RISK MANAGEMENT OF COMMERCIAL BANKS IN NEPAL

(A Comparative Study between EBL, NIBL, KBL, MBL & GIBL)

By

DIPENDRA GAUTAM

University Campus

Central Department of Management

T.U. Registration No. : 7-2-314-09-2006

Campus Roll No. : 322/066

Second Year Symbol No. : 280040

A Thesis Submitted to:

Office of the Dean

Faculty of Management

Tribhuvan, University

In partial fulfillment of the requirement for the degree of

Master of Business Studies (M.B.S.)

Kirtipur, Kathmandu, Nepal

January, 2015

ACKNOWLEDGEMENT

As the partial fulfillment of the MBS degree, I have prepared this report. During the course, I worked with sincerity, honesty and diligently, as far as possible. But beside my continual efforts, I also got unforgettable support from different people and parties. I am extremely grateful and overwhelmed by their support while completing my work.

I would like to express cordial gratitude to all my teachers, who taught me up to now. For this dissertation, I would like to extend special thanks to my thesis supervisor Reader, Ajay Prasad Dhakal. Despite busy schedule, he made significant contribution for preparing this thesis.

I am also very grateful and express my heartfelt thanks to all the senior officer of EBL, NIBL, KBL, MBL and GIBL, who helped me a lot, by providing necessary data and required information for the study.

Similarly, sincere thank goes to all the staff of central library and central department of management library and to my friends, colleagues and my family for their continuous inspiration, support and encouragement.

Dipendra Gautam

Researcher

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURE

ABBREVIATION

%	Percentage
&	and
A/C	Account
ABB	Anywhere Branch Banking
ATM	Automated Teller Machine
B.S.	Bikram Sambat
CAR	Capital Adequacy Rayio
CBs	Commercial Banks
CD	Credit Deposit
CEO	Chief Executive officer
CIB	Credit Information Bureau
CPG	Credit Policies Guidelines
CRR	Cash Reserve Ratio
C.V.	Coefficient of Variation
EBL	Everest Bank Limited
e.g.	Example
e.t.c	Etcetera
ECA	Export Credit Rating Agency
EOD	End of Day
FDRs	Fixed Deposit Receipts
Fig.	Figure
FIRA	Fixed interest Rate Assets
FIRL	Fixed interest Rate Liabilities
FY	Fiscal Year
GDP	Gross Domestic Product
GIBL	Global IME Bank Limited
i.e.	That is
IRR	Interest Rate Risk
IRSA	Interest Rate Sensitive Assets

IRSL	Interest Rate Sensitive Liabilities
KBL	Kumari bank Limited
KYC	Know Your Customer
LLP	Loan Loss Provision
Ltd	Limited
MBL	Machhapuchhre Bank Limited
NBA	Non Banking Assets
NBL	Nepal Bank Limited
NGO	Non Government Organization
NIBL	Nepal Investment Bank Limited
NIM	Net Interest Margin
No.	Number
NPL	Non Performing Loan
NRB	Nepal Rastra Bank
Pvt.	Private
RBB	Rastriya Banijya Bank
Rs.	Rupees
S.D.	Standard Deviation
TLA	Total Loan and Advance
T.U.	Tribhuvan University
T-Bill	Treasury Bill

CHAPTER-I
INTRODUCTION

1.1Background of the Study:

Nepal is under developed countries it has adopted mixed and liberal economic policy having lower economic growth and activity. But many reforms have been made in the financial sector in recent days. Liberalization of interest rates, creation of a basic regulatory framework and development of longer term government securities market are some important example of such financial reforms. Participation of private sector has been emphasizing in financial sector which is playing a significant role in the sustainable economic development of the country. The private sector and government are jointly involved in the name of public private partnership. Sound banking system is the culture means to acceleration the development of the country by strengthening the economic condition in the globalize economy of the twenty-first century. This requires the well-developed corporate culture, proper management of risk and return and healthy competitive environment that facilitate mobilization of small saving in the commercial and industrial sectors that will enhance the economic and social welfare of a country.

Bank is a financial institution, which deals with money by accepting various types of deposits, disbursing loan and rendering various types of financial services. It is the intermediary between the deficit and surplus of the financial resources. Banking when properly organized, aids and facilitates growth on trade and considered not as dealers in money but as the leader of development. Bank are not just the storehouse of the country's wealth but are the reservoirs of resources necessary for economic development.

