}} \sim tN_1 + N_2 - 2$$

Where,

$\bar{X}_1$ = mean of Targeted Amount

$\bar{X}_2$ = mean of Actual Amount

N_1 = No. of observation of Target

N_2 = No. of observation of Actual

$N_1 + N_2 - 2$ = Degree of Freedom

S^2 = Combined population variance

$$S^2 = \frac{1}{N_1 + N_2 - 2}\left[\Sigma(X_1 - \bar{X}_1)^2 + \Sigma(X_2 - \bar{X}_2)^2\right]$$

Decision: If calculated $|t| \leq$ tabulated t, Null hypothesis will accept other wise reject null hypothesis in favor of alternatives hypothesis.

Ñ **Tables**

A table is presentation of data in row and column form. The presentation of table is concerned with labeling techniques to make the context clear. The raw data collected should be tabulated so that it will be revealing. The better the organization and sequencing of that data, the better it will be revealing. If the data is displayed in table form, it becomes easier for its analysis.

Ñ **Figures**

The term figure usually includes graphs and charts. These presentations help clarify and understand the data at a glance. In other words, figure assists to the reader in understanding the subject.

CHAPTER – IV
DATA PRESENTATION AND ANALYSIS

4.1 Introduction

As explained earlier in the chapter, first the core theme of the right study is to have a correct insight about loan management (disbursement and collection) of Agriculture Development Bank Limited (ADBL). The data collected for the study have been depicted in tabular form and analyzed with the help of pictorial and diagrammatic presentation, trend analysis, correlation arithmetic mean, standard deviation coefficient of variation followed by hypothesis testing. For achieving the stated objectives analysis is being conducted for five year period (i.e. from 2063/64 to 067/68.

In this chapter, data collected from various sources have been presented and analyzed to study the various dimensions of the problems of the study so that the objectives of the study are fulfilled.

4.2 Analysis of Sector wise Loan Disbursement

Loan disbursement refers to identifying data investing source of fund in the forms of loan and advances to capitalize prospects opportunities and action done for that. Lending money as loan and advances is not just like giving aims to the beggars. Hence it requires wise and rational practices.

4.2.1 Statement of Sector wise Loan Disbursement

To evaluate the lending performance of banks, it is important to know how much amount is disbursed out of total deposit. ADBL has disbursed loan in different sector. In this section the disbursement of loan on different sector are analyzed. The sector wise loan disbursements of ADBL are given below

Table 4.1

Status of Sector Wise Loan Disbursement

(Amount in Rs'crores)

| FY / Sector	063/64	064/65	65/66	66/67	67/68	Total
Agriculture	474.15	477.61	365.38	515.83	434.37	2267.34
Mine	-	-	-	-	-	-
Production	235.40	344.56	592.05	552.08	620.06	2344.15
Construction	51.30	108.70	92.93	107.16	74.92	435.01
Metal Product Machinery and Agriculture Tools	15.75	7.21	5.17	1.54	5.18	34.85
Transportation Inst. Production and Installation	3.68	3.22	-	-	-	6.9
Transportation, Comm. Public utility Service	14.25	18.73	10.47	15.36	10.9	69.71
Whole Sales & Seller	699.25	1248.17	1332.38	1391.51	1378.91	6050.22
Finance and Insurance Fixed Assets	57.49	30.67	32.44	28.94	32.54	182.08
Service Industries	147.73	109.53	100.15	123.61	105.06	586.08
Others Service	109.47	132.02	202.14	230.36	226.89	900.88
Consumer Loan	94.62	38.04	113.99	136.18	261.14	643.97
Other	674.75	1115.14	1344.11	1270.41	987.50	5391.9
Total	2577.8	3633.60	4191.21	4373.97	4137.5	18913.1

Source: Annual Report of ADBL

From Table no 4.1 we can see that the sector and amount of loan disbursed every year from 2063/064to 2067/68. The total amount of loan disbursement has been divided into thirteen categories. Such types of loan are being introduced to attract customers of different occupation and interest. We can also conclude from above disbursement table (table no. 4.1) that the contribution of the mine sector has a little less than other sector.

The trend of loan disbursement in most of loan category is fluctuating. Some other   category has increasing trend in loan disbursement. Among these different types of loans the highest amount disbursed every year is wholesale and seller's loan. The above table shows that there is a remarkable difference in the amount of loan given as wholesale and seller's loan. It covers around 33% of the total loan given by the bank inconsiderable period. The bank provides least amount of loan in mine and transportation instrument production and installation sector. In this category the trend of loan disbursement is highly fluctuated. This shows that the bank cannot attract such type of customers.

4.2.2 Trend Analysis of loan Disbursement

The trend forecast of the total amount of loan disbursed every year has been made by using trend analysis technique. The following trend line shows the projection of the total amount disbursed of ADBL up to 2067/68. The calculation of trend forecast has been presented in appendix-1.

Figure 4.1

Trend of loan disbursement
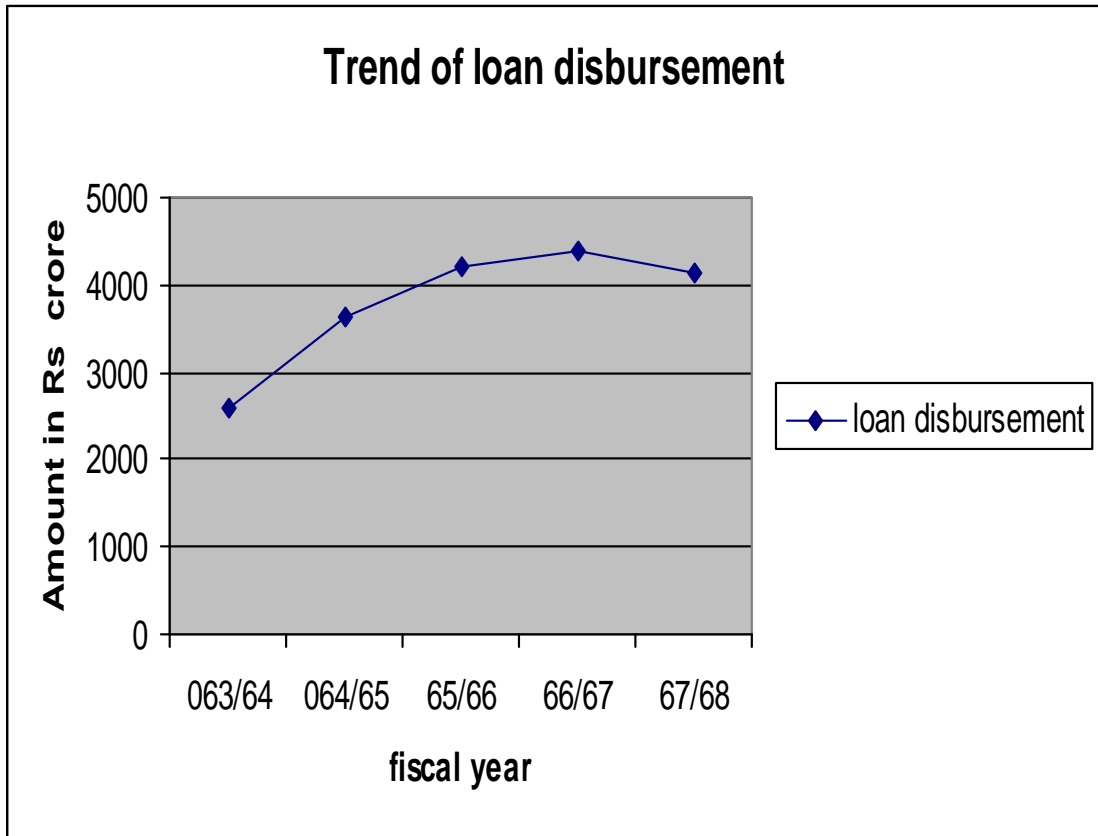
Sources: Appendix-1

The figure 4.1 shows the trend analysis of loan disbursement of ADBL from 2063/64 to 2067/68. The loan disbursement of the bank is in increasing trend if other thing remains constant. According to the trend, the loan disbursement in the fiscal year 2063/64 Rs. 2577.8. crore, in 2064/65 it increases Rs.3633.60 crore, in 2065/66 it shows Rs. 4191.21crore, in 2066/67it has gradually increases by Rs. 4373.97 crore and in FY 2067/68 it shown Rs. 4137.5 crore.

4.2.3 Ratio Analysis of Cash and Bank Balance to Total Deposit

Analysis of organization through all major four types of ratios provides view about the overall performance of the organization. Here all ratios are not shown. It is not possible also. Hence only related ratio is giving more places here to calculate the financial ratio of total deposit.

Table 4.2

Cash and Bank Balance to Total Deposit

Amount in Rs '000'

Fiscal Year	Cash and Bank Balance	Total Deposit	Ratio
2063/64	3689400	32416400	11.38%
2064/65	4017140	32553800	12.34%
2065/66	7451850	35159610	21.19%
2066/67	5772747	32472569	17.77%
2067/68	4836244	34394627	14.06%
Mean			15.34%
S.D ( )			1.78%
C.V			11.60%

Source: Annual Report of ADBL

$$\sigma = \frac{\sqrt{\Sigma(X - \bar{X})^2}}{n}$$

$$CV = \frac{\sigma}{\bar{X}}$$

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

According to table no 4.2 cash and bank balance to total deposit ratios of ADBL haven't been highly fluctuated. But, here in FY 067/068cash and bank balance of ADBL is a little fluctuated .because all year ratios of cash and bank balance to total deposit are near to average ratio. The cash and bank balance of the bank is high. It shows that the bank can make payment easily to the depositor as per their demand. The cash and bank balance of the bank is higher than NRB directives so we can conclude that easily. The mean, standard

deviation and coefficient of variation of the ratio are only 15.34%, 1.78% and 11.60% respectively form consistency stand point, ADBL has 84.78% consistency in this ratio. Hence cash and bank balance to total deposit ratio of ADBL is satisfactory.

