"Impact of Non-Performing Assets of Development Bank in Nepal with reference to Mukthinath Bikas Bank Limited, Excel Development Bank Limited and Sindhu Bikash Bank Limited "

A Dissertation Submitted to the office of the Dean, Faculty of Management in partial fulfillment of the requirement for the Master's Degree

By

Kajal Beriwal

Exam Roll No: 29140/20

T.U. Regd. No: 7-2-439-246-2012

Thakur Ram Multiple Campus

Tribhuvan University

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Certification of Authorship

I hereby corroborate that I have researched and submitted the final draft of dissertation entitled **"Impact of Non-Performing Assets of Development Bank in Nepal with reference to Mukthinath Bikas Bank Limited, Excel Development Bank Limited and Sindhu Bikash Bank Limited".** The work of this dissertation has not been submitted previously for the purpose of conferral of any degrees nor it has been proposed and presented as part of requirements for any other academic purposes. The assistance and cooperation that I have received during this research work has been acknowledged. In addition, I declare that all information sources and literature used are cited in the reference section of the dissertation.

Kajal Beriwal

Signature: .....

Date of Submission: August 22, 2023

TRIBHUVAN UNIVERSITY
FACULTY OF MANAGEMENT
(M.B.S PROGRAMME)
THAKUR RAM MULTIPLE CAMPUS
BIRGUNJ, NEPAL

REF No: ..... Date: .....

Report of Research Committee

Ms. Kajal Beriwal has defended research proposal entitled **"Impact of Non-Performing Assets of Development Bank in Nepal with reference to Mukthinath Bikas Bank Limited, Excel Development Bank Limited and Sindhu Bikash Bank Limited"** successfully. The research committee has registered the dissertation for further progress. It is recommended to carry out the work as per suggestions and guidance of supervisor Assistant. Prof. Hira Lal Yadav. and submit the thesis for evaluation and viva voce examination.

Name of Supervisor: Hira Lal Yadav
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TRIBHUVAN UNIVERSITY
FACULTY OF MANAGEMENT
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THAKUR RAM MULTIPLE CAMPUS
BIRGUNJ, NEPAL

REF No: ..... Date: .....

APPROVAL SHEET

We have examined the dissertation entitled **Impact of Non-Performing Assets of Development Bank in Nepal with reference to Mukthinath Bikas Bank Limited, Excel Development Bank Limited and Sindhu Bikash Bank Limited** presented by **Kajal Beriwal**, a candidate for the degree of **Master of Business Studies (MBS)**. We hereby certify that the dissertation is acceptable for the award of degree.

Hira Lal Yadav

Dissertation Supervisor

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Hira Lal Yadav

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Chairperson, Research Committee

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ACKNOWLEDGEMENT

This research entitled **"Impact of Non-Performing Assets of Development Bank in Nepal with reference to Mukthinath Bikas Bank Limited, Excel Development Bank Limited and Sindhu Bikash Bank Limited"**

has been prepared for the partial fulfillment of the requirement for the Degree of Masters of Business Studies. The general purpose of the study is to discuss, examine and evaluate the Non- Performing Assets, profitability status and the impact of Non-Performing Assets on profitability of the Nepalese development banks. The Completion of the study is a result of help and support of several hands. Therefore, I would like to express my heartfelt gratitude to all those respondents for their help and support. I acknowledge the encouragement, guidance, constant follow-ups and suggestions from my supervisor, **Assistant Professor Hira Lal Yadav**. It is for his tireless and invaluable efforts and by setting time for me his busy schedule that this research paper has been successful. It was an enjoyable period during the research work to be with him as a supervisor

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

CC	Cash Credit
CDR	Credit Deposit Ratio
CF	Capital Fund
EDBL	Excel Development Bank Limited
EPC	Export Packing Credit
LLP	Loan Loss Provision
MNBBL	Mukthinath Bikash Bank Limited
NPA	Non Performing Assets
NPL	Non Performing Loan
NRB	Nepal Rastriya Bank
OD	Overdraft
PCFC	Pre-shipment Credit in Foreign Currency
PSL	Priority Sector Lending
ROE	Return on Equity
RWA	Risk Weighted Asset
SINDU	Sindu Bikash Bank Limited
TL	Total Loan
TLLP	Total Loan Loss Provision

ABSTRACT

This study examines the impact of non-performing assets and profitability of development banks in Nepal. Out of 17 development banks, three development banks have been selected as sample based on descriptive and analytical technique. Secondary data was collected from the quarterly reports of three selected development banks for the period fourth quarter of fiscal year 076/077 to the third quarter of 079/080. Data have been collected and analyzed by using mean, coefficient of variation, correlation and regression analysis. The profitability in terms of return on equity (ROE) is taken as dependent variable.The Non Performing Loan (NPL) to Total Loan (TL) ratio, the Total Loan Loss Provision to Total NPL, Capital Fund (CF) to Risk Weighted Asset (RWA), Cost of Funds, Credit Deposit Ratio (CDR) and base rate were taken as independent variables. After the conduction of this study, CF to RWA has negative impact on ROE of MNBBL, while TLLP to TNPL has impact on ROE of SINDU and EDBL. In case of EDBL, Cost of Funds and Base Rate also had significant impact on ROE.

Keywords: Return on Equity, Non Performing Assets

CHAPTER 1

INTRODUCTION

1.1 Background

For a sound economy, one should have sound banking system. One of the important parameters for judging the performance of banking system is the NPA's. These are an inevitable burden of the banking industry. Banks need to monitor their standard asset regularly in order to prevent any account becoming an NPA. Today the success of bank depends upon the proper management of NPA's and keeping them within the controlled level. NPA causes serious strain on the profitability as, on the one hand banks cannot book income on such accounts and in second way, charge for funding cost is required and provision required for the profits. In order to keep debtors friendly, we keep provision of NPA's. An asset is classified as non-performing assets if the borrower does not pay dues in the form of principal and interest. To define NPA first of all meaning of assets should be understand. Asset means the property of a person or a company. This indicates that assets are the property of company accumulated with the help of sources. Nonperforming loan means an outstanding loan that is not repaid, i.e. neither payment on interest nor principal are made. In case of the bank, the loans and advances are the assets as the banks flow loans from the funds generated through shareholders equity, money deposited by the people and fund having through the borrowing. Hence the term of NPA means the loan and advances that are not performing well. Thus, all the irregular loans and advances can be turned as NPA.

With a view to moving towards international best practices and to ensure greater transparency, it has been decided to adopt the '90 days' overdue norm for identification of NPA, from the year ending from March 31, 2004. Accordingly, with effect

from March 31, 2004, a non-performing asset (NPA) is a loan or an advance where;

1. Interest and/ or installment of principal remain overdue for a period of more than 91 days in respect of a term loan,
2. The account remains 'out of order' for a period of more than 90 days, in respect of an Overdraft/ Cash Credit (OD/CC),
3. The bill remains overdue for a period of more than 90 days in the case of bills purchased and discounted,
4. Interest and/ or installment of principal remains overdue for two harvest seasons but for a period not exceeding two half years in the case of an advance granted for agricultural purpose, and
5. Any amount to be received remains overdue for a period of more than 90 days in respect of other accounts,
6. No submission of Stock Statements for 3 continuous Quarters in case of Cash Credit Facility,
7. No active transactions in the account (Cash Credit/ Over Draft/ EPC/PCFC) for more than 91 days.

The non-performing loans (NPL) of financial institutions are considered as a significant issue in the context of Nepal for last few decades. The immediate consequence of large amount of NPLs in the banking system is bank failure. Many researches on the cause of bank failures find that asset quality is a statistically significant predictor of insolvency and that failing banking institutions always have high level of non-performing loans prior to failure Barr et al. [1994].

According to new requirements of NRB, a lender must classify loans which have not serviced for three months as 'pass' loans. Watch list also includes loans which have not been serviced for three months. But 'watch list' includes loans whose principal and interest have not been paid within the repayment period. Non-performing loans

not serviced for three to six months will have to be classified as 'Sub-standard' loans. Similarly, loans not service for six months to one year will have to be classified as 'Doubtful' loan. The 'Loss' loans are those whose interest and/or installment of principal has not been paid for more than one year. The central bank has also defined 'Pass' and 'Watch list' loans as performing loan and restructured sub-standard, doubtful and loss loans as non-performing loans. Considering these facts, it is necessary to control non-performing loans for the economic growth in the country, otherwise the resources can be jammed in unprofitable projects and sectors which not only damages the financial stability but also the economic growth. In order to control the non-performing loans, it is necessary to understand the root causes of these non-performing loans in the particular financial sector Rajaraman and Vasishtha [2002].

It is important to understand the phenomena and nature of non-performing loans; it has many implications, as fewer loan losses is indicator of comparatively more firm financial system, on the other hand high level of non-performing loans is an indicator of unsecure financial system and a worrying signal for bank management and regulatory authorities. If we look into the causes of great recession 2007-2009 which damaged not only economy of USA but also economies of many countries of the world find that non-performing loans were one of the main causes of great recession Richard [2010].

1.2 Problem statement

High level of NPA is uniformly matter of grave concern for the bank and public alike because bank credit is the catalyst to the economic growth of the country. Rapid rise in NPA level brings an adverse economic environment to the country. In order to have a permanent presence in the market, bankers must have enough vigilance to control the NPA within a reasonable limit. Development banks in Nepal have been facing several problems like lack of smooth functioning of economy,

different policies and guidelines of NRB, political instability, security problem, poor information system, over liquidity caused by lack of good lending opportunities, increasing non-performing assets etc. In the present context where Nepalese banks are facing the problem of increasing NPAs, more amounts have to be allocated for loan loss provision. As earlier mentioned, the provision amount is taken out by deducting from the profit of the bank; the bank's profit might come down. This study will try to seek the answer of the following questions

- What are the impacts of Non-performing assets on profitability of sample development banks in Nepal?
- What are the impacts of Base Rate on profitability of sample development banks in Nepal?
- What are the impacts of Cost of Funds on profitability of sample development banks in Nepal?
- What are the impacts of Credit Deposit Ratio on profitability of sample development banks in Nepal?
- What are the impacts of Capital to Risk weighted ratio on profitability of sample development banks in Nepal?

1.3 Objectives

The main objective is to familiarize with the overall credit management practice in the JBBL, KSBBL and CORBL. The specific objectives can be outlined as under:

- To analyze the impact of NPL to TL ratio on profitability of sample development banks in Nepal.
- To analyze the impact of total LLP to total NPL ratio on profitability of sample development banks in Nepal.
- To analyze the impact of CF to RWA ratio on profitability of sample devel-

opment banks in Nepal.

- To analyze the impact of Cost of Funds on profitability of sample development banks in Nepal.
- To analyze the impact of Credit Deposit Ratio on profitability of sample development banks in Nepal.
- To analyze the impact of Base Rate on profitability of sample development banks in Nepal.

1.4 Hypothesis (Null H0 / Alternative H1)

1. Null H0
    - NPL to TL ratio has a significant and negative effect on bank profitability.
    - TLLP to total NPL ratio has a significant and negative effect on bank profitability.
    - CF to RWA ratio has a significant effect on bank profitability.
    - Base Rate has a significant and negative effect on bank profitability.
    - Costs of Funds has a significant effect on bank profitability.
    - Credit Deposit Ratio has a significant impact on the bank profitability.
2. Null H1
    - NPL to TL ratio has a no significant effect on bank profitability.
    - total LLP to total NPL ratio has no significant effect on bank profitability.
    - CF to RWA ratio has no significant effect on bank profitability.
    - Base Rate has a no significant effect on bank profitability.
    - Costs of Funds has no significant effect on bank profitability.
    - Credit Deposit Ratio has mp significant impact on the bank profitability.