In Nepal, banking sector started in 1937 A.D. (1994 B.S.) with the establishment of Nepal Bank Ltd., Nepal Rastra Bank, the central bank of Nepal, established in 1957 A.D.(2013 B.S.) followed by Rastriya Banijya Bank in 1966 A.D.(2022 B.S.). As Nepalese government took liberal economic policy, joint venture banks started to operate

since 1984 A.D.(2041 B.S.) with the establishment of Nepal Arab bank Ltd. Tillthan July 2014 A.D. (2071 B.S.), 30 commercial banks have been operating in the country. With the growth rate of banking industry from the 1984 A.D.(2041 B.S.), the risk on banking also made a mark simultaneously. Most of the Nepalese banks have suffered from credit risk, which is associated with the non-payment of loan by the borrowers.

Present challenges to the banking sector are: to manage the excess /short liquidity, to invest the money in productive as well as new sector, to manage the accumulated non-performing loan. Commercial banks collect deposits from individuals and invest them as loan and advance to the borrowers and receive interest as the output of the business. Commercial banks' profit and operating cost are borne by these interest collected from the borrowers. When interests as well as the principal are not collected in due time, the existence of the bank and the deposits of individuals will be in threat. So, necessary action must be taken by the banks and government to overcome this situation.

Current context of globalization, privatization, free market, economic liberalization etc. have made the activities of banks and financial institutions more complex and challenging. Recent development in science and information technology has turned the whole world as a small village. A small mistake made by an organization affects innumerous sectors for the long run to the organization and nation. Therefore, organization must be conscious and vigilant in their activities.

For this study five commercial banks Everest Bank limited (EBL), Nepal Investment Bank limited (NIBL), Kumari Bank limited (KBL), Machhapuchhre Bank limited (MBL) and Global IME Bank Limited (GIBL) have been selected for the study. Since their date of establishment and size of capital are also quite similar, these banks are chosen for study. The brief introduction of these banks is as follows:

Everest Bank Limited is joint venture with Punjab National Bank, one of the largest commercial bank of India. EBL was established on 1994 under the company Act 1964. Now the authorized capital of this bank is 240 million and issued and paid up capital of this bank is 120 million. It has raised it is 50% of the promoter share holders, 20% of the

Punjab National Bank. India and 30% of the general public share holders Punjab National Bank is provided the top level management services to EBL under a technical services agreement signed between the two institutions.

Nepal Investment Bank Limited, previously Nepal Indosuez Bank Ltd was established on 21st Jan, 1986 as a third joint venture bank under the company Act 1964. NIBL is the changed name of Nepal Indosuez Bank Ltd on 26th march, 2002 venture commercial bank with Indosuez Bank of Paris. NIBL's 50% equity participation by Indosuez bank France, 30% by Nepalese financial institutions and rest 20% by general public. The main objectives of this bank are to provide loans and advances to agriculture industries and commerce and to provide modern banking services to the people. Till date it has 44 branches scattered throughout the country giving modern banking services of international class from 10am to 7pm evening.

Kumari Bank Limited, came into existence as the fifteenth commercial bank of Nepal by starting its banking operations from Chaitra 21, 2057 B.S (April 03, 2001) with an objective of providing competitive and modern banking services in the Nepalese financial market. The bank has paid up capital of Rs. 1,828.332 million of which 70% is contributed from promoters and remaining from public. KBL has 9 branches inside the Kathmandu Valley & 19 branches outside the valley and corporate office at Darbar Marg, Kathmandu. The bank has adopted computerized system in banking. The main software of the bank is called Globus and the bank has the Any Branch Banking System (ABBS). The bank also provides different service such as ATM and electronic banking etc. The bank has been providing loan and advance in various sectors such as agriculture, manufacturing, deprived sector, industry and consumer financing etc.

Machhapuchhre Bank Limited (MBL) was registered in 1998 as the first regional commercial bank to start banking business from the western region of Nepal with its head office in Pokhara. Today, with a paid up capital of above 1,627 million rupees, it is one of the full fledged commercial bank operating in Nepal; and it ranks in the topmost among the private commercial banks. Machhapuchhre Bank Limited is striving to

facilitate its customer needs by delivering the best of services in combination with the state of the art technologies and best international practices. This bank is the pioneer in introducing the latest technology in the banking industry in the country. It is the first bank to introduce centralized banking software named GLOBUS BANKING SYSTEM developed by Temenos NV, Switzerland. Currently it is using the latest version of GLOBUS, referred as **T-24 BANKING SYSTEM**. The bank provides modern banking facilities such as Any Branch Banking, Internet Banking and Mobile Banking to its valued customers. The bank in the last few years have really opened up with branches spread all around the country. At this stage, it has 40 branches including head office. It has its Corporate Office in Kathmandu and branch offices in other parts of Kathmandu, Damauli, Bhairahawa, Birgunj, Banepa, and different parts of Pokhara in addition to the Head Office in Naya Bazar, Pokhara. A full-fledged banking branch is in operation in Jomsom located high up in the mountains too. The bank aims to serve the people of both the urban and rural areas. The bank intends to open many more branches in the coming years.