4.2.4 Analysis of Loan Disbursement Target and Achievement

The bank has its own system to disburse loan in different sectors. It has followed the budgetary system of operation. There is a planning and project department, which formulates the plan and fixes the target of loan disbursement form each fiscal year. Here we will show the target and achievement of loan disbursement of the ADBL. The bank has fixed the loan disbursement target at the beginning of the fiscal year and it evaluates the achievement of the bank at last of fiscal year. Loan disbursement target and achievement of the ADBL is presented in the following table and diagram.

Table 4.3

Loan Disbursement Target and Achievement

Amount in Rs. '000'

Fiscal Year	Loan Disbursement		Variation Amount	Variation Percentage
	Target (X_1)	Achievement (X_2)		
2063/64	29192034	29285522	93488	3.20%
2064/65	31770120	36335966	4565846	12.56%
2065/66	37460000	41915100	4455100	10.62%
2066/67	39850000	43729700	3879700	8.87%
2067/68	40362000	41374500	1012500	2.47%

Source: Annual Report of ADBL

Figure 4.2

Loan Disbursement Target and Achievement
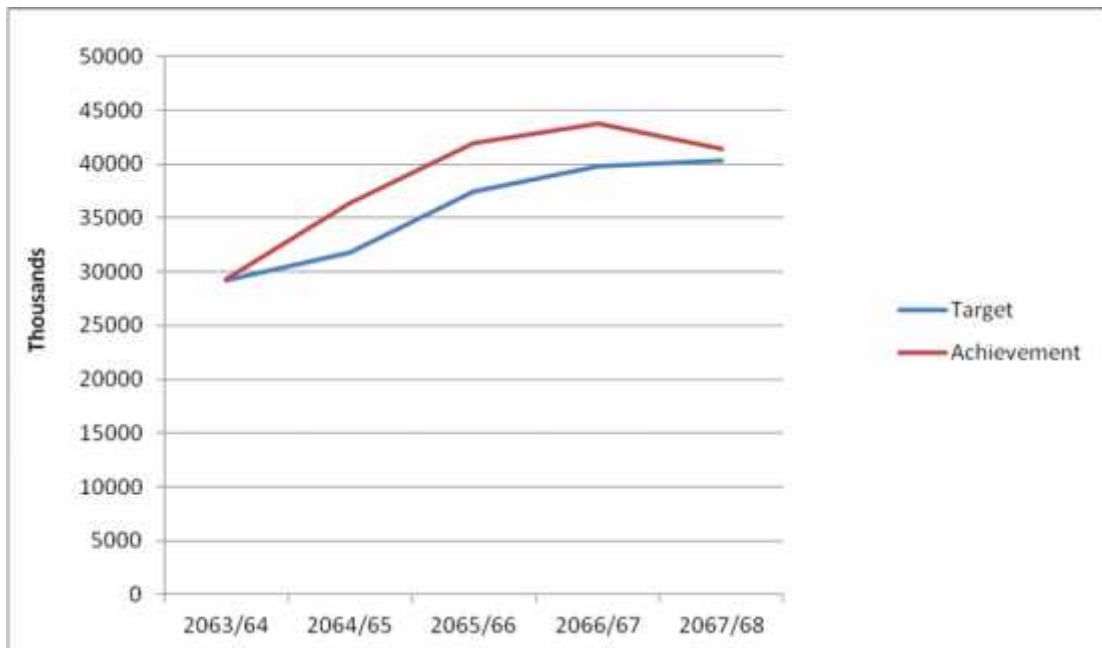
Source: Table no. 4.3

According to table no. 4.4 and diagram or figure no 4.2 we can see there, loan disbursement target and achievement of year 2063/64 to 2067/68. The table and figure shows that a loan disbursement target was not meet in fiscal year 2064/65and achievement of loan disbursement in other fiscal year is above the target during the study period. The variation percentage of fiscal year 2064/065 is more variation than other fiscal year variations. The deviations of loan disbursement are 3.20%, 12.56%, 10.62% ,8.87% 2.47%   to targeted loan disbursement during the study period respectively. From that projected amounts for loan disbursement is a little good as compare with achievement. To test signification variation of targeted and actual loan disbursement, t-test can be used the calculation of all figure has been drawn from appendix-2.

Here, Amount in Crore

$\overline{X}_1$ = 2898.40

$\overline{X}_2$=3852.82

$S^2 = 1286440.41$

$N_1 = 5$

$N_2 = 5$

Now,

Null Hypothesis (H_0): There is no significant different between the mean ratio of targeted and actual loan disbursement.

Alternative hypothesis (H_1): There is significant different between the mean ration of targeted and actual loan disbursement.

Test Statistics,

$$|t| = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{S^2\left(\frac{1}{N_1} + \frac{1}{N_2}\right)}}$$

$$X \frac{2898.40\, Z\, 3852.85}{\sqrt{1286440.41(1/5\, \Gamma\, 1/5)}}$$

$$X \frac{Z954.41}{717.3396}$$

$$= 1.330$$

The tabulated value of 't' for 8 degree of freedom at 5% level of significant is 2.31, which is greater than calculated value of $|t|$ i.e. 1.330. So, null hypothesis is accepted. That means there is no significant difference between the targeted and actual loan disbursement. So according to t-test the ADBL's targeted and actual loan disbursement is not significant difference.

From above analysis we can conclude that there is good planning and projection in ADBL to disburse loan. They can formulate the real plan of loan disbursement. They are doing well so the bank has good performance in disbursing loan.

4.2.5 Analyzing the Relationship between Deposit Collection and Loan Disbursement

Bank or Financial institution not only collects deposit but also disburse the loan. Without disbursing as loan investment the bank can not earn any thing. From that we can say deposit collection is the main source of loan disbursement. But sometimes loan disbursement is greater than deposit collection because of collection of previous year's due or interest collection and the profit earned by the bank. So, the banks are intermediaries where deposits are collected from clients and provide loan and advances to the borrowers or clients. So there is relationship between deposit collection and loan disbursement.

4.2.5.1 Comparative Study of Loan Disbursement and Deposit Collection

To evaluate the landing performance of banks, it is important to know how much amount is disbursed out of total deposit. Disbursement of loan is made out of the deposit collected. So loan disbursement is related with deposit collection. The amount of loan disbursement should be according to the amount of deposit collection. In practice, sometimes loan disbursement is higher than deposit collection because of collection of loan and collection of due amount of previous year. In the following table it has been tried to show the comparative study between loan disbursement and deposit collection of ADBL. Appendix-4

Table 4.4

Comparative Study of Loan Disbursement & Deposit Collection

Amount in Rs. '000'

Fiscal Year	Amount of Deposit collection	% change in Deposit collection.	Amount of loan disbursement	% change in loan Distribution.
2063/64	32416400	-	29285522	-
2064/65	32553800	0.42%	336335966	19.40%
2065/66	35159610	7.41%	41915100	13.31%
2066/67	32472569	-8.29%	43729700	4.14%
2067/68	34394627	5.58%	41374500	-5.69%

Source: Annual Report of ADBL

From table no 4.4, we can see the change in amounts of deposit collection and loan disbursement of ADBL during the study period. The amount of deposit collection is in increasing trend up to 2065/66 but in year 2066/67 it is decreased. And also the amount of loan disbursement is not in increasing trend but sometimes, The amount of loan disbursement is in increasing trend up to fiscal year 2064/65. But after 2067/68 it is in decreasing trend. From table we can conclude that the amount of deposit collection and loan disbursement are not in same way because the deposit collection is in increasing trend but loan disbursement is not same we can also see the amount of loan disbursement is more than deposit collection because of the bank also collect the amounts form other sources.

4.2.5.2 Coefficient of Correlation between Loan and Disbursed and Deposit Collection

These tools, coefficient of correlation measure the degree of relationship between these two variables, loan disbursement and deposit collections. In this analysis, deposit is independent variable 'X' and loan is dependent variable

(Y). The main reason of finding out the coefficient of correlation between these two variables is to justify whether deposit collected is significantly used as loan disbursed or not. The table below shows the value 'Y' and 'r^2', probable Error (P.E) and 6PE between deposit and loan of ADBL for the period studied.

Table 4.5

Coefficient of Correlation between Deposit Collected and Loan Disbursed of ADBL

Coefficient of Correlation (r)	Coefficient of Determination (r^2)	Probability Error (P.E)	Test = 6PE
0.0354	0.0012	0.30126	1.80

Sources : Appendix- 4

Table 4.5 Shows that the coefficient of correlation between deposit collection and loan disbursement. The correlation coefficient is 0.0354 which shows the negative relationship between these two variables. It also shows that there is utilization of deposit collection in loan disbursement by the bank. The coefficient of determination is 0.0012 which depicts that 0.12% of the dependent variable i.e. loan disbursement has been influenced by the independent variable i.e. deposit collection.