1.5 Significance of the study

The research is based on the impact of NPA on profitability of development banks. Currently, some Nepalese development banks are facing huge amounts of Non-Performing Assets. Banks should minimize NPA level to achieve their financial goal. Increasing non-performing loans followed by increased loan loss provision is

one of the challenges faced by development banks in the present context. Proper classification of loans and adequate loan loss provisioning strengthens the financial health of the banks and also reflects the true picture of a bank's asset. This research will be able to deliver some of the present issues, latest information and data regarding non- performing loan and loan loss provisioning. Hence this study will be significant to shareholders, bankers, depositors, students and further researchers. Loans and advances are the most profitable of all the assets of a bank. These assets constitute primary sources of income to the bank. It means interest earned from such loans and advances occupy major space in the income statement of the bank. Since loans and advances are more profitable than any of other assets, the bank is willing to lend as much as its fund as possible. But it has to be careful about the safety of such loans and advances. It is very important, therefore, to remember that most of the bank's failures in the world are due to the shrinkage of the value of loans and advances. Hence loans are known as risky assets. Risk of non-repayment of loan is known as credit risk or default risk. Performing loan/assets has multiple benefits while non-performing loan/ assets erode even existing capital. Therefore, the success of any bank doesn't depend upon how much money a bank is able to lend, but it 5 depends upon the quality of the loan. So success of a bank depends upon the amount of performing assets/ loan. Performing assets are those loans that repay principal and interests to the bank from the cash flow it generates. The Nepal Government has just enacted the debt recovery act and approved the long awaited regulation on debt recovery to speed up the financial reforms in the financial sector. The proposed study will make comparison between the NPA of development banks of Nepal and International standard. It will also check the NPA level between the development banks. It will wipe out some misconception that general people have about NPA of development banks.

1.6 Limitations of the Study

Although this study will try to study the impact of non-performing assets on the profitability of the development banks, it do have the following limitations.

- Only the data of last twelve quarters were used.
- Only the data of three banks were used and analysed.
- The economic policies of the government were not be considered during this study.
- The effect of international trade policies were not considered.
- The effect of factors like earthquake, pandemic, epidemic, flood, war etc. will not be studied.

1.7 Chapter Plan

The study on the relationship between NPA and profitability of development Banks has been divided into five chapters respectively; introduction, literature review, methodology, results and conclusion.

Chapter-I: Introduction

The introduction chapter deals with the general background and the subject matter of the study. It consists of introduction of research study, which explains the focus of the study, statement of the problem, purpose of the study, significance of the study and limitations of the study.

Chapter-II: Literature review

In the second chapter, the relevant and pertinent literature and various studies have been reviewed. The review has been made in terms of the theoretical background of banking principles that are relevant to this research work.

Chapter-III: Methodology

The third chapter briefly explains about the research methodology, which has been used to evaluate the NPA and profitability position of banks under consideration. This chapter consists of research design, sample and population, sources of data, and statistical and financial tools and techniques to measure the NPA and profitability position of development Banks.

Chapter-IV: Results and discussion

In the fourth chapter, the data required for the study has been presented, analyzed and interpreted by using various tools and techniques of financial management and statistics to present the result relating to the study.

Chapter V: Conclusion

The fifth chapter is the final chapter of the study, which consists of the summary of the four earlier chapters. This chapter tries to draw out a conclusion of the study and attempts to offer various suggestions and implications for the improvement of the future performance of the banks under review. Finally, references and appendices are also included at the end of the study.

CHAPTER 2

LITERATURE REVIEW

2.1 Background of the study

In this chapter, review of various related articles, books, research paper, journals and previous thesis similar to the research topic. the review of various articles, research studies, journals and books are presented to have a clear understanding about the impact of non-performing assets on financial performance on the Nepalese banks and its relevance in different part of the world. This chapter help to recall the theories and previous studies made by various researches in different part of the world. Literature review is basically a stock taking work of available literature. The purpose of literature review is thus to find out what principle were established and what research studies had been conducted in the field of study and what remained to be done.

2.2 Theoretical review

The study conducted by Pradhan [2014] on 21 commercial banks of Nepal shows that return on asset has a positive and significant relationship with non-performing loans. It implies that increase in return on assets, increases the non-performing loans. Similarly, loans to total deposit ratio also has a positive and significant impact on non-performing loans which means that increase in loans to total deposit would increase the non-performing loans. Likewise, return on equity has negatively significant influence on non-performing loans. Thus, the result indicates that lower the non-performing loans, higher would be the return on equity. Hence, the overall study concludes that return on asset, return on equity and loans to total deposit ratio are major determinants of non-performing loans in Nepalese commercial

banks.

The findings of Gaur and Mohapatra [2021] show that there exists a positive correlation and bidirectional causal relationship between PSL and GDP, which implies that PSL brings additional growth for the whole economy. In addition to it, PSL is found to be insignificant for the NPA ratio, and thus, it can be inferred that credit extended to government-specified sectors does not bring any major increase in the bad loan portfolio of banks.

2.2.1 Causes of non-performing assets

1. Miss-utilization of loan assets: When the borrower uses the loan amount for any other purpose instead of using it for the purpose he/she takes loan.
2. Intentional Defaulter: When defaulter applied a loan on fake ground or providing false information or documents.
3. No Proper follow up: Once the loan amount is disbursed by bank to borrower, banks need to take timely follow up or need to be in contact with the borrower.
4. Industrial sickness (loss): Business cycle has many phases. Some industries are running in profit, while in some other industries there can be slow down, strike or other unfavorable situations. Borrowers who take loans for expansion or to set up industry, will not be able to earn profit or will fail to meet their liability of loan.
5. Defective lending policy: It is the major reason for increasing NPA for the bank. When loan is grant to a person without proper analysis of creditworthiness may be,
    - Borrower already has other loans too.
    - His earnings are not good enough to repay the loan.
6. Political pressure: The NPA for banks increases when the loan or debt forgiven

by the government. Example farmer debt forgiven by the government.

2.2.2 Classification of NPA

Nepal Rastra Bank has published Unified Directives 2078 and has addressed various changes for the banks and financial institutions. As per the unified directives, the loans which have defaulted their payment by 1 month are to be excluded from the 'Pass' loan category. Previously, loans that have missed out their payments up to 3 months were termed as pass loans. So, the banks and financial institutions need to create a provision of 5% in case the delay in payment exceeds 1 month. Pass and watch list loans and advances are categorized as performing loans while others are classified as non -performing loans. As per NRB directives 2078 the NPA of bank is classified as below:

1. **Pass**

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

   - Any asset which is past due period up to 1 month shall be classified as Pass.
   - Loans and advances against fixed deposit receipt
   - Loans and advances against debentures and securities issued by Nepal Government and Nepal Rastra Bank.
   - Loans and advances against silver and gold up to 1 million

2. **Watch list**

   Loans and advances are to be taken as watch list that comply the following criteria

   - Loans and advances that are due from 1 month to 3 month.
   - Loans and advances extended without renewal

- Loans and advances provided to the party categorized as Non-performing loans in the banks.
- Loans and advances that are paying interest and principal on time but are in loss from the last 2 years or have negative net worth provided that this clause will be effective for the projects under construction after the completion of the project only.
- Loans and advances up to 1 Arab or more that are financed by more than one bank and are yet to be classified as joint financing.
- Loans and advances that are instructed by Nepal Rastra Bank to be kept in this category as reviewing their Cash Flow and Operational Management.

3. **Substandard**

   Loans and advances that are due from 3 months to 6 months are to be categorized under this category.

4. **Doubtful**

   Loans and assets in this category have all the weaknesses inherent in substandard assets but the loans are not well-secured. Weaknesses make collection in full highly questionable and improbable on the basis of existing facts, conditions, and value. The possibility of loss is high, but the actual amount of loss cannot be fully determined because specific pending factors may mitigate. Pending factors may include a merger, acquisition, or liquidation; a capital injection; obtaining additional collateral; or refinancing. If pending events do not occur within 180 days and repayment must again be deferred, Loss classification is warranted.

   - Any asset which is past due 6 months and not more than 1 year are to be classified as Doubtful.

5. **Loss**

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

2.3 Empirical review

Various studies have been conducted in different aspects of commercial banks and JVBs. The conclusion of the previous studies on the different aspects of commercial Banks is relevant to this study. Thus, the studies of previous articles, journals and thesis are reviewed in this regard. Khadka [2004] has explained about the topics in which he had objectives to study and examine the level of NPAs in total assets, total deposits and total lending of commercial banks. He also studied whether the Nepalese Commercial Banks have been following the directives of NRB regarding loan loss provision for non- performing loan/ assets or not. He had taken sample banks as Nepal SBI Bank Limited, Nepal Investment Bank limited, Nepal Bangladesh Bank limited, Bank of Kathmandu limited, and Nabil Bank Limited. From his studies, it is found that the level of NPA of Nepal Bangladesh limited seemed greater than all of the other banks under his study. Similarly, Nepal SBI Bank and Bank of Kathmandu stand at second and third position respectively. The position of Nabil Bank limited seemed to be quite satisfactory because the bank has been reducing its NPA every year. The NPA of Nepal Investment Bank stands at a lower level than that of all the other banks. From the study it has also been found that none of the banks have been following the directives of NRB regarding the loan loss provision. Despite the high level of NPA the loan loss provision made by the Nepal Bangladesh Bank seemed to be quite satisfactory than any of the other banks. Despite the outstanding success in managing the NPA the loan loss provision made by Nepal Investment Bank is not considerable.

It means the loan loss provision of Nepal Investment Bank is very less than the requirement.

Ghimire [2013] studied the internal and the external factors that affect the non-performing assets to increase from the loan and advances. The internal factors that influence and the effective management of the NPA and its increment. The objective of his studies is also to find out the relationship between the non- banking assets and the Non-Performing Assets, in which he was able to find out very important results from the survey. The study was able to find out the internal responsible factors that contribute to turning good loans into bad loans, bad intention, weak monitoring and miss management are the most responsible factors. Similarly, weak legal provision and credit concentration are also found as the least preferred factors in turning good loans into bad loans. Some factors such as lack of portfolio analysis, not having effective credit policy and shortfall on security were identified as having average effect on NPA growth. In connection to external factors it has been found that recession, political and legal issues are more relevant factors in turning good loans into bad one. Likewise legal provisions for recovery as a reason for increment in NPA in Nepalese Banks have been found to have less impact. Supervision and monitoring systems have been identified as average factors. It is therefore, can be generalized that economic and industrial recession and not having strong legal provision for loan recovery are the major external factors that have major contribution for the increment of NPA. It has also been concluded in the study that Nepalese Commercial Banks gave much priority to the trade sector for lending its resources, at the same time it is found that service sectors are not being given that much emphasis. He had recommended to the sample banks, Nepal Bangladesh Bank Ltd, Nepal SBI Bank Ltd, and Bank of Kathmandu Ltd, as on different headings, subject matter such as financial strength, personal integrity and security, monitoring and control system, avoidance of credit concentration, strong legal system, assets management company, avoidance of undue pressure, etc.

Ahmad and Ariff [2008] states that non-performing is the percentage of loan values that are not serviced for three months and above. Basically, Non- performing loans reflect the performance standard of the banks. A high level of NPL reflects the high probability of loss and net worth get affected due to large number of credit defaults and similarly low level of NPL reflects the high probability of profit due to low credit default. Parul [2012] states that the NPL growth involves the necessity of provisions because it decreases the overall profits and shareholders. If there is a high proportion in bank credit there will be a higher probability that the banks can suffer from the financial crisis and vice versa.

Yadav [2011] banks directly or indirectly affect economic development because of their many facets. During colonial rule in India, banks were geographically confined to urban areas and provided credit, particularly business and trading class and were restructured into nationalized banks during the post –independence period to achieve broader economic objectives and registered an overall impressive achievement. Despite this, the question has been raised time and again on the myriad restriction of nationalized banks which merely fulfills the social agenda of the government and increased non-performing assets. This paper deals with the concept of non-performing assets, its magnitude and impact. One fourth credit of total advances was in the form of doubtful asset in the initial year of the nineties and has an adverse impact on profitability of public banks at aggregate or sectorial level indicating high degree of riskiness in credit portfolio and raising question mark on the credit appraisal. The profitability of all public sector banks is affected to a very large extent when non- performing assets (NPAs) work with other banking strategic variables and also affect productivity and efficiency.

Afriyie and Akotey [2012] examined the impact of credit risk management on the profitability of rural and community banks in Ghana using panel regression models for the period 2006 to 2010. He authors have taken non-performing loan and capital adequacy ratio as indicators of credit risk management, and ROA

and ROE as indicators of bank profitability. The findings of the study show the existence of a significant positive relationship between non-performing loans and bank profitability meaning that even though there is huge loan default, non-performing loans are increasing proportionately to profitability. The authors have found the reason for ineffective credit risk management practice among the rural and community banks of Ghana and reported that banks shift the cost of loan default to other customers with higher interest on loans. Due to this practice the community banks remained profitable. This however reveals that rural and community banks in Ghana do not have sound and effective credit risk management practice because theoretically, nonperforming loans reduce the bank profitability. The authors strongly recommend for the Bank of Ghana to tighten its control mechanism of the rural banking industry to stop this practice. Kurawa and Garba [2014] has studied that recently banks witnessed rising non-performing credit portfolios and this significantly contributed to financial distress in the banking sector. Banks collect deposits and lend to customers but when customers fail to meet their obligations problems such as non-performing loans arise. This study evaluates the impact of credit risk on the profitability of Nigerian banks. Financial ratios as measures of bank performance and credit risk were the data collected from secondary sources mainly the annual reports and accounts of sampled banks from 2004 - 2008. Descriptive, correlation and regression techniques were used in the analysis. The findings revealed that credit risk management has a significant impact on the profitability of Nigeria banks. Therefore, management needs to be cautious in setting up a credit policy that might not negatively affect profitability and also they need to know how credit policy affects the operation of their banks to ensure judicious utilization of deposits.

Selvarajan and Vadivalagan [2013] the magnitude of the problem of bad debts was not taken seriously. Subsequently, following the recommendations of Narasimham committee and Verma committee, some steps have been taken to solve the problem of old NPAs in the balance sheets of the banks. It continues to be expressed from

every corner that there has rarely been any systematic evaluation of the best way of tackling the problem. There seems to be no unanimity in the proper policies to be followed in resolving this problem. There is also no consistency in the application of NPA norms, ever since these have been recognized. Non-performing Assets are also called as Non- performing Loans. It is made by a bank or finance company on which repayments or interest payments are not being made on time. A loan is an asset for a bank as the interest payments and the repayment of the principal create a stream of cash flows. It is from the interest payments that a bank makes its profits. The problem of NPA is not limited to only Indian public sector banks, but it prevails in the entire banking industry. Major portion of bad debts in Indian Banks arose out of lending to the priority sector at the dictates of politicians and bureaucrats. If only banks had monitored their loans effectively, the bad debt problem could have been contained if not eliminated. The top management of the banks was forced by politicians and bureaucrats to throw good money after bad in the case of unscrupulous borrowers. Non-performing assets of banks are one of the biggest hurdles in the way of socio- economic development of India. The level of NPAs of the banking system in India is still too high. It affects the financial standing of the banks so that it is a heavy burden to the banks. A vigorous effort has to be made by the banks to strengthen their internal control and risk management systems and to set up early warning signals for timely detection and action. The problem of NPAs is tied up with the issue of legal reforms. This is an area which requires urgent consideration as the present system that substantially delays in arriving at a legal solution of a dispute is simply not tenable. The absence of a quick and efficient system of legal redress constitutes an important 'moral hazard' in the financial sector, as it encourages imprudent borrowers. NPAs can create many challenges. There are many other reasons why public sector banks have the highest level of NPAs. The NPA problem of banking institutions in India is exaggerated by deriving NPA figures based on percentage against risk assets instead of total earning assets. To improve recovery and to minimize NPAs,

banks are expected to do a continuous recovery exercise through various methods adopting newer strategies. Besides, the borrowers are to be educated again and again about the benefits they derive from bank loans compared to the local money lenders. The defaulters with genuine reason must be taken care of by the banks. But this attitude becomes an act of mockery when blanket write-off is affected. The above are various issues faced by banks related to lending and recovery. Banks cannot stop lending. Lending will continue, recovery also must be continued.

Adeusi et al. [2014] evaluated the association of risk management practices and banks' financial performance in Nigeria using secondary data from annual reports and financial statements of ten Nigerian banks for the period 2006 to 2009. The authors have adopted the panel data estimation technique as the data collected for their study is cross-sectional units observed over time. The independent variables used by the authors included the cost of bad and doubtful loans, non-performing loan, liquidity, equity-total asset ratio, equity-loan ratio and debt-equity ratio. Whereas the dependent variables used are return on asset (ROA) and return on equity (ROE). The findings of this study show that there is an inverse relationship between banks' financial performance and cost of bad and doubtful loans; but a positive and significant relationship between capital assets ratio and banks' financial performance. The authors concluded that there is a significant relationship between bank's performance and risk management. The authors recommend that the credit risk indicators identified which include cost of bad and doubtful loans, debt-equity ratio, and managed fund needs to be managed in a better way to achieve better banks' financial performance. Pradhan [2014] has conducted research on "A Study on Non- Performing Assets of Commercial Banks with References to SCBNL, RBB, Everest bank, NB bank and NBBL". Main objective of his study are to find out the proportion of non-performing loans and the level of NPA in total assets, total deposit and total lending in the selected commercial bank relationship between loan loss provisions in the commercial bank impact of non-performing assets in the performance of commercial banks. He has concluded improper credit

policy, political pressure to lend, lack of supervision and monitoring, economic slowdown, overvaluation of collateral are the major cause of occurring NPA. In recent years, not only the private sector's banks (like NBBL, EBL and SCBNL) but also public sector's banks (RBB and NBL) are trying to maintain their loans and advances to control over becoming the non-performing assets. To overcome the NPA from public banks, they should try to recover their loan and interest amount on time and also make a suitable loan loss policy. He has concluded "high level of non-performing assets not only decrease the profitability of the banks but also affect the entire financial as well as operational health of the organization. If the NPA doesn't control immediately, it will be the main cause for the shutdown of the banks in future. ROA is the measuring tools of bank profitability and also the ability of the bank management to generate the income by utilizing the company assets at their disposal.

Bhattarai [2018] the non-performing loans (NPL) of financial institutions are considered as a significant issue in the context of Nepal for the last few decades. The paper aims to identify the impact of macroeconomic variables (GDP, Inflation, and Real Effective Exchange Rate) and bank specific variables (size, change in loan, real lending rate of interest, and share of loan to total assets) on the non-performing loan of the commercial banks in Nepal. The study was conducted mainly with secondary sources. The data were collected for 26 commercial banks covering the period of 2002-2012 with 227 observations. The study found that macroeconomic variables such as the real effective exchange rate have a significantly negative impact on non- performing loans. The impact of GDP growth rate was found to be insignificant in this study. One year lagged inflation rate has a significant positive impact on non- performing loans. The banks which charge relatively higher real interest rates have higher non-performing loans, which is consistent with the findings of previous studies. The ownership dummy has positive coefficient and significant at one percent level showing that if the bank is government owned the non-performing loan would be higher than that of the private owned banks. As well,

more lending in the previous years and current year reduces the non-performing loan since the coefficient of change in loan in current and previous years have negative coefficient and significant at one percent level.

Dudhe et al. [2017] the assets of banks which do not perform any role in getting profit to the organization, such assets are called Non-performing Assets. Non-Performing Asset (NPA) is defined as an advance, where payment of interest or repayment of installment of principal (in case of term loans disbursed by the commercial banks) or both remains unpaid for a certain period, Ibrahim and Thangavelu [2014] NPA is an advance which is considered written off, for bank has made provisions, and which is still held in banks' books of account. Gross NPA (non-performing asset) refers to the overall quantity of loans that have gone bad debts. It consists of all the nonstandard assets like sub-standard, doubtful, and loss assets. An asset makes non-performing when it stops to generate income for the bank. Recently an asset was measured as non-performing asset (NPA) standing on the concept of 'Past Due'. A non-performing asset was examined as credit in respect of which interest of principal has remained 'past due' for a particular time.

García-Herrero et al. [2009] claims that despite the operating costs of holding a large portfolio of loans, bank profitability should increase with a higher ratio of loans to assets as long as interest rates on loans are liberalized and the bank applies markup pricing. Among the different types of risk which are faced by banks, credit risk seems to have more impact on bank's profitability because bank's revenue is generated from loans from which interest is derived. NPA are classified as classified loans according to the NRB directives categories into sub-standard, doubtful and loss. The circular further says a NPA is a credit facility in respect of which interest has remained unpaid for two quarters. According to the circulars, the loans are classified based on weakness and dependence on collateral securities into four categories and prescribed the provisioning rate as follows: Gnawali [2018] the level of NPA in Nepalese banking system is very alarming. It is well-known fact that the

bank and financial institution in Nepal have been facing the problem of swelling non-performing assets and the issue of becoming more and more unmanageable day by day. This study examines the impact of non-performing loans on profitability of Nepalese commercial banks. Return on assets and return on equity are taken as dependent variables. Non-performing loan, loan loss provision, capital adequacy ratio, ratio of loan loss provision to total loan, ratio of total loan to total deposit and size of the firm are selected as independent variables. This study is based on the secondary data, which are collected from various issues of Banking and Financial Statistics, Bank Supervision Report published by Nepal Rastra Bank and annual reports of the banks. The study covers the period of 2010 to 2017for 3 government banks and 10 non -government banks with 24 and 80 observations respectively. The regression models were estimated to test the significance and impact of non-performing loans on profitability on Nepalese commercial banks.

CHAPTER 3

METHODOLOGY

The data of the selected development bank was read. Each variable in the data was summarized and plotted with respect to time. The correlation between each and every parameters in the data was calculated and plotted. ROE was selected as the dependent variable and CFtoRWA, NPLtoTL, TLLPtoTNLP, Cost of Funds, Credit Deposit Ratio and Base Rate were taken as the independent variables. We will start by developing a linear regression model with ordinary least square with respect to dependent variable and each independent variable individually. This linear regression model with ordinary least square is based on the assumption that is the P-value of our model is greater than 0.05 then population coefficient is zero and the independent variable has no significant relation with our dependent variable.If the P-value is not greater than the 0.05 we lean toward alternative hypothesis that the coefficient is non zero and the independent variable has significant impact on the dependent variable. The linear regression models were selected based on the above hypothesis.

If we have single independent variable whose linear regression model has p-value less than 0.05, we make a conclusion based on this model.

If we have two independent variables whose linear regression model has p-value less than 0.05, the multiple linear regression with these two independent variable was developed. After development of this multiple linear regression model, its p-value for each individual independent variable was checked to make sure they were below 0.05.

In the case where more than two independent variable has p-value less than 0.05, the multiple linear regression model was developed with all three independent variable. After development of this multiple linear regression model, its p-value for each individual independent variable was checked to make sure they were below 0.05. If p-value of any independent variable was above 0.05, that independent variable was removed and the model was redesigned with remaining independent variables with the above criteria.