Loan disbursement and deposit collection are positively correlated which shows that an increase in total deposit leads to increase in loan disbursed. During the period from 2063/64 to 2067/68, the trend of percentage increase in deposit collection to the percentage increase in loan disbursement is fluctuating. Normally, a higher coefficient of correlation between deposit collection and loan disbursement is a good signal until the deposit follows an increasing trend. But once the deposit suffers, loan and advance will also be adversely affected. ADBL is not failed in mobilizing its deposit collection.

Probability Error (P.E) is calculated to be 0.30126 and 6P.E. is.1.80. The value of correlation coefficient (r) is more than 6PE which reveals that there is not significant relationship between total deposit collected and loan disbursed.

4.3 Recovery Management of Disbursed Loan

The success of a bank doesn't depend only on the extension of more amount of credit. The recovery of extended credit is equally important. In fact, timely recovery of loan is the crucial things of the lending function of a bank. Hence, quality of credit is more vital than exploiting new opportunities sound recovery of disbursed loan enhances financial institutions to releases more and more of which ensures day to day. Operation and long run survival of such institution to fulfill stated objectives to analyze the recovery management of ADBL, we have been studied as below:

4.3.1 Statement of Loan Collected by ADBL

Table 4.6

Amount of Loan Collected by Bank

Amount in Rs. '000'

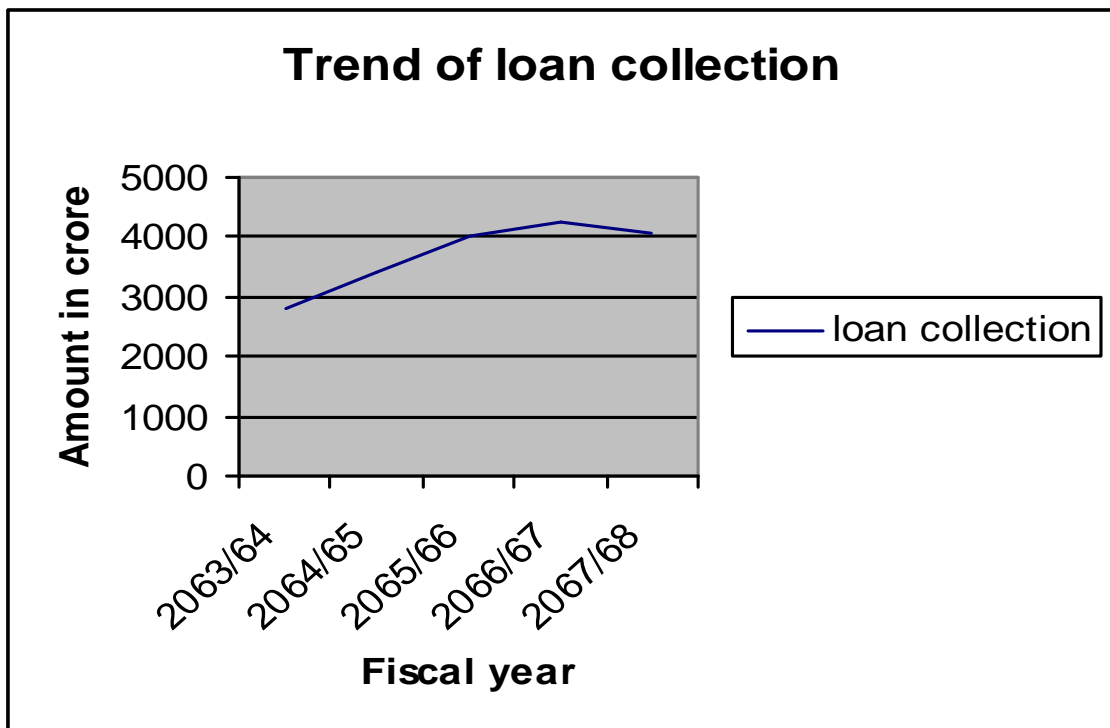| Fiscal Year	Amount of loan Collected	Increase/Decrease in Amount	Increase/decrease in percent
2063/64	28155899	-	-
2064/65	34171617	5559382	16.26
2065/66	40218700	6047083	15.03
2066/67	42448000	2229300	5.25
2067/68	40584700	(1863300)	-4.59

Source: Annual Report of ADBL

From table no 4.5 we can see the amount of loan collected in every year from 2063/64 to 2067/68. We can see here the collection of loan is slightly fluctuating in every year other than year 2067/68. In the year 2067/68 collection of loan was less than 2066/67. The highest amount increased in year 2065/66 is Rs 6047083 thousand. In year 2067/68 the amount decreased by Rs. 1863300 thousand. The trend of loan recovery is in fluctuating rate. In percentage the amount of loan recovery has increase and decrease by 16.26%, 15.03%, 5.25% and- 4.59% respectively during the study period.

4.3.2 Trend Analysis of Loan Collection

The trend of total collected loan in coming year is analyzed using the trend analysis. The following trend line shows the projection of total loan collected of ADBL up to coming five year. The projection of loan collection amount depends upon the previous year's movement of collection amount. The calculation of trend forecast has been presented in appendix-3

Figure 4.3

Trend of loan collection

- 55 -

From table no 4.3 we can see the trend analysis of loan collection of ADBL, during the study period and forecasting period (2063/64 to 2067/68). The figure shows that the loan collected by this bank is in increasing trend rater than fiscal year 2063/64, in this year the loan collected by this bank is in slightly decreasing trend. According to the trend forecast, then loan collection trend in upcoming five years are scheduled in the trend line above. The loan collection amount will be Rs. 2815.5899 crore, 3417.1617 crore 4021.8700 crore, 4244.8000 and 4058.4700 crore respectively for coming five year according to the trend forecast.

4.3.3 Analysis of Loan Collection Target and Achievement

ADBL has its own system to collect loan from different sectors. It has followed the budgetary system of operation. There is a planning and project department, which formulates the plan and fixes the target of loan collection for every fiscal year. Here, we will evaluate the target and achievements of loan collection by the bank loan collection target and achievement of loan collection by the bank can be presented in below by using table and bar diagram.
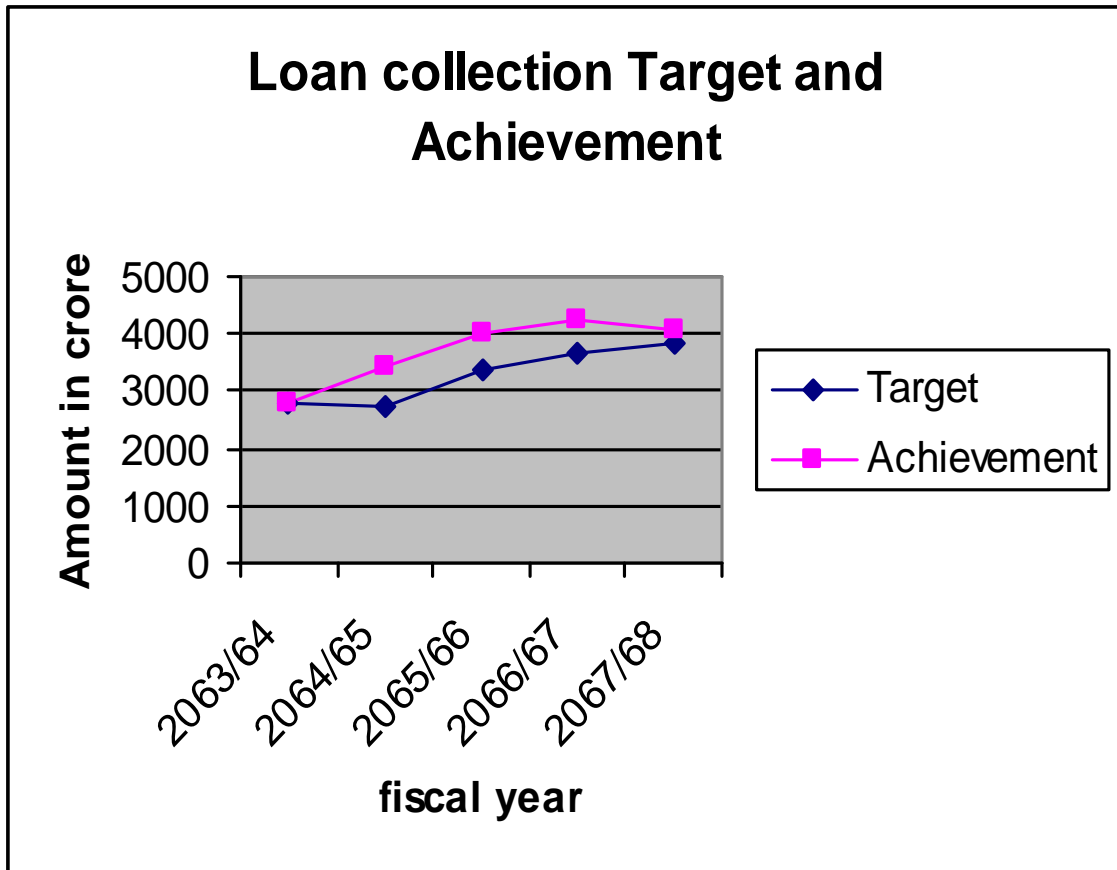
Table 4.7

Loan Collection Target and Achievement

Amount in Rs. '000'

Fiscal Year	Loan Collection		Variation	Variation
	Target	Achievement	Amount	Percentage
2063/64	28083230	28155899	72669	0.25
2064/65	27241412	34171617	6930205	20.28
2065/66	33860000	40218700	6358700	15.81
2066/67	36670000	42448000	5778000	13.61
2067/68	38560000	40584700	2024700	4.98

Source: Annual Report of ADBL

Figure 4.4

Loan collection Target and Achievement

Source: Table no 4.7

Above table 4.7 and figure 4.4 shows that both actual and targeted loan collection of loan are in every year during study period. According to above table loan collection of disburse loan is in increasing and decreasing ratio in fiscal year 2063/64 and 2067/68, increasing ratio of collection is higher than other fiscal year. Achievement of loan collection in all year is above than the target during the study period. The variation percentage of every fiscal year is positive. The deviation of loan disbursement is 0.25%, 20.28%, 15.81%, 13.61%and 4.98% to target loan collection during the study period respectively. The variation between actual and targeted increase in 2nd and 3rd year and variation in actual loan collection to targeted loan collection a statistical technique (t-test) can be used as below. The calculation of all figures has been drawn from appendix-4.