The following table summarizes the methodology applied in this thesis.

1. Read the data of the selected bank.
2. Create the linear regression model for each independent variable with respect to ROE.
3. Check the value of p-value of each linear regression model.
4. If the p-value of the model for particular linear regression model is less than 0.05, that independent variable was considered as significant.
5. If we have only one independent variable considered as significant was stop the process.
6. If we have two independent variable considered as significant, the multiple linear regression model was developed. The p-value for two independent variables was checked to make sure that both independent variable have significant impact on the model.
7. If we have more than two independent variable considered as significant, the multiple linear regression model was developed. The p-value for all the independent variables was checked to make sure that each independent variable have significant impact on the model.
8. If any independent variable has p-value more than 0.05, that independent variable was removed and next model was developed with remaining independent

variables was developed.

9. All above process were repeated with the data of all the banks.
10. Based on the models developed for all the selected banks conclusion was made.

CHAPTER 4

RESULTS AND ANALYSIS

The data of last 12 quarters of three selected development banks were collected and models were developed. The details of these experiments and developed models and results obtained from them are described in the following section.

4.1 MNBBL

Data of MNBBL from fourth quarter of fiscal year 076/077 to the third quarter of 079/080 was collected and processed. The summary of this data is in the following table.

Table 4.1: Data of MNBBL for last 12 quarters

Date	CFRWA	NPLtoTL	TLLPtoTNPL	Cost of Funds	CDR	Base Rate	ROE
2077-04-01	12.830000	0.530000	319.520000	7.520000	74.890000	9.980000	11.147000
2077-07-01	12.510000	0.120000	1338.730000	6.990000	77.420000	9.120000	4.840000
2077-10-01	11.890000	0.300000	474.140000	6.240000	78.480000	8.360000	9.950000
2078-01-01	11.140000	0.210000	600.020000	6.090000	79.930000	8.010000	19.260000
2078-04-01	11.160000	0.250000	647.940000	6.260000	78.040000	8.050000	17.110000
2078-07-01	12.100000	0.230000	694.000000	6.910000	85.510000	8.640000	4.600000
2078-10-01	12.140000	0.260000	598.190000	7.770000	86.240000	9.630000	7.890000
2079-01-01	12.480000	0.170000	873.850000	8.540000	86.510000	10.440000	12.810000
2079-04-01	10.280000	0.210000	677.890000	9.120000	81.400000	10.960000	16.580000
2079-07-01	13.900000	0.770000	218.710000	10.150000	82.970000	12.420000	3.640000
2079-10-01	11.550000	0.980000	186.120000	10.530000	84.650000	12.800000	7.200000
2080-01-01	11.640000	1.990000	109.750000	10.210000	82.500000	12.390000	9.180000

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The maximum value of CF to RWA of MNBBL was 13.9 % and the minimum value was 10.28 %. The mean of CF to RWA of MNBBL was 11.96 % with the standard deviation of 0.93 %. The maximum value of NPL to TL of MNBBL was 1.99 % and the minimum value was 0.12 %. The NPL to TL of MNBBL was 0.5 % with the standard deviation of 0.53 %. The maximum value of Total Loan

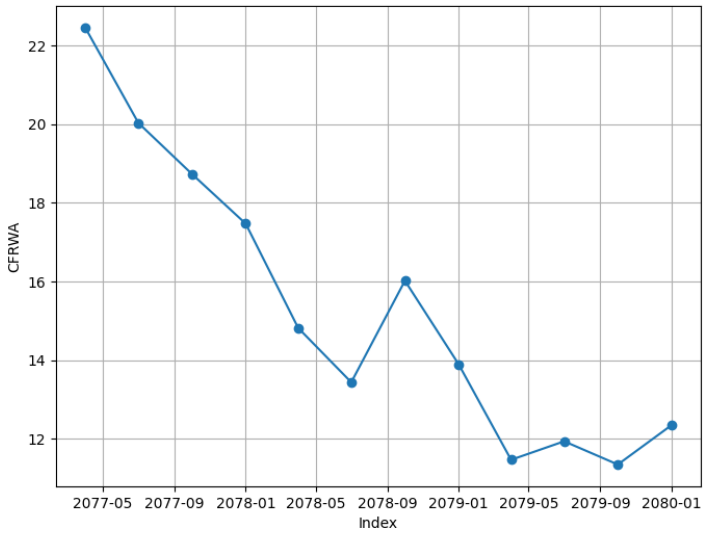

Figure 4.1: CF to RWA of MNBBL for last 12 quarters.

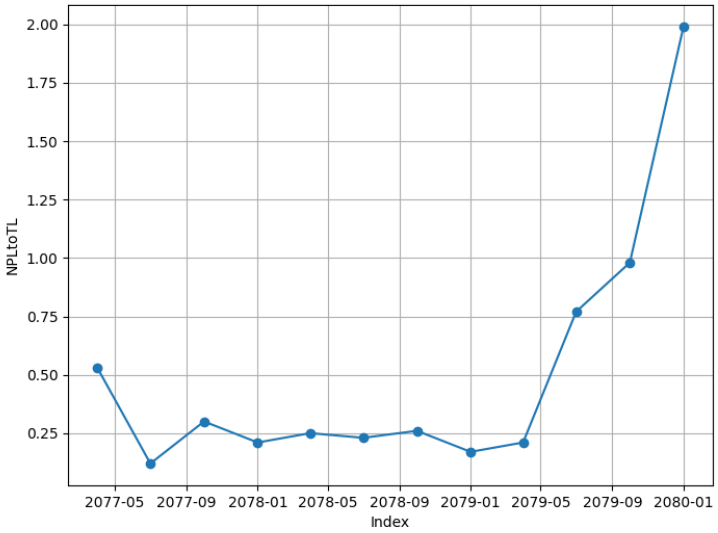

Figure 4.2: NPL to TL of MNBBL for last 12 quarters.

Loss Provision to Total NPL of MNBBL was 1338.73% and the minimum value was 109.75%. The average Total Loan Loss Provision to Total NPL was 561% with the standard deviation of 340.01%. The maximum value of Cost of funds of MNBBL was 10.53% and the minimum value was 6.09%. The average Cost of

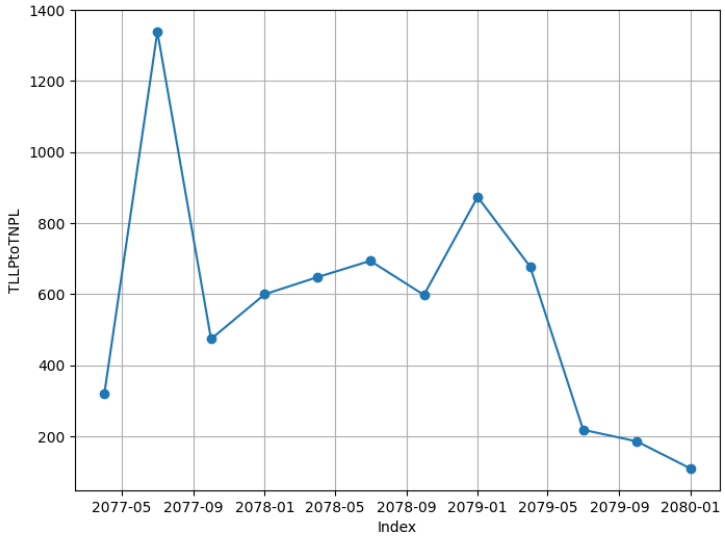

Figure 4.3: TLLP to NPL of MNBBL for last 12 quarters.

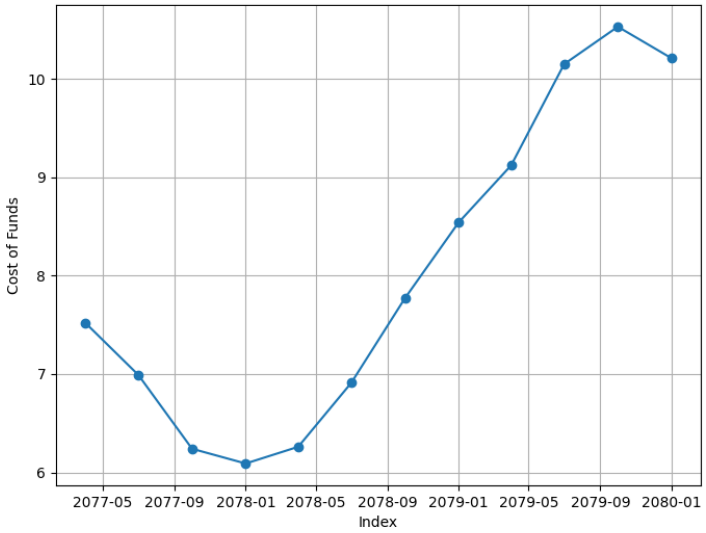

Figure 4.4: Cost of Funds of MNBBL for last 12 quarters.

Funds was 8.02% with the standard deviation of 1.64%. The maximum value of Credit Deposit Ratio of MNBBL was 86.51% and the minimum value was 74.89%. The average of Credit Deposit Ratio was 81.54% with the standard deviation of 3.82%. The maximum value of Base Rate of MNBBL was 12.8% and the minimum

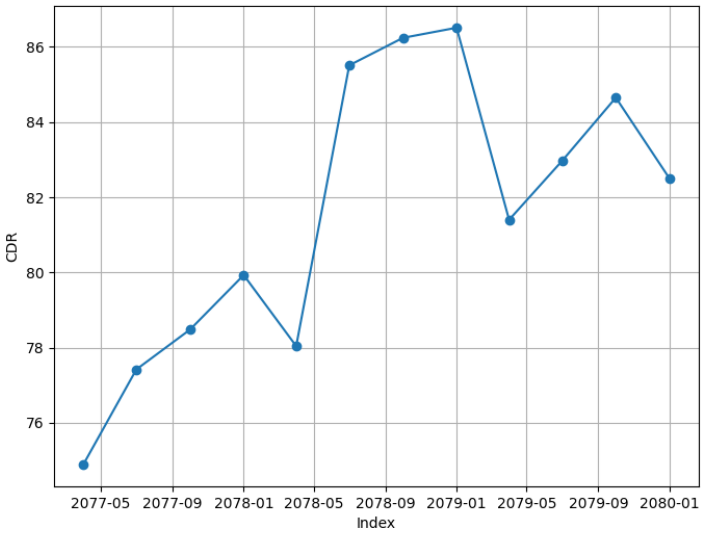

Figure 4.5: CDR of MNBBL for last 12 quarters.

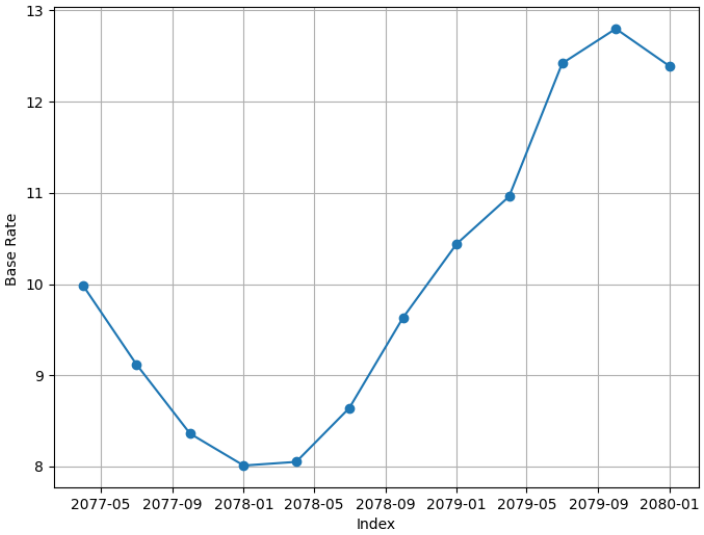

Figure 4.6: Base Rate of MNBBL for last 12 quarters.

value was 8.01%. The average of the Base Rate was 10.7% with the standard deviation of 1.7%. The maximum value of ROE of MNBBL was 19.26% and the minimum value was 3.6%. The average ROE for this period was 10.35% with the standard deviation of 5.19%.

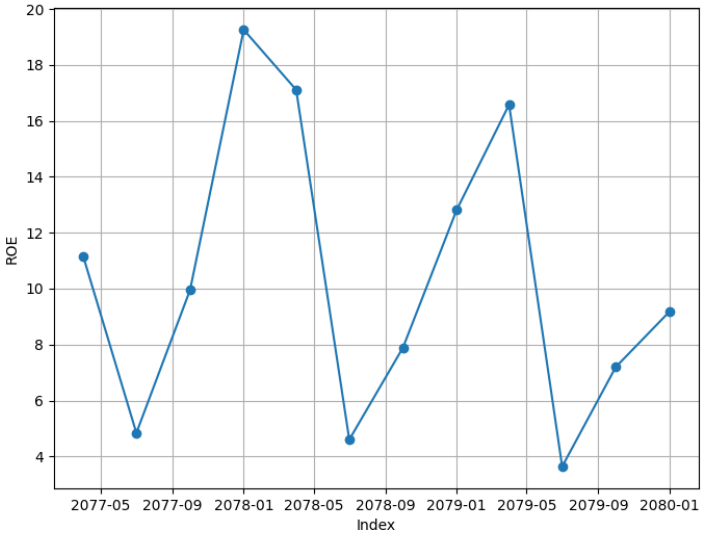

Figure 4.7: ROE of MNBBL for last 12 quarters.

Table 4.2: Summary of Data of MNBBL

	CFRWA	NPLtoTL	TLLPtoTNPL	Cost of Funds	CDR	Base Rate	ROE
count	12.000000	12.000000	12.000000	12.000000	12.000000	12.000000	12.000000
mean	11.968333	0.501667	561.571667	8.027500	81.545000	10.066667	10.350583
std	0.931995	0.537567	340.017769	1.643423	3.821141	1.749906	5.192084
min	10.280000	0.120000	109.750000	6.090000	74.890000	8.010000	3.640000
25%	11.452500	0.210000	294.317500	6.747500	78.370000	8.570000	6.610000
50%	11.995000	0.255000	599.105000	7.645000	81.950000	9.805000	9.565000
75%	12.487500	0.590000	681.917500	9.377500	84.865000	11.317500	13.752500
max	13.900000	1.990000	1338.730000	10.530000	86.510000	12.800000	19.260000

4.1.1 Correlation

Correlations between every variable was calculated between and the result was shown in the following table and plots.

By observing the above figure it can be said that the CF to RWA ratio has negative correlation with the ROE. To confirm the findings from this graph the linear regression models were developed and their result can be found in the following section.

Table 4.3: Corealtion between variables of MNBBL.

	CFRWA	NPLtoTL	TLLPtoTNPL	Cost of Funds	CDR	Base Rate	ROE
CFRWA	1.000000	0.064149	-0.072345	0.162465	0.043286	0.219596	-0.691538
NPLtoTL	0.064149	1.000000	-0.718773	0.683688	0.125238	0.707020	-0.248153
TLLPtoTNPL	-0.072345	-0.718773	1.000000	-0.533295	-0.108244	-0.563183	0.058682
Cost of Funds	0.162465	0.683688	-0.533295	1.000000	0.464485	0.992784	-0.348778
CDR	0.043286	0.125238	-0.108244	0.464485	1.000000	0.383113	-0.288359
Base Rate	0.219596	0.707020	-0.563183	0.992784	0.383113	1.000000	-0.375073
ROE	-0.691538	-0.248153	0.058682	-0.348778	-0.288359	-0.375073	1.000000

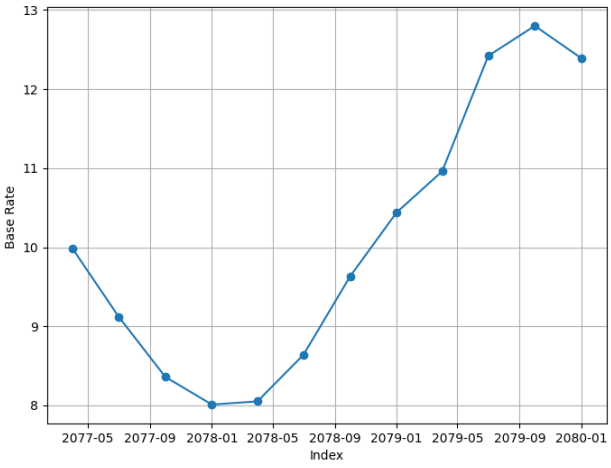

Figure 4.8: Pair plot between all the variables present in MNBBL data.

4.1.2 Linear Regression with single independent variable

In this section the linear regression was performed to evaluate the relationship of ROE with respect to all other independent variables.

All the models were selected or rejected with the criteria described in the methodology.

1. The linear regression model with CF to RWA as independent variable and ROE as dependent variable has the coefficient of -3.85251358 with the intercept of 56.45875002529276. The P-value in this case is 0.012732820262054174 which is smaller than 0.05. So it can be concluded that CFRWA does have significant impact on ROE.

2. The linear regression model with NPLtoTL as independent variable and ROE as dependent variable has the coefficient of -2.39677915 with the intercept of 11.552967539821523. The P-value in this case is 0.4367543818630695 which is greater than 0.05. So it can be concluded that NPLtoTL does not have significant impact on ROE.

3. The linear regression model with TLLP to TNPL as independent variable and ROE as dependent variable has the coefficient of 0.00089608 with the intercept of 9.847372399473374. The P-value in this case is 0.8562483174618696 which is greater than 0.05. So it can be concluded that TLLP to TNPL does not have significant impact on ROE.

4. The linear regression model with Cost of Funds as independent variable and ROE as dependent variable has the coefficient of -1.10189857 with the intercept of 19.196074092306354. The P-value in this case is 0.2665146700541405 which is greater than 0.05. So it can be concluded that Cost of Funds does not have significant impact on ROE.

5. The linear regression model with CDR as independent variable and ROE as dependent variable has the coefficient of -0.3918161 with the intercept of 42.30122720883347. The P-value in this case is 0.36338356771561164 which is greater than 0.05. So it can be concluded that CDR does not have significant impact on ROE.

6. The linear regression model with Base Rate as independent variable and ROE as dependent variable has the coefficient of [-1.11286531] with the intercept of 21.55342743806134. The P-value in this case is 0.22961216268571288 which is greater than 0.05. So it can be concluded that Base Rate does not have significant impact on ROE.

Out of all the parameters, it was found that only CF to RWA has the significant impact on the ROE of MNBBL for that data of last twelve quarter. The final

regression model can be presented as follows:

$$ROE = 56.45 \times (CFtoRWA) - 7.857 \tag{4.1}$$

4.2 EDBL

Data of EDBL from fourth quarter of fiscal year 076/077 to the third quarter of 079/080 was collected and processed. The summary of this data is in the following table.

Table 4.4: Data of EDBL for last 12 quarters

Date	CFRWA	NPLtoTL	TLLPtoTNPL	Cost of Funds	Credit Deposit Ratio	Base Rate	ROE
2077-04-01	12.290000	4.630000	94.520000	5.980000	72.010000	8.980000	3.540000
2077-07-01	12.540000	4.920000	90.400000	4.850000	73.870000	7.550000	4.750000
2077-10-01	12.080000	3.050000	140.130000	4.490000	74.660000	7.030000	12.167000
2078-01-01	12.250000	2.620000	122.840000	4.710000	77.230000	7.130000	9.189000
2078-04-01	12.340000	3.150000	113.230000	4.640000	76.210000	7.530000	10.430000
2078-07-01	11.270000	3.890000	96.700000	5.380000	89.460000	8.050000	1.390000
2078-10-01	13.640000	3.710000	95.580000	6.870000	88.960000	9.390000	2.980000
2079-01-01	13.680000	3.670000	86.280000	7.660000	92.850000	10.180000	6.440000
2079-04-01	12.800000	2.790000	118.830000	8.220000	85.800000	10.900000	6.860000
2079-07-01	13.330000	4.480000	82.950000	9.210000	84.240000	11.960000	1.310000
2079-10-01	13.250000	4.900000	85.160000	9.600000	83.540000	12.260000	1.390000
2080-01-01	13.130000	8.920000	55.610000	9.350000	83.220000	12.000000	2.660000

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The maximum value of CF to RWA of EDBL was 13.68 % and the minimum value was 1.27 %. The CF to RWA of EDBL was 12.71 % with the standard deviation of 0.71 %. The maximum value of NPL to TL of EDBL was 8.92 % and the minimum value was 2.62 %. The NPL to TL of EDBL was 4.227 % with the standard deviation of 1.68 %.

The maximum value of Total Loan Loss Provision to Total NPL of EDBL was 140.13% and the minimum value was 55.61%. The average Total Loan Loss Provision to Total NPL was 98.51% with the standard deviation of 72.27%.

The maximum value of Cost of funds of EDBL was 9.6% and the minimum value

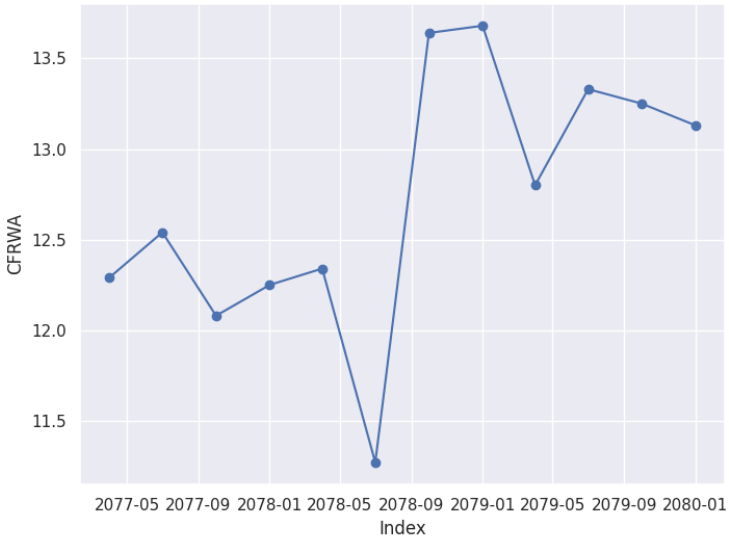

Figure 4.9: CF to RWA of EDBL for last 12 quarters.

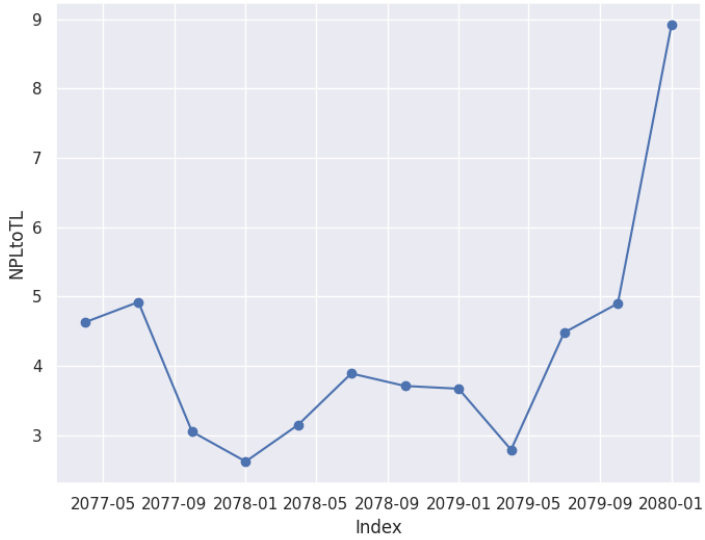

Figure 4.10: NPL to TL of EDBL for last 12 quarters.

was 4.49%. The average Cost of Funds was 6.74% with the standard deviation of 1.99%.