Here, Amount in Crore

$\overline{X}_1 = 3288.88$

$\overline{X}_2 = 3711.56$

$S^2 = 299293.03$

$N_1 = 5$

$N_2 = 5$

Null Hypothesis (H_0): There is no significant different between the mean ratio of targeted and actual loan collection.

Alternative hypothesis (H_1): There is significant different between the mean ratio of targeted and actual loan collection.

Test of Statistics,

$$|t| = \frac{\overline{X}_1 - \overline{X}_2}{\sqrt{S^2\left(\frac{1}{N_1} + \frac{1}{N_2}\right)}}$$

$$X\frac{3288.88\ Z\ 3711.56}{\sqrt{299293.03(1/5\ \Gamma\ 1/5)}}$$

$$= 1.22$$

Hence, the tabulated value of $|t|$ for 8 degree of freedom at 5% level of significant is 2.31, which is grater than the calculated value of $|t|$ i.e. 1.22. So, Null hypothesis is accepted. That means there is significant difference between the targeted and actual loan collection. In other words, the ADBL's targeted and actual loan collections are significantly different.

From above analysis we can concluded that there is no good and effective planning and projection in ADBL, which can not formulate the real plan of loan collection. They are not performing well. So, that the bank should do more exercise in this department to do a well forecast.

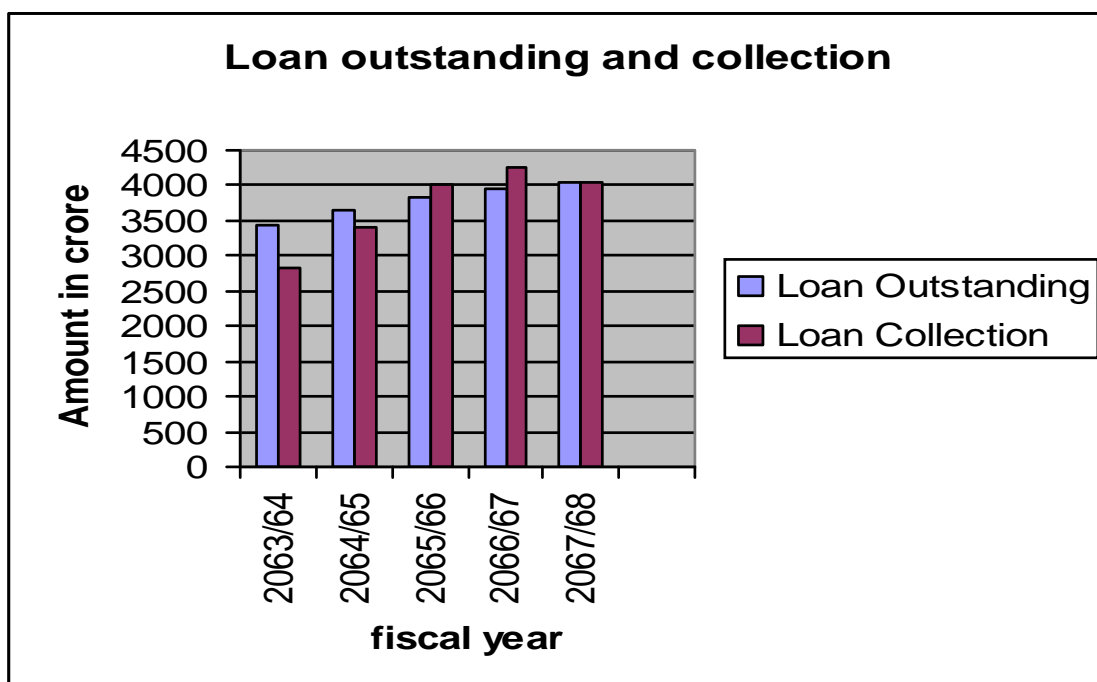**4.3.4 Compare of Loan Outstanding with Loan Collection**

Table 4.8

Loan Outstanding Loan Collection

Fiscal Year	Loan Outstanding	Inc/Dec %	Loan Collection	Inc/Dec%
2063/64	34440396	-	28155899	-
2064/65	36604700	5.91	34171617	17.60
2065/66	38301100	4.42	40218700	15.03
2066/67	39582900	3.23	42448000	5.25
2067/68	40372700	1.95	40584700	-4.59

Source: Annual Report of ADBL

Figure 4.5

Source: Table no 4.8

Figure no 4.5 and table no 4.8 shows that the loan outstanding amount and collection amount during the study period 2063/64and 2067/68.the amount of loan outstanding increasing in every year but in fluctuation trend. But amount

of loan collection is in increasing or decreasing trend in fiscal year 2067/68 it is in decreasing trend. It is decreased by 4.59% than fiscal year 2066/67. The amount of loan outstanding is increasing with recovery amount, it is because loan disbursement amount is increasing every year.

4.4 Study of Relationship between Loan Disbursement and Loan Recovery/ Collection

Loan collection is related with loan disbursement. The amount of loan recovery should be according to the amount of loan disbursed. To run and earn smoothly, any financial institution should recover disbursed loan in time. Bank, first of all disburses the loan then after recovers it. Without disbursement of the loan, there would not be loan collection amount. So, the loan amounts, to be collected is increasing with loan disbursement amount generally which express that there is certain relationship between loan disbursement and loan collection. In the following, it has been tried to study the loan disbursement and collection of ADBL comparatively.

4.4.1 Loan Collection to Loan Disbursement

To study the relationship and recover performance of banks it is important to know how much amount of loan is recovered out of the total loan disbursed. Loan collections to loan disbursement of ADBL show the relationship and recover performance which is presented as below in the figure.

Figure 4.6

Loan Disbursement and collection
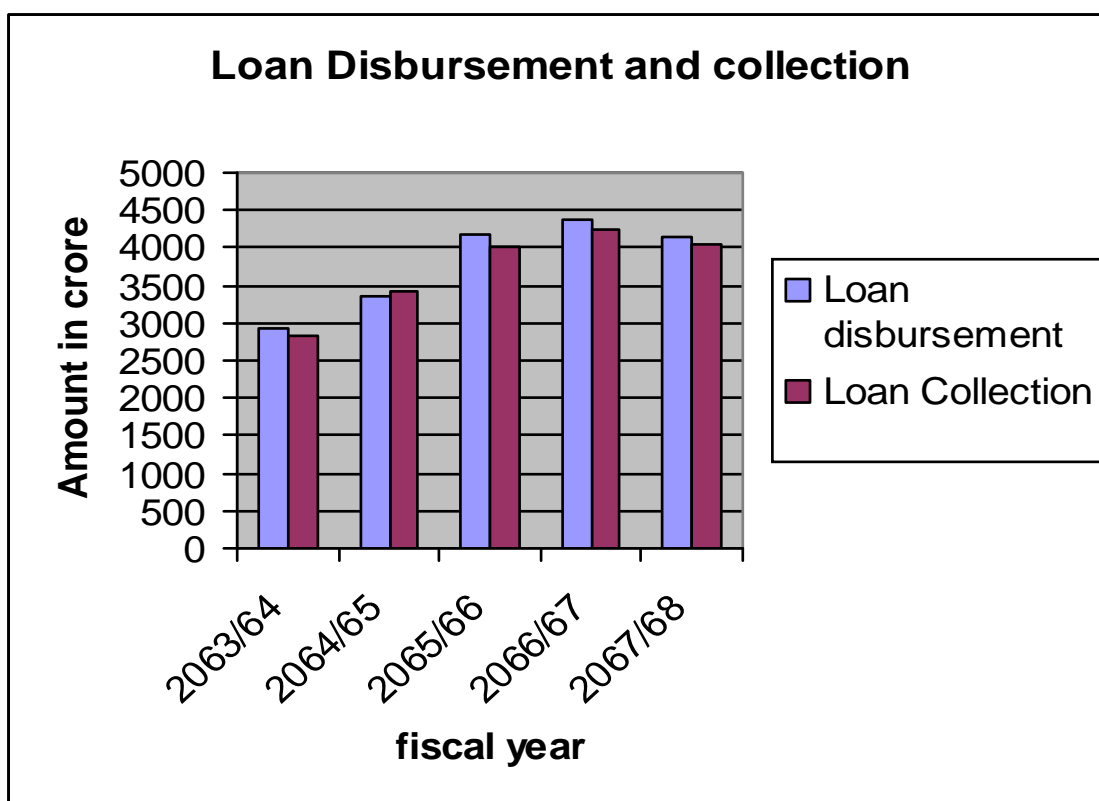
Source: Table 4.9

The figure no 4.6 display the amount of loan collection in comparison to the amount of loan disbursement. The amount of loan collections are Rs. 2815.5899 crore3417.1600 crore, 4021.8700 crore, 4244.8000 crore and 4058.4700 crore like wise the amounts of loan disbursement are Rs. 2928.5522 crore,36336000 crore, 4191.5100 crore,4372.9700 crore and Rs.4137.45000 crore . The amount of loan disbursement is fluctuating sometimes in increasing trend and sometimes in decreasing trend because of deposit collection. Loan collection is also in same trend like loan disbursement, increasing or decreasing trend because of increasing or decreasing trend of loan disbursement. From figure we can see that the distance of loan disbursement is always a little greater than loan collection. So it is a good condition that the figure emphasis the good relation between loan disbursement and loan collection of ADBL during the study period.