The maximum value of Credit Deposit Ratio of EDBL was 92.85% and the minimum

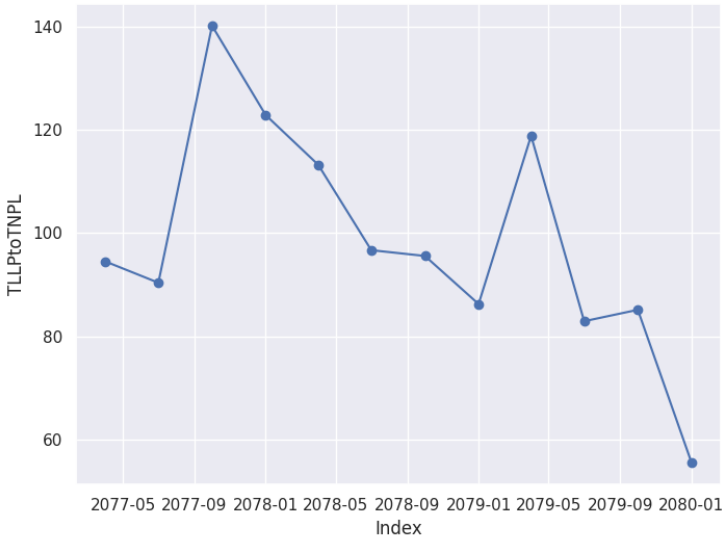

Figure 4.11: TLLP to NPL of EDBL for last 12 quarters.

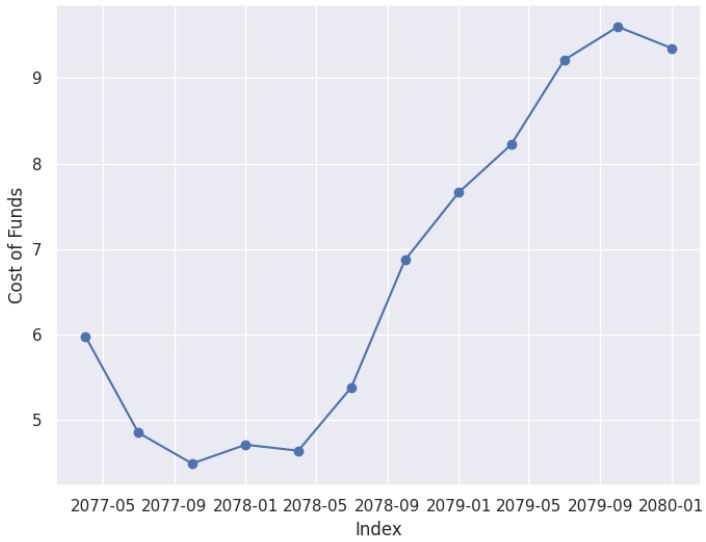

Figure 4.12: Cost of Funds of EDBL for last 12 quarters.

value was 72%. The average of Credit Deposit Ratio was 81.83% with the standard deviation of 6.88%.

The maximum value of Base Rate of EDBL was 12.26% and the minimum value

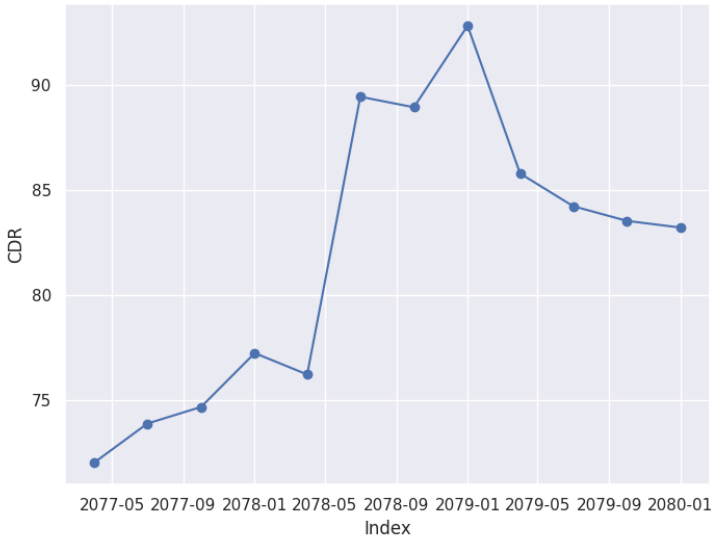

Figure 4.13: CDR of EDBL for last 12 quarters.

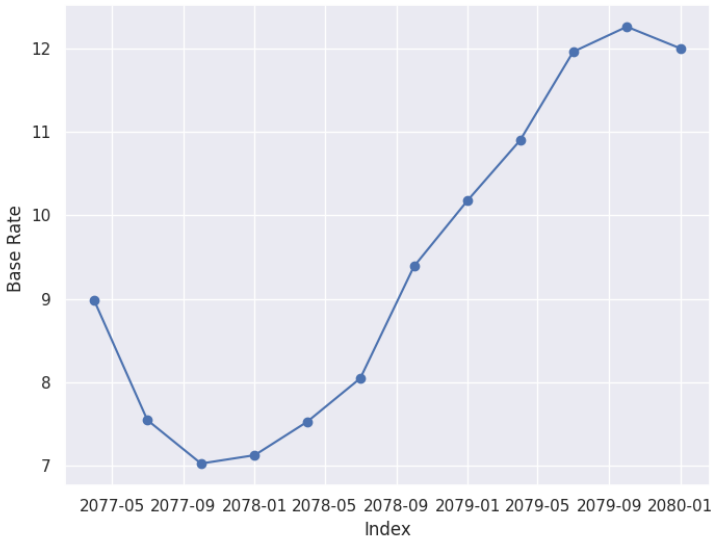

Figure 4.14: Base Rate of EDBL for last 12 quarters.

was 7.03%. The average of the Base Rate was 9.41% with the standard deviation of 2%.

The maximum value of ROE of EDBL was 12.16% and the minimum value was

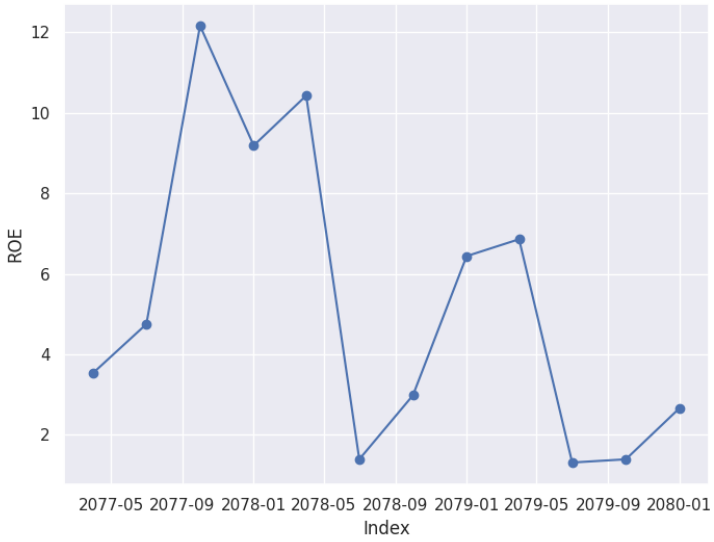

Figure 4.15: ROE of EDBL for last 12 quarters.

1.31%. The average ROE for this period was 5.25% with the standard deviation of 3.74%.

The following table summarizes the major features of data all variables in the given data.

Table 4.5: Summary of Data of EDBL

	CFRWA	NPLtoTL	TLLPtoTNPL	Cost of Funds	Credit Deposit Ratio	Base Rate	ROE
count	12.000000	12.000000	12.000000	12.000000	12.000000	12.000000	12.000000
mean	12.716667	4.227500	98.519167	6.746667	81.837500	9.413333	5.258833
std	0.719221	1.680574	22.274374	1.994047	6.881239	2.000856	3.748432
min	11.270000	2.620000	55.610000	4.490000	72.010000	7.030000	1.310000
25%	12.280000	3.125000	86.000000	4.815000	75.822500	7.545000	2.342500
50%	12.670000	3.800000	95.050000	6.425000	83.380000	9.185000	4.145000
75%	13.270000	4.697500	114.630000	8.467500	86.590000	11.165000	7.442250
max	13.680000	8.920000	140.130000	9.600000	92.850000	12.260000	12.167000

4.2.1 Correlation

Correlations between every variable was calculated between and the result was shown in the following table and plots.

Table 4.6: Corealtion between variables of EDBL.

	CFRWA	NPLtoTL	TLLPtoTNPL	Cost of Funds	CDR	Base Rate	ROE
CFRWA	1.000000	0.257097	-0.481393	0.700135	0.438668	0.680302	-0.274899
NPLtoTL	0.257097	1.000000	-0.839497	0.518314	0.020388	0.531095	-0.538819
TLLPtoTNPL	-0.481393	-0.839497	1.000000	-0.661651	-0.354732	-0.674882	0.791125
Cost of Funds	0.700135	0.518314	-0.661651	1.000000	0.535422	0.996708	-0.623847
CDR	0.438668	0.020388	-0.354732	0.535422	1.000000	0.499475	-0.429567
Base Rate	0.680302	0.531095	-0.674882	0.996708	0.499475	1.000000	-0.638330
ROE	-0.274899	-0.538819	0.791125	-0.623847	-0.429567	-0.638330	1.000000

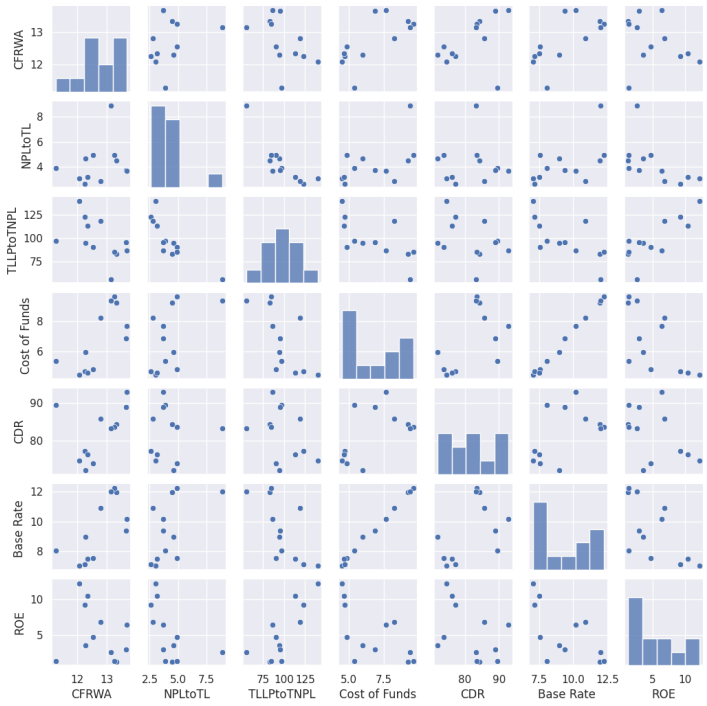

Figure 4.16: Pair plot between all the variables present in EDBL data.

By observing the above figure it can be said that the TLLP to TNPL has high positive correlation with the ROE, while Cost of Funds and Base Rate has high negative correlation with the ROE. To confirm the findings from this graph the linear regression models were developed and their result can be found in the following section.

4.2.2 Linear Regression with single independent variable

In this section the linear regression was performed to evaluate the relationship of ROE with respect to all other independent variables.

All the models were selected or rejected with the criteria described in the methodology.

1. The linear regression model with CFRWA as independent variable and ROE as dependent variable has the coefficient of -1.43271725 with the intercept of 23.47. The P-value in this case is 0.3871836408930931 which is greater than 0.05. So it can be concluded that CFRWA does not have significant impact on ROE

2. The linear regression model with NPLtoTL as independent variable and ROE as dependent variable has the coefficient of -1.20180686 with the intercept of 10.339471854543115. The P-value in this case is 0.07067108265106546 which is greater than 0.05. So it can be concluded that NPLtoTL does not have significant impact on ROE.

3. The linear regression model with TLLPtoTNPL as independent variable and ROE as dependent variable has the coefficient of 0.13313401 with the intercept of -7.857418353938077. The P-value in this case is 0.0021786890872032773 which is smaller than 0.05. So it can be concluded that TLLPtoTNPL does have significant impact on ROE.

4. The linear regression model with Cost of Funds as independent variable and ROE as dependent variable has the coefficient of -1.17271433 with the intercept of 13.170746018378942. The P-value in this case is 0.030169548485756596 which is smaller than 0.05. So it can be concluded that Cost of Funds does have significant impact on ROE.

5. The linear regression model with CDR as independent variable and ROE as dependent variable has the coefficient of -0.23399872 with the intercept of 24.4087038733393. The P-value in this case is 0.16342202728887695 which is greater than 0.05. So it can be concluded that CDR does not have significant impact on ROE.

6. The linear regression model with Base Rate as independent variable and ROE as dependent variable has the coefficient of -1.19585658 with the intercept of 16.51582991454286. The P-value in this case is 0.02549530645480905 which is smaller than 0.05. So it can be concluded that Base Rate does have significant impact on ROE.

4.2.3 Multiple Linear Regression

As more than one parameter was found to effect the ROE, the multiple linear regression model was built. The summary of the multiple linear regression model built with TLLP to TNLP, Cost of Funds and Base Rate as the independent variable and ROE as the dependent variable in presented in the following table.

Table 4.7: OLS Regression Results for EDBL.

Dep. Variable:	ROE	**R-squared:**	0.650
Model:	OLS	**Adj. R-squared:**	0.519
Method:	Least Squares	**F-statistic:**	4.952
Date:	Wed, 23 Aug 2023	**Prob (F-statistic):**	0.0313
Time:	02:17:33	**Log-Likelihood:**	-26.062
No. Observations:	12	**AIC:**	60.12
Df Residuals:	8	**BIC:**	62.06
Df Model:	3		
Covariance Type:	nonrobust		

Table 4.8: The coefficients of each independent variable for each significant variable for EDBL data

	coef	**std err**	**t**	**P> |t|**	**[0.025**	**0.975]**
const	2.0597	16.897	0.122	0.906	-36.905	41.024
TLLPtoTNPL	0.1086	0.049	2.238	0.056	-0.003	0.221
Cost of Funds	1.5086	4.934	0.306	0.768	-9.869	12.887
Base Rate	-1.8782	4.996	-0.376	0.717	-13.400	9.644

The final equation obtained from the above model is:

$$ROE = 0.1086 \times (TTLPtoTNLP) + 1.5086 \times (CostofFunds) - 1.8782 \times (BaseRate) + 2.0597 \tag{4.2}$$

4.3 SINDU

Data of SINDU from fourth quarter of fiscal year 076/077 to the third quarter of 079/080 was collected and processed. The summary of this data is in the following table.

Table 4.9: Data of SINDU for last 12 quarters

Date	CFRWA	NPLtoTL	TLLPtoTNPL	Cost of Funds	CDR	Base Rate	ROE
2077-04-01	22.450000	1.710000	147.400000	6.260000	65.470000	10.260000	3.890000
2077-07-01	20.030000	4.470000	89.100000	5.440000	70.200000	9.810000	4.110000
2077-10-01	18.730000	2.520000	105.550000	5.350000	74.210000	9.160000	5.220000
2078-01-01	17.470000	2.420000	119.120000	5.810000	74.800000	9.190000	5.510000
2078-04-01	14.820000	5.480000	62.450000	5.390000	85.850000	8.860000	5.000000
2078-07-01	13.440000	6.640000	59.130000	5.730000	86.610000	9.650000	1.070000
2078-10-01	16.020000	2.670000	98.690000	6.410000	84.010000	10.100000	5.370000
2079-01-01	13.900000	1.650000	136.940000	7.100000	87.780000	10.520000	6.755000
2079-04-01	11.470000	0.920000	203.070000	7.680000	83.990000	11.270000	10.672000
2079-07-01	11.940000	1.300000	25.890000	9.080000	87.100000	12.870000	0.342000
2079-10-01	11.350000	4.900000	72.510000	9.400000	81.570000	13.190000	3.140000
2080-01-01	12.350000	4.270000	77.830000	9.390000	78.930000	13.290000	-2.490000

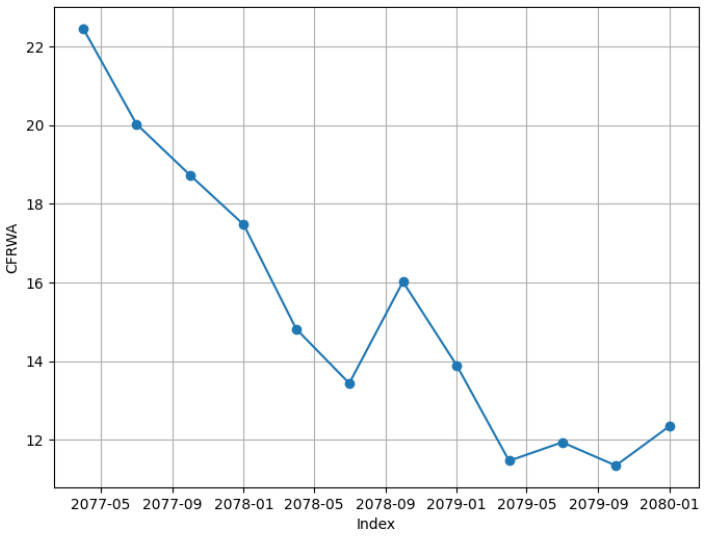

Figure 4.17: CF to RWA of SINDU for last 12 quarters.

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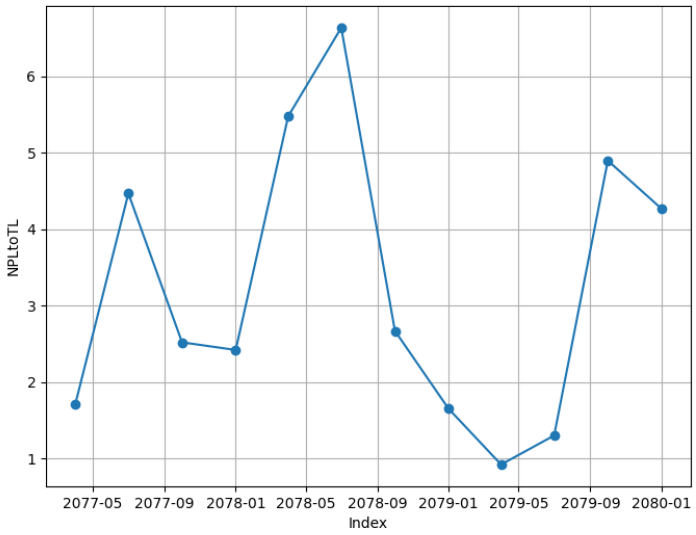

Figure 4.18: NPL to TL of SINDU for last 12 quarters.

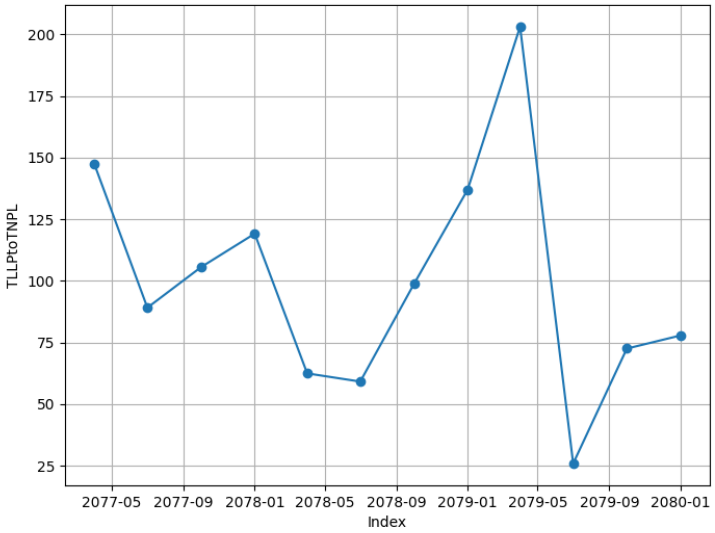

Figure 4.19: TLLP to NPL of SINDU for last 12 quarters.

The maximum value of CF to RWA of SINDU was 22.45 % and the minimum value was 11.35 %. The CF to RWA of SINDU was 15.33 % with the standard deviation of 3.64 %. The maximum value of NPL to TL of SINDU was 6.64 % and the minimum value was 0.92 %. The NPL to TL of SINDU was 3.24 % with the

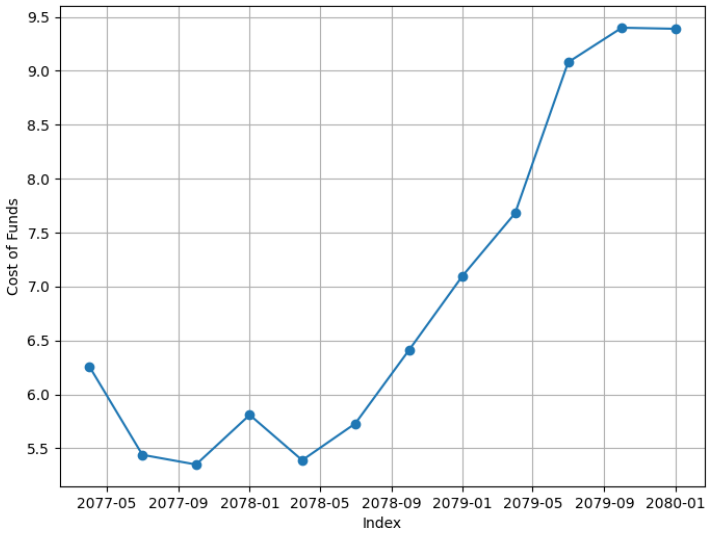

Figure 4.20: Cost of Funds of SINDU for last 12 quarters.

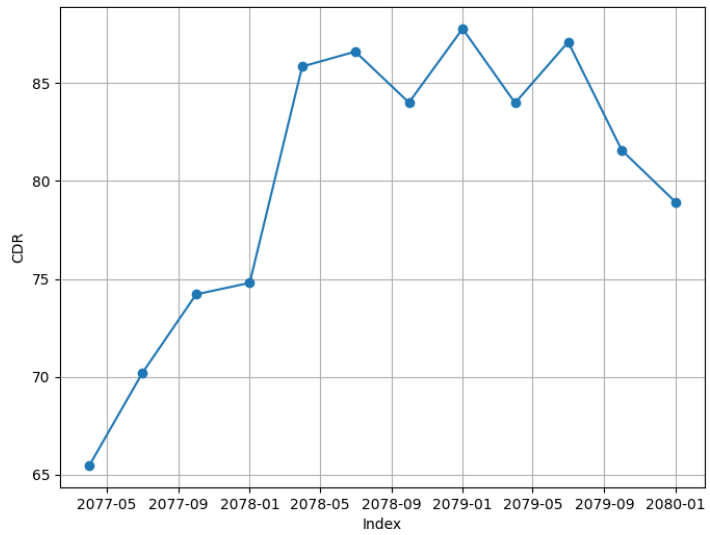

Figure 4.21: CDR of SINDU for last 12 quarters.

standard deviation of 1.84 %.