4.4.2 Comparative Study of Loan Disbursement and Collection of ADBL

Loan collection is related with loan disbursement. The amount of loan recovery should be according to the amount of loan disbursed. In the following table it has been tried to study the loan disbursement and loan collection by ADBL comparatively during the study period.

Table no 4.9

Comparative Study of Loan Disbursement and Loan Collection

Amount in Rs. '000'

Fiscal Year	Amount of Loan disbursement	% change in loan	Amount of loan collection	% change in loan collection
2063/64	29285522	-	28155899	-
2064/65	336335966	19.40	34171617	17.60
2065/66	41915100	13.31	40218700	15.03
2066/67	43729700	4.14	42448000	5.25
2067/68	41374500	-5.69	40584700	-4.59

Source: Annual Report of ADBL

From table 4.9 we can compare the loan given and collection of ADBL. It has been revealed that the loan in each other from 2063/64 to 2067/68 has been recovered proportionately as per the loan disbursed. In 2064/65 the loan disbursement has been increased by 19.40% then after increased only by 13.31% in 2065/66 and fiscal year 2066/67 also increases by 4.14% and at last fiscal year 2067/68 it is decreased by 5.69% it is less than other fiscal year which shows that the percentage increasing or decreasing in loan disbursement in fluctuating trend. Similarly, the percentage increase in loan collection in year 2064/65 by 17.60% than after increased by 15.03% in year 2065/66 and in year 2066/67 it is increased by 5.25% and at last fiscal year 2067/68 it is decrease by 4.59% it is also less than other fiscal year. Table shows that the

loan disbursement and collection in 2067/68 are fluctuating higher than other fiscal year.

4.4.3 Coefficient of Correlation between Loan Disbursement and Loan Collection

In order to find whether the loan disbursed has been significantly recovered or not, this method of analysis is adopted. The relationship between the variables loan disbursement and loan collection is found by calculating the coefficient of correlation between these two variables. In this calculation, loan disbursement is independent variable (X) and loan collection is dependent variable (Y). The table shows the relationship between X and Y variables as below.

Table 4.10

Coefficient of Correlation between Loan Disbursement and Loan Collection

Coefficient of Correlation (r)	Coefficient of Determination (r^2)	Probability Error (P.E)	Test = 6PE
0.9919	0.9838	0.0048	0.0293

Source: table no. 4.10

The above table, table no. 4.10 shows that the coefficient of correlation between loan disbursement and loan collection. The correlation coefficient is 0.9919 which shows the strong positive relationship between these two variables. It also shows that there is well collection of loan disbursed by the bank. The coefficient of determination (r2) is 0.9838 which depicts that 98.80% of the dependent variable i.e. loan collection has been influenced by the independent variable i.e. loan disbursement. Loan disbursement and collection are strongly positive correlated which shows that an increase in total loan disbursement leads to increase in loan collection During the study periods, the trend of percentage increase in loan disbursement to the percentage increase in loan collection is fluctuating but not highly. A higher coefficient of correlation

between loan disbursement and collection is a good sign. ADBL is successful in collecting the loan disbursed.

Probability Error (P.E) is calculated to be 0.0048 and 6PE is 0.293 The value of 'r' more than 6PE which reveals that there is significant relationship between total loans disbursed and loan collected or recovered.

4.4.4 Regression Analysis between Loan Outstanding on Loan Disbursement and Loan Collection

The regression analysis in the general sense the estimation of the unknown value of one variable form the know value of the other variables. It is specially used in business and economic to study the relationship between two or more variables that are related causally.

The analysis of the relationship of loan outstanding on loan disbursement and collection based on the historical data in this section. Here in the analysis the loan outstanding independent variable which is denoted as Y? Loan disbursement and loan collection are independent variables which are denoted as X1 and X2 respectively. Form where we can find the regression line of Y on X1 and X2 calculation of regression equation line of Y on X1 and X2 from appendix – 5

This is,

$$Y = a + b1\ X1 + b2X2$$
$$Y = 3908.24 + 0.0019\ X1 + (-0.0349)\ X2$$

The above regression equation shows the relationship of loan outstanding on loan disbursement and loan collection from where we can find there is not a good relation between loan outstanding with loan disbursement and loan collection. The slope coefficient of -0.0349 of X2 means that the marginal propensity to loan collection decrease by a rupee, on the average loan

collection will goes down by Rs. 0.0349, like this if the value and loan disbursement increase by a rupee, on average loan disbursement will goes up by Rs. 0.0019, but it is not in practical. In practice the amount of loan collection should be decrease with increasing in loan disbursement amount. But here the real amount of loan outstanding is increasing every year. Another value of 'a' is 3908.24 means that the average value of loan collection would be Rs 3908.24 crore, if the loan outstanding and loan disbursement amount are zero.

Table 4.11

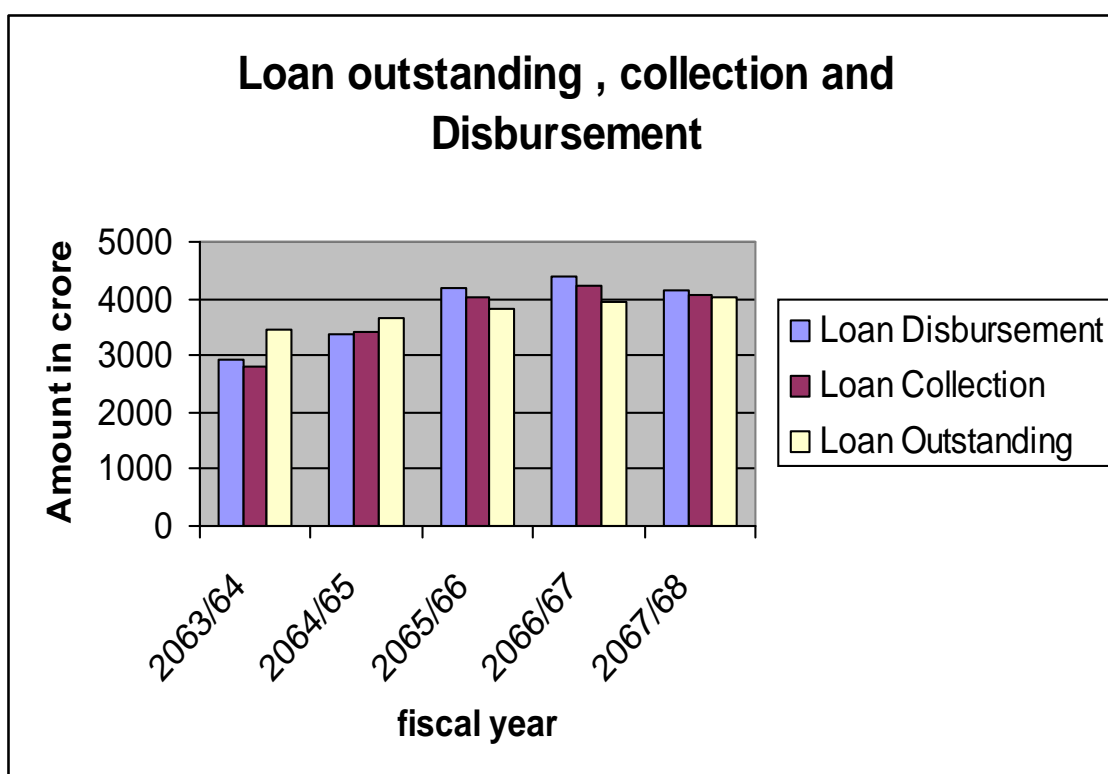**Loan Disbursement, Loan Collection and Loan Outstanding of ADBL**

Amount in Rs. '000'

Fiscal Year	Loan Disbursement	Loan Collection	Loan Outstanding
2063/64	29285522	28155899	34440396
2064/65	336335966	34171617	36604700
2065/66	41915100	40218700	38301100
2066/67	43729700	42448000	39582900
2067/68	41374500	40584700	40372700

Source: Annual Report of ADBL

From table no 4.11, we can see the amount of loan disbursement, loan collection and loan outstanding during the study period. The trend of loan disbursement, collection and outstanding are fluctuating in increasing or decreasing. The loan disbursement is some times increasing and some times in decreasing trend, loan collection also same trend but loan outstanding is always increasing trend. The loan outstanding amount is increasing even the loan collection amount is increasing even the loan collection amount is increase. It is because of the high level of increasing in loan disbursement amount.

Figure 4.7

Loan outstanding, collection and Disbursement

Source: Table 4.11

In figure no 4.7 we can see the relationship of loan disbursement, loan collection and loan outstanding of ADBL. In figure amount of loan outstanding is always higher than amount of loan disbursement and loan collection. And amount of loan collection is always less than other. In figure all amounts of loan disbursement, collection and outstanding are in increasing trend. Amounts of loan collection and loan outstanding is in increasing trend because of amount of loan disbursement is also in increasing trend during the study period.

4.5 Major Findings

Most of the activities of the bank are related with loan management. It plays the major role in profitability of the organization. It is highly complicated task in the bank and financial institution. Loan management requires effective loan disbursement and loan collection. Here we discuses about the major findings of Loan Management of ADBL during the study period.

⟩ The sector wise loan disbursement of ADBL is divided into thirteen categories. The uncategorized loan of ADBL is included in other sector. The highest portion of the loan is disbursed in wholesale and seller sector. In average 33% of the total loan disbursed in this category. The bank provides least amount of loan in mine and transportation instrument production and installation sector.

⟩ The loan disbursement amount can be forecasted thought historical data. Here the researcher forecast five year after the study period. The amount of loan disbursement will be Rs. 4137.4500, 4213.8798, 4315.2273, 4433.57466 and 4654.9220 crore respectively, if the historical trend is continue.

⟩ From deposit collection the average cash and bank balance of the bank is 15.34% with total deposit. And the standard deviation and coefficient of variation of this ratio during the study period are 1.74% and 11.60% respectively. The deposit collection of the bank is in increasing trend but some time it fluctuates highly.

⟩ Achievement of loan disbursement is more than targeted amount in the study period rather than year 2063/64. In 2063/64 achievement is slightly less than targeted amount. The calculated value of t-test is 1.33 and the tabulated value of 5% level of significance with 8 degree of freedom is 2.31. So, there is no significance difference between actual and target loan disbursement according to t-test of ADBL loan disbursement.

⟩ The amount of deposit collection is in increasing trend. In year 2063/64 its increasing rate is higher than other fiscal year, it is increased by 9.40%. And the lowest increasing percentage of loan collection is 4.24% in year 2064/65. Likewise, the amount of loan disbursement was

increased by 24.07% in year 2064/65. It is the highest percentage. The lowest increasing percentage of loan disbursement is in year 2063/64. It is not in increasing rate, it is in decreasing rate by 4.34% during the study period of this research.

) Generally, loan disbursement is depended in to deposit collection but not in all time. So the deposit collection is independent variable. The correlation coefficient between these two variables is 0.0354. Like this coefficient of determination, probability error and 6PE are 0.0012, 0.30126 and 1.80 respectively. This shows the negative relationship between these two variables, loan disbursement and deposit collection.

) During the study period, the highest amount of loan collection of ADBL is in 2064/65. And amount of loan collection is also increased in same year 2064/65, where the loan collection amount is increased by 17.60%. The lowest percentage of loan collected in year 2067/68 in the fiscal year it is in negative that means in this year it is in decreasing trend.

) The loan collection amount is forested for coming five year after the study period. The amount of loan collection will increase by Rs.199.4086 crore every year. The projected amounts will Rs 3844.3181, 4243.1353,4544.45, 4748.1245 crore respectively for coming five year.

) Actual amount of loan collection is always higher than targeted loan collection of ADBL during the study period. The calculated value of t-test is 2.46 and the tabulated value at 5% level of significance with 8 degree of freedom is 2.306. Here the calculated value of t-test is higher than tabulated value. So, there is significance difference between actual and target loan collection amount.

) The amount of loan outstanding is increased in highest percentage in year 2064/65 by 5.91%. The amount of loan outstanding of ADBL is Rs 3444.0396, 3660.4700, 3830.1100, 3958.2900 and 4037.2700 crore respectively during the study period.

) From the comparative study of loan disbursement and collection we can find the change trend in percentage. The loan disbursement is increased by 19.40% and loan collection is increased by 17.60% in fiscal year 2064/65, which are the highest percentage change in their section during the study period. In year 2067/68 loan disbursement and collection is decreased by 5.69% and 4.59%, which are the lowest increasing percentage rate during the study period.

) Loan collection amount is dependent variable because it depends upon loan disbursement. The correlation coefficient between these two variables is 0.9919, which express strong positive relationship between these variable. The coefficient of determination, probability error and 6PE are 0.9838, 0.0048 and 0.0293 respectively.

) In general, loan outstanding depends upon loan disbursement and loan collection amount from analysis of multiple regression analysis we can find that there is not a good relationship between loan outstanding with loan disbursement and loan collection. If the amount changes in two variables by Re 1, the loan outstanding amount would be changed by 0..0019 and 0.0349 respectively. The average value of loan outstanding would be Rs. 3908.24 crore, if the loan outstanding and disbursement amount are zero.

CHAPTER-V
SUMMARY, CONCLUSION AND RECOMMENDATIONS

The research is about the loan management of ADBL. The main objectives of the study are to show the sector wise loan disbursement, to examine the loan disbursement , collection and outstanding, to measure the association between deposit collection and loan disbursement, to measure the relationship between loan disbursement and recovery management and to suggest some remedies for improving loan disbursement and collection procedures of ADBL. For the fulfillment of these objectives various articles, books, unpublished dissertations were studied as literate review. Relevant datas are presented and analyzed in fourth chapter. During the study, it was found that the bank lends to agricultural, industries and trade, priority and deprived sectors and even to individuals also it was found that the bank has followed the rules and regulation of NRB. The bank has proved its strength by fairly competing in a cutthroat competitive market without violating the rules and regulations. The lending functions have been smoothly handled by the bank despite the adverse circumstances of the economy.

5.1 Summary

Commercial bank plays an important role for economic development of the country as they provide capital for the development of industry, trade as well as agriculture by disbursing the savings collected as deposits form public. The primary objectives of such banks are to earn profit by granting loan and advances to the people associated with various field. The economic health of the country depends upon the well management of the bank investment. Presently, there are twenty six commercial banks are providing, banking services. ADBL was established in 2024 BS as a development bank. The bank is converted into 'A' class commercial bank in 2062, which is 18th commercial bank in Nepal. The main objectives of the bank is to boost up the economic

prosperity of the nation through being reliable and qualitative banking and financing intermediaries in all over the country by providing services in agriculture, industry, business, service etc sectors.

The research is about the lending function of ADBL. It covers both loan disbursement and loan collection. Banks collect deposit form people and lend it to make profit. They charge interest rates higher than they pay to the borrowers. The bank provides various types of loan to various sectors. The lending function of the bank does not complete in giving away loans in various sectors, timely collection of loan disbursed is equally important. Therefore, loan management of bank is crucial to the profitability of the bank.

The bank, disbursed the highest portion of loan in wholesale and seller sector. In average around 33% of the total loan disbursement is disbursed in this sector. In some fiscal year, ADBL has disbursed hundred percentage amount of deposit collection to loan and sometimes it is higher than deposit collection because of their good collection policy and bank's higher capital. The amount of total loan disbursement and deposit collection is in increasing trend during the study period. But the trends of these amounts are fluctuating form the analysis of targeted and actual loan disbursement we can find the ratio of targeted amount is less than actual amount of loan disbursed. But there is significance difference between targeted and actual loan disbursement.

The condition of loan collection of ADBL is good. In the case of loan collection the targeted amount is always less then actual amount of loan collection, so it is good for the bank. Form t-test, we conclude that, there is significance difference between targeted and actual loan collection. The loan collection amount is increasing proportionately with the increment in loan disbursement amount. The amount of loan outstanding of a bank is also in increasing trend, it is always increased but the trend of this amount is fluctuating. The relationship between loan disbursement and loan collection is

positive. So, there is significant relationship between them. We can also say that the bank recovers the amount of loan easily.

5.2 Conclusion

Management of loan is one of the most important functions of commercial bank. Only the collection of deposit doesn't end the functions of a bank. Effective utilization of the fund is needed for good earning. Most of the activities of the banks are related with loan management. If the bank manages the loan disbursement and collection activities better, it gets the good performance on earning. If the disbursed loan can not recover in time, the bank would bear huge amount of loss. So, the loan management of ADBL is not only necessary but also compulsion for better performance of the organization. If ADBL initiates to the appropriate management of loan certainly it will cops its set objectives successfully. This study is just a small part to fulfill the partial requirement of MBS. But it can help to improve and requires attention to bring some improvement in loan management of ADBL. From above study the following conclusion which are derived forms major finding are given

) From the study the highest portion of sector wise loan disbursement is in wholesale and seller sector. And the lowest portion of disbursement is in mine and transportation instrument production and installation sector. The percentage change in all loan disbursement are fluctuating either in increasing or decreasing trend.

) The amount of cash and bank balance of ADBL is in increasing trend but the ratios with respect to total deposit are fluctuating. It has also 15.34% and 1.78% of mean and standard deviation respectively.

) The amount of loan disbursement is not in same trend; sometimes it is increased and sometime decreased. From trend analysis we can conclude that the loan disbursement amount will be increased by Rs 235.5200

crore every year. If all things remain constant, loan disbursement would be Rs 5554.92201 crore in coming fifth years.

⟩ Generally, the bank gains achievement than their target in some fiscal year, not in all. Both the ratio of amount is not in same trend. Out of one fiscal year 2063/64, the targeted amounts are always less than actual achievement. By using hypothesis t-test we can find the calculated value of 't' is less than tabulated value of 't' at 5% level of significant with 8 degrees of freedom. Hence there is no significant difference between actual and target loan disbursement.