The maximum value of Total Loan Loss Provision to Total NPL of SINDU was 203.07% and the minimum value was 25.89%. The average Total Loan Loss

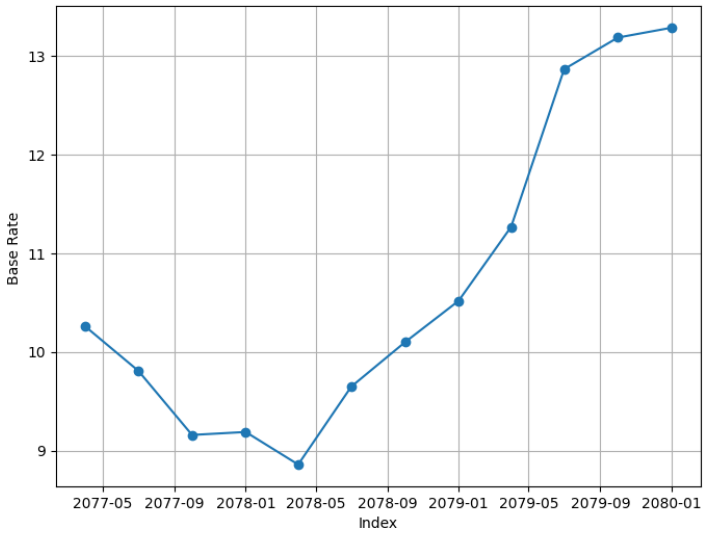

Figure 4.22: Base Rate of SINDU for last 12 quarters.

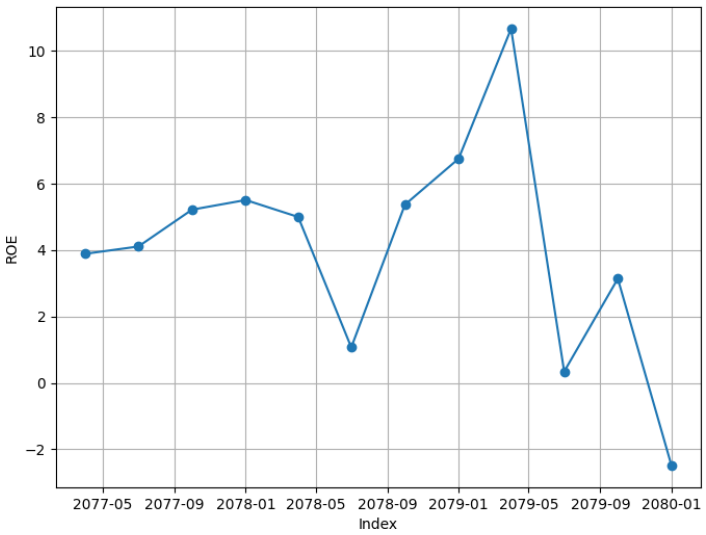

Figure 4.23: ROE of SINDU for last 12 quarters.

Provision to Total NPL was 99.80% with the standard deviation of 47.262%.

The maximum value of Cost of funds of SINDU was 9.6% and the minimum value was 5.35%. The average Cost of Funds was 6.92% with the standard deviation of

1.59%.

The maximum value of Credit Deposit Ratio of SINDU was 87.78% and the minimum value was 65.47%. The average of Credit Deposit Ratio was 80.04% with the standard deviation of 7.33%.

The maximum value of Base Rate of SINDU was 13.29% and the minimum value was 8.86%. The average of the Base Rate was 10.68% with the standard deviation of 1.6%.

The maximum value of ROE of SINDU was 10.67% and the minimum value was −2.49%. The average ROE for this period was 4.049% with the standard deviation of 3.35%.

Table 4.10: Summary of Data of SINDU

	CFRWA	NPLtoTL	TLLPtoTNPL	Cost of Funds	CDR	Base Rate	ROE
count	12.000000	12.000000	12.000000	12.000000	12.000000	12.000000	12.000000
mean	15.330833	3.245833	99.806667	6.920000	80.043333	10.680833	4.049083
std	3.648034	1.844828	47.262385	1.591654	7.337113	1.608373	3.351687
min	11.350000	0.920000	25.890000	5.350000	65.470000	8.860000	-2.490000
25%	12.247500	1.695000	69.995000	5.657500	74.652500	9.535000	2.622500
50%	14.360000	2.595000	93.895000	6.335000	82.780000	10.180000	4.555000
75%	17.785000	4.577500	123.575000	8.030000	86.040000	11.670000	5.405000
max	22.450000	6.640000	203.070000	9.400000	87.780000	13.290000	10.672000

4.3.1 Correlation

Correlations between every variable was calculated between and the result was shown in the following table and plots.

Table 4.11: Corealtion between variables of SINDU.

	CFRWA	NPLtoTL	TLLPtoTNPL	Cost of Funds	CDR	Base Rate	ROE
CFRWA	1.000000	-0.123570	0.220174	-0.695712	-0.837878	-0.622881	0.137963
NPLtoTL	-0.123570	1.000000	-0.573939	-0.171253	0.120906	-0.118498	-0.458635
TLLPtoTNPL	0.220174	-0.573939	1.000000	-0.164795	-0.276686	-0.203804	0.767760
Cost of Funds	-0.695712	-0.171253	-0.164795	1.000000	0.320055	0.984836	-0.390605
CDR	-0.837878	0.120906	-0.276686	0.320055	1.000000	0.224963	0.019344
Base Rate	-0.622881	-0.118498	-0.203804	0.984836	0.224963	1.000000	-0.461460
ROE	0.137963	-0.458635	0.767760	-0.390605	0.019344	-0.461460	1.000000

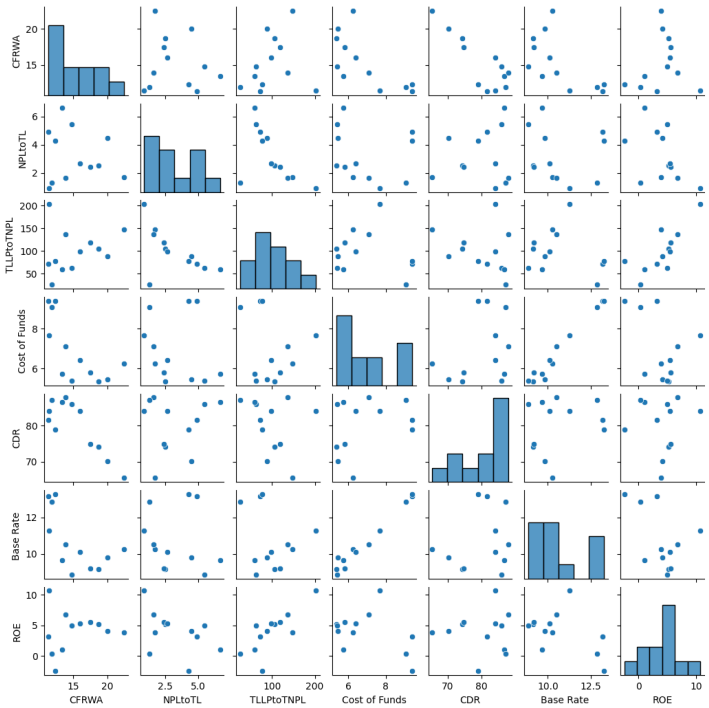

Figure 4.24: Pair plot between all the variables present in SINDU data.

By observing the above figure it can be said that the TLLP to TNPL has high positive correlation with the ROE. To confirm the findings from this graph the linear regression models were developed and their result can be found in the following section.

4.3.2 Linear Regression with single independent variable

In this section the linear regression was performed to evaluate the relationship of ROE with respect to all other independent variables.

All the models were selected or rejected with the criteria described in the methodology.

1. The linear regression model with CF to RWA as independent variable and ROE as dependent variable has the coefficient of -1.432717 with the intercept of 23.478221028458933. The P-value in this case is 0.3871836408930931 which is greater than 0.05. So it can be concluded that CF to RWA does not have significant impact on ROE.

2. The linear regression model with NPL to TL as independent variable and ROE as dependent variable has the coefficient of -1.20180686 with the intercept of 10.3. The P-value in this case is 0.07067108265106546 which is greater than 0.05. So it can be concluded that NPLtoTL does not have significant impact on ROE.

3. The linear regression model with TLLP to TNPL as independent variable and ROE as dependent variable has the coefficient of 0.13313401 with the intercept of -7.857418353938077. The P-value in this case is 0.0021786890872032773 which is smaller than 0.05. So it can be concluded that TLLPtoTNPL does have significant impact on ROE.

4. The linear regression model with Cost of Funds as independent variable and ROE as dependent variable has the coefficient of -1.17271433 with the intercept of 13.170746018378942. The P-value in this case is 0.030169548485756596 which is smaller than 0.05. So it can be concluded that Cost of Funds does have significant impact on ROE.

5. The linear regression model with CDR as independent variable and ROE as dependent variable has the coefficient of -0.23399872 with the intercept of

24.4087038733393. The P-value in this case is 0.16342202728887695 which is greater than 0.05. So it can be concluded that CDR does not have significant impact on ROE

6. The linear regression model with Base Rate as independent variable and ROE as dependent variable has the coefficient of -1.19585658 with the intercept of 16.51582991454286. The P-value in this case is 0.02549530645480905 which is smaller than 0.05. So it can be concluded that Base Rate does have significant impact on ROE.

Out of all the parameters, it was found that only TLLP to TNPL has the significant impact on the ROE of SINDU for that data of last twelve quarter. The final regression model can be presented as follows:

$$ROE = 0.133 \times (TTLPtoTNLP) - 7.857 \tag{4.3}$$

CHAPTER 5

Conclusion and Future Work

5.1 Summary

The quarterly data of financial reports of three development banks were analysed to study the impact of non performing assets and other factors such as total equity, CF to RWA ratio Cost of Funds, CDR and base rate on the return on equity. It was found that, in case of EDBL TLLP to TNLP ratio and cost of funds has positive impacts on ROE and Base rate has negative impact on ROE. While for SINDU only TLLP to TNLP ratio has impact on the ROE. In the case of MNBBL, CF to RWA ratio had negative impact on ROE.

5.2 Conclusion

In this study the impact of six different parameters on ROE of three different development banks were studied. Correlations were calculated and linear regression and multiple linear regression model were designed. The main goal of this study was to study the impact of non performing assets on the profitability of bank. The NPL to TL and TLLP to TNLP were the two parameters related to non-performing assets and ROE was the only parameter indicating the profitability of bank. It was found that only in the case EDBL and SINDU non-performing assets had impact on the profitability of the bank. From these results it can be concluded that the effect of non-performing assets on the profitability of bank cannot be generalized, rather its dependent on the bank and its practices. It was also found that MNBBL has the average ROE of 10.35 which was the highest among three banks taken in this study.

5.3 Future Work

This study assumes that ROE is the only indicator of profitability of a financial institution. There are other indicators such as ROA and earning per share. The study of the impact of Net interest margin, inflation rate, GDP growth on ROE, ROA and earning per share should be done for more clear understanding of the factors that have impact on the profitability of development banks of Nepal. This study have taken into account of only three development banks. To get good and clear understanding of what impacts the profitability of development banks in Nepal, the study should be broaden to all the development banks in Nepal.

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