⟩ The amount of loan collection is also in same trend, some times increasing and some times decreasing. In year 2067/68it is decrease by 4.59% and before these years it is highly increased by 17.60%. It shows the loan collection is highly fluctuating.

⟩ The amounts of all year target loan collection are less than actual loan collection. Both amounts are not in same trend. To find the significant difference between them, we use t-test. The calculate value of't' is higher than tabulated value of 't'. Hence there is significance difference between target and actual loan collection.

⟩ The loan outstanding amounts are increasing with increase in loan collection amount. Which is not seem in realistic. The loan outstanding amount should be reduced with increasing in loan collection amount. Loan disbursement amount is in increasing ratio. So, the loan outstanding amount is also increasing with loan collection amount of ADBL.

⟩ The coefficient of correlation between loan disbursement and loan collection is strongly positive. The coefficient of determination 0.9838 shows that 98.38% of loan collection amount depends on loan

disbursement. The coefficient of correlation is greater than 6PE hence there is significant relationship between them.

The overall analysis of the study proves that ADBL has been performing its function of loan management (i.e. loan disbursement and loan collection) satisfactory not very well. Because, the amount of loan disbursements and collections are not in same trend. The trends of them were fluctuating. The amounts of liquidity show the ineffectiveness in disbursement and collection of loan. The bank has upgraded in commercial bank, but until it is same as before entering the commercial bank. So the bank should do more exercise and practice to bear more responsibility of their clients. But the bank has not any difficulty to fulfill the paid up capital according to new policy applied from NRB. The bank follows the rules and regulations of the banking act and fulfills the requirement as per NRB rules. The bank has to fulfill its social responsibility too, along with its focus to profitability.

5.3 Recommendations

The following are the recommendation for ADBL based on the study carried out.

⟩ The study has revealed that the performance of ABDL in loan disbursement and collection is good. But the fact is that the increment in deposit collection, the loan disbursement and loan collection are in highly fluctuating trend can not be overlooked. So the bank is recommended to identify the reasons behind their fluctuating patterns and working for ensuring that deposit and loan follow a smooth and regular increment.

⟩ The ADBL has high amount of cash and bank balance, the bank can easily meet the clients as per their demand. But the high amount of cash

and bank balance could not beneficial for the bank. So the bank should keep the optimum level of cash and bank balance.

) The loan disbursement is in increasing trend but not in same, sometimes it is in decreasing trend so the bank should maintain the increasing trend. The bank should rapidly grow in loan disbursement amount.

) The amount of loan disbursement target is always less than actual achievement rather than one fiscal year which seems that the organization cannot make effective target. So, the bank should do more exercise for effective and real target.

) The trend of loan collection is in increasing trend which is good for the organization, but the collection trend should increase with loan disbursement.

) The target loan amount is always less than actual achievement rather than one fiscal year during the study period. The bank should make well target for loan collection. Effective target made effective implementation.

) The correlation coefficient between loan disbursement and deposit collection is positive, which is green signal for the organization. The bank should try to increase the relationship for better improvement.

) The relationship between loan disbursement and loan collection are strongly positive correlated. That is better for profitability of the organization.

) The loan outstanding amount is in increasing trend. But it is not same with loan disbursement and loan collection. In general, loan outstanding

amount is increase with loan disbursement and loan collection is better. So, the bank should do practice to maintain same trend of increasing. And the bank should make effective policy to collect and disburse the loan.

⟩ To achieve all the objectives of ABDL the efficient loan management is essential. The management of loan in ADBL is not only necessary but also compulsory, for better performance of the organization. If ADBL initiates steps to the appropriate management of loan, certainly it will attain its set objectives successfully.

Most of the people of our country live in rural area. They are not benefited from the banking service. Generally, our assumption is that, ADBL is one of the banks, which give services to the rural area's people. But in practice it is not shown. So the bank should create a desirable level of network so that the people of all sector and areas are provided with the banking services. There are twenty six commercial banks in our country. All of the other commercial banks are already introduced with modern technology working system. But the bank only starts computerize system. To be the competitive bank, the bank should focus in modern technologies which are introduced in banking world. The bank should start E-banking, card system, ATM card service, any bank transaction service etc. In this time fast and well service of the bank attracts the more customers. So the bank should adopt new technology and service to be a successful bank in the nation.

BIBLIOGRAPHY

Books

Aliber, R.Z. (1973). *The International Money Game*. New York: Basic Book Inc.

American Institute of Banking (1972). *Principle of Bank Operation*. New York.

Bajrachary, A.B.S. (1999). *Business Statistics and Mathematics.* Kathmandu: MK Publishers

Bhattacharya, H. (1998). *Banking Strategy, Credit Appraisal 2nd lending Decisions-A Risk Return Frame Work.*

Bhandari Dilli Raj (2004).*Banking and Insurance,* Kathmandu: Aayush Publication.

Brealy, R. & Myers, S. (1996). *Principle of Corporate Finance*. New Delhi: Tata McGraw Hill Publishing Company Limited.

Clemen, J.H. (1963). *Bank Lending.* London. Butterneorth Publisher

Crosse, H.D. (1963). *Management Policies for Commercial Banks*. New Jersey: Prentice Hall Inc.

Dahal, B. & Dahal, S. (2002). *A Hand Book to Banking*. Kathmandu:Asmita Books and Stationary.

Diamond,Willium (1960). *Development Finance Company,* First Edition Marylalnd: The John Hopking Press.

Gitman, L.J. & Jochnk (1972) Fundamentals of Investing, New York: Harper and Row Publisher.

Gupta, S.C. (2000). *Fundamental of Statistics*. New Delhi: Himalayan Publishing House.

Jha,K.K (1998) *Agricultural Financing in Nepal,* New Delhi: Heritage Publisher.

Johnson & Jonhson (1940). *Commercial Bank Management*. New York: The Dryden Press.

Klisse, E. (1978). *Money and Banking*. Brighton: South Western Publishing Company

Mather, L.C. (1984). *Securities Available to the lending Banker*. New Delhi: MacMillan India Ltd.

Mitra, R.M (1966). *Banking law and Practice*. New Delhi: Sunja Book Center

Pandey, I.M. (1999). *Financial Management.* New Delhi: Vikash Publishing House Pvt. Ltd.

Paul, P. (1997). *Cambridge International Dictionary of English*. London: Combridge sUniversity Press.

Radhaswamy, M. & Vasudevan, S.V. (1979). *A Text Book of Banking*. New Delhi: S. Chand and Co. Ltd.

Rose Peter S.(2002). *Commercial Banking Management* New Delhi.

Shekhar, K.C. & Shekhar, L. (1999). *Banking Theory and Practice*. New Delhi: Vikas Publishing House Pvt. Ltd.

Sing, S.P, & Sing, S. (1983). *Financial Analysis for Credit Management in Banks*. New Delhi: Vikas Publishing House Pvt. Ltd.

Vaidya, S. (1999) *Banking Management*. Kathmandu: Monitor Nepal.

Wolff, H.K. & Pant, P.R. (2002). *Social Science Research and Thesis Writing*. Kathmandu: Buddha Academic Publishers and Distributors Pvt. Ltd.

Journals and Articles

ADBL (2063/64 to 2067/68). *Annual Reports.*

ADBL (2065) Souvenir Organization.

Chopra. S. (1989). *Role of Foreign Banks in Nepal*. Kathmandu: Nepal Rastra Bank Samachar. 1–2

Financial Management (1978). *Corporate Debt Decisions:A New Analytical Frame Work*

Nepal Rastra Bank (20July,2010). *Neplease Financial System*. Kathmandu

Nepal Rastra Bank, (2007/08). *Economic Report*. Kathmandu.

Nepal Rastra Bank, (Mid-July, 2008) *Quartely Economic Bulletin*. Kathmandu.

Njepal Rastra Bank (2008). *Economic Report*. Kathmandu.

Thesis

Dawadi, P.R. (2009). *Loan Management of Banking Company (A Case Study of ADBC).* An Unpublished Master's Degree Thesis, Submitted to Faculty of Management, Kathmandu   Tribhuvan University.

Khanal, P.P. (2008). A *Study of Loan Management of Agricultural Development Bank Nepal*. An Unpublished Master's Degree Thesis, Submitted to Faculty of Management, TRIBHUWAN UNIVERSITY.

Lekhak,, P.D. (2009). *Loan Policy of Agricultural Development Bank* Limited An Unpublished Master's Degree Thesis, Submitted to Faculty of Management, , TRIBHUVAN UNIVERSITY.

Sharma, R. (2005). *Loan Disbursement and Collection of NBBL*. An Unpublished Master's Degree Thesis, Submitted to Faculty of Management, TRIBHUVAN UNIVERSITY.

Sigdel, B.D. (2006). *A Study on Loan Management of ADBL*. An Unpublished Master's Degree Thesis, Submitted to Faculty of Management, TRIBHUVAN UNIVERSITY.

Status of Sector rise loan disbursement

FY	063/064	064/065	065/066	066/067	067/068
Total	2577.8	3633.60	4191.21	4373.91	4137.5

Appendix-2

Table No.4.3

Calculation of 't' test

Fiscal Year	X_1	X_2	$\int x_1 z \overline{X}_1 Å$	$\int x_2 z \overline{X}_2 Å$
063/064	2919.2034	2928.5522	43265.33	854263.1283
064/065	3177.0120	3633.5966	77622.9303	48057.0401
065/066	374.6000	4191.5100	63695.9866	114713.7882
066/067	3985.000	4372.9700	1180692.8666	270560.4334
067/068	4036.2000	4137.4500	1294581.8312	81016.6506
	X_1 14492.0154	X_2 19264.0788	$\int x_1 z \overline{X}_1 Å$ 8922912.2679	$\int x_2 z \overline{X}_2 Å$ =1368611.0406

$N = 5$

$$\overline{X}_1 \; X \frac{14492.0154}{5} \qquad\qquad \overline{X}_2 \; X \frac{19264.0788}{5}$$
$$= 2898.40 \qquad\qquad\qquad = 3842.62$$

$$S^2 \; X \frac{1}{N_1 \, \Gamma \, N_2 \, Z2} \bullet \int x_1 z \overline{x}_1 Å \, \Gamma \quad \int x_2 z \overline{x}_2 Å'$$

$$= \frac{1}{5 \, \Gamma \, 5 \, Z2} \bullet 8922912.2679 \, \Gamma \, 1368611.0406'$$
$$= 0.125 \times 10291523.3$$
$$= 1286440.41$$

$$/t/ \; X \frac{\overline{X}_1 \, Z \, \overline{X}_2}{\sqrt{S^2 \; \frac{1}{n_1} \, \Gamma \, \frac{1}{n_2}}}$$

$$X \frac{2898.40 \, Z \, 3852.82}{\sqrt{1286440.41 \int \frac{1}{5} \, \Gamma \, \frac{1}{5} Å}}$$

$$= \frac{984.41}{\sqrt{514576.17}}$$

$$X\frac{Z954.41}{717.3396}$$
$$= -1.33$$

The tabulated value of 't' for 8 degree of freedom at 5% level of significant is 2.31, which is greater than calculated value of i.e. 1.330. So null hypothesis is accepted.

Appendix -3
Table 4.2

Cash and Bank Balance to total deposit

Fiscal years	Cash & Bank Balance	Total deposit	Ratio
063/064	2910800	32416400	11.38%
064/065	40171140	32553800	12.34%
065/066	7451850	35159610	21.19%
066/067	5772747	32472569	17.77%
067/068	48363244	34394627	14.06%
		$mean \bar{x}$ S.D. $S.D. \dagger A$ CV	15.34% 1.78% 11.60%

Sources: Annual Report or ADBL

$$\bar{x} X\frac{x}{n}$$
$$X\frac{76.74}{5} X 15.37\%$$

$$\dagger \ X\sqrt{\frac{(x Z\bar{x})^2}{5}} \qquad CV\ X\frac{\dagger}{x^Z}$$

$$X\sqrt{\frac{Z(3.96)^2}{5}} \qquad X\frac{1.78}{15.34}$$

$$X\sqrt{3.1363} \qquad \qquad = 11.60\%$$

$$\dagger \ X 1.78$$

According to table no-4.2 Cash & Bank Balance total deposit ratio of ADBL haven't been higher fluctuated.

Appendix-4
Calculation of co-relation

Fiscal Year	Deposit of Collection x	Loan, outstanding 'y'
063/064	-	-
064/065	0.42%	19.40%

065/066	7.41%	13.31%
066/067	-8.27%	4.14%
067/068	5.58%	-5.69%

Solution

Fiscal Year	X	Y	XY	X²	Y²
063/064	-	-	-	-	-
064/065	0.42	19.40	8.148	0.176	376.36
065/066	7.41	13.31	98.622	54.908	177.156
066/067	-8.27	4.14	-34.237	68.392	17.139
067/068	5.58	-5.69	-31.750	31.136	32.376

$N \text{ X} 5$

$$r \text{ X} \frac{5 \mid 40.788 \text{ Z} 5.14 \mid 31.16}{\sqrt{5 \mid 154.6 \text{ Z}(5.14)^2} \sqrt{5 \mid 603.025 \text{ Z}(31.16)^2}}$$

$$\text{X} \frac{203.97 \text{ Z} 160.16}{\sqrt{773.05. \text{ Z} 26.42} \sqrt{3.15.13 \text{ Z} 970.95}}$$

$$\text{X} \frac{43.78}{\sqrt{746.63.} \sqrt{2044.18.}}$$

$$\text{X} \frac{43.78}{27.32 \mid 45.21}$$

$$\text{X} \frac{43.78}{1235.12}$$

$$= 0.0354$$

$$PE \text{ X} 0.6745 \mid \frac{1 \text{ Z} f 0.0354 Å^2}{\sqrt{5}}$$

$$0.6745 \mid \frac{1 \text{ Z} 0.0013}{2.236}$$

$$\text{X} 0.6745 \mid \frac{0.9987}{2.236}$$

$$\text{X} 0.6745 \mid 0.4466$$

X0.30126

Coefficient of correlation between deposit collected and loan disbursed 'EADEL'.

Coefficient of correlation	Coefficient of determination	Probability Error (PE)	Test=6PE
0.0354	0.0012	0.30126	1.80

PE > r Not significant

Appendix-5

Find out a, b_1 and b_2

y	x_1	x_2	x_1^2	x_2^2	$x_1 y$	$x_2 y$	$x_1 x_2$
3444.039	2928.35	2815.58	8575233.72	7927490.73	10085351.61	9696967.328	245003.693
3660.47	3633.60	3417.16	13203048.96	11670217.47	13300683.79	12508411.67	12416592.58
3830.11	4191.51	4021.87	7568756.08	16175438.3	16053944.37	15404204.51	16857708.32
3958.29	4372.97	4244.80	19122866.62	18018327.04	17309483.42	12557349.39	18562383.06
4037.27	4137.45	4058.47	17118492.5	16471178.74	16704002.76	16385139.18	16791716.70
18930.179	19263.88	185557.88		175292652.2	73453465.95	66552072.08	72873404.35

$$y \text{ X} 5_2 \Gamma b_1 19263.88 \Gamma 18557.88 b_2 \ldots\ldots(ii)$$

And,

$$7345465.95 \text{ X} 9 \mid 19263.88 \Gamma 3710970727 b_1 \Gamma 7287340.35 b_2 \ldots..(iii)$$
$$66552072.08 \text{ X} 9 \mid 18557.88 \Gamma 72873404.35 b_1 \Gamma 1752926522 b_2 \ldots\ldots(iv)$$

$$18930.179 \text{ X} 5a \Gamma 19263.88 b_1 \Gamma 18557088 b_2 \ldots..(ii)$$
$$73453465.95 \text{ X} 19263.88a \Gamma 371097072.7 b_1 \Gamma 72873404.35 b_2 \ldots..(iii)$$
$$66552072.08 \text{ X} 18557.88a \Gamma 72873404.35 b_1 \Gamma 175292652 b_2 \ldots\ldots(iv)$$

Solving the equation (ii) & (iii) and multiplying by 3852.77 Equation (iv)
Subtracting from (III) equation

$$72933739.33 \text{ X} 19263.88a \Gamma 74219298.95 b_1 \Gamma 71499243.33 b_2$$
$$73453465.95 \text{ X} 19263.88a \Gamma 371097072.71 b_1 \Gamma 72873404.65 b_2$$

-      -   -   -

$$Z519726.62 \text{ X} Z296877773.8 b_1 \text{ } Z1374161.02 b_2 \ldots\ldots(v)$$

Now, solving the equation (iii) & (iv) and (iv) equation multiplying by 1.0380 & subtracting from (iii) equation.

$$69081050.82 \text{ X} 19263.88a \Gamma 75642593.72 b_1 \Gamma 181953773 b_2$$
$$73453465.95 \text{ X} 19263.88a \Gamma 371097072.7 b_1 \Gamma 72873404.35 b_2$$

$$Z4372415.13 \text{ X} Z295454479 b_1 \Gamma 1090803687 b_2 \ldots\ldots(vi) \mid 1.0048$$

Again now solving the equation (v) & (vi)

$Z4393402.72 \, XZ296877773.8b_1 \, \Gamma109603954.5b_2$

$Z519726.62 \, XZ296877773.80b_1 \, Z13741661.02b_2$

$Z3873676.10 \, X\Gamma110978115.50b_2$

$\dfrac{Z3873676.10}{11097811155} \, Xb_2$

$Z0.0349b_2$

Now putting value of b_2 on equation (v) find the value of b_1

Or, $Z519726.62 \, XZ296877773.80b_1 \, Z1374161.02 \, | \, 0.0349$

Or, $Z519726.62 \, XZ296877773.80b_1 \, \Gamma47958.2196$

Or, $Z567684.83 \, XZ296877773.8b_1$

$\dfrac{567684.83}{2968777773.8} \, Xb_1$

$0.0019 \, Xb_1$

Now putting the value of b_1 or b_2 on equation (ii) & find out (a)

$18930.179 \, X5a \, \Gamma19263.88(0.0019) \, \Gamma18557.88 \, | \, (Z0.0349)$

$18930.179 \, X5a \, \Gamma36.60 \, Z647.67$

$18930.179 \, X5a \, Z611.07$

$18930.179 \, \Gamma611.07 \, X5a$

$19541.24 \, X5a$

$a \, X\dfrac{19541.24}{5}$

$a \, X3908.24$

$y \, Xa \, \Gamma b_1 x_1 \, \Gamma b_2 x_2$

$\hat{y} \, X3908.24 \, \Gamma0.0019x_1 \, \Gamma(Z0.0349)x_2$