Global Bank limited (GBL) was established in 2063 B.S (2007) as an 'A' class commercial bank in Nepal which provides entire commercial banking services. The bank was established with the largest capital base at the time with a paid up capital of NPR 1000 million. The paid up capital of the bank has since been increased to NPR 2420 million. The bank shares are published traded as an 'A' category company in the Nepal Stock Exchange. The change name of Global Bank is Global IME Bank Ltd. Emerged after successful merger of Global Bank Ltd (an A class commercial bank), IME Financial Institution (a C class finance company) and Lord Buddha Finance ltd (a C class finance company) in year 2012. Two more development bank (social development bank and Gulmi Bikas Bank) merged with Global IME Bank Ltd in year 2013.The main head office of GIBL is located in Birgunj. It is line with the aim of the bank to be "The bank for all" by necessary impetus to economy through world class banking service. The bank also provides different services such as ATM and electronic banking, SMS banking etc. Authorize capital of GIBL is NPR 5,000 million and paid up capital is NPR4,106 million. The promoters hold 70.60% while 29.40% is floated for the public.

1.2 Statement of the Problem:

Many investors are not rational towards their investment decision. They don't know how to make rational investment by assessing the risk percept in the investment and the level of return to compensate the percept risk. In Nepal, most of the financial institutional issues only the common stocks and capital market is also dominated by the trading the stocks. On the basis of this, the study seeks to answer the following research questions.

- What is credit risk, liquidity risk and interest rate risk of commercial banks?
- What is the level of systematic and unsystematic risk in commercial banks?
- What is the investor's perception on the risk of commercial bank?
- What actions can minimize these risks in order to maximize the profit?
- Increased pressure of Nepalese commercial banks to face the competition of foreign banks.

Within this competitive market scenario, the stringent credit risk management, sound portfolio analysis, and proper management of asset and liabilities.

1.3 Objectives of Study:

The main threat to the commercial bank of Nepal is to develop safe and sound financial system by way of sufficient amount of qualitative capital and risk management practices. The aim of the study is basically to analyze and evaluate the application how the selected commercial Bank have managed different type of financial risk. Besides that, specific objectives of this study are as follows:

- To analyze different types of financial risks faced by EBL, NIBL, KBL, MBL & GIBL and management of such risks by them,
- To analyze Nepal Rastra Bank's directives and to examine whether EBL, NIBL, KBL, MBL & GIBL has complied with such directives,
- Interpretation of risk by calculation different statistical and financial tools.

1.4 Significance of the Study

The Nepalese economy is not at such state that where anyone can feel proud by heart. As a matter of fact, the recent economic situation of Nepal has been influenced by the economic recession due to security problem and unstable political situation. Commercial Banks & Capital Market also is not able to get rid of such influences. Shrinking investment opportunities due to economic recession has put the Nepalese entrepreneurs in a great trouble. This may be the only reason that foreign and Nepalese investors are drawing back their hands from the investment sectors.

Importance of the study is as follows:

- This study is helpful in further research in this context.
- This study is useful to make clear conception towards risk management to related investors and company's management.
- This study must be useful to the government for policymaking, controlling, and supervisions & monitoring.
- This study covers a partial requirement of M.B.S.

1.5 Limitations of the Study

This study will be conducted considering some limitations which may affect the results and conclusions to some extent. Financial risk measures the banks and companies goodwill and ranks of the companies. Financial risks most important topics in financial management to achieve the management goal. Investments, capital structure, liquidity, leverage, dividend, risk management and others are area of financial measurement. Risk management is most important tools for financial management. This research is done for partial fulfillment of Master Degree (MBS) and this study will be limited by the following factors;

- There are 30 commercial banks in Nepal that are in operation, among them 27 banks are listed in NEPSE. Only five banks EBL,NIBL, KBL, MBL& GIBL have been selected for the study.
- The study is based on both primary & secondary data. Few Primary data are collected from telephonic interview & personal visit. Whereas Secondary data are collected mainly form published sources like annual report, prospectus, balance sheet, newspaper, journal, internet and other sources. However, the accuracy of results and conclusions highly depends on the reliability of the secondary data.
- The evaluation is made through the analysis of financial statement published by the banks. Therefore generalization of the whole banking industry cannot be made.
- Resource, time, money constraints and inaccessibility of sufficient information also limit the conclusion drawn from study.
- The study has covered only the five years data from fiscal year 2008/09 to 2012/13.

1.6 Organization of the Study:

The study is divided into following chapters:

Chapter I: Introduction

This first chapter deals with the background of the study, focus of the study, statement of the problem, objective of the study, Significance of the study, limitations of the study and organization of the study.

Chapter II: Review of the Literature

This chapter includes conceptual framework, theoretical review of related studies.

Chapter III: Research Methodology

The third chapter provides the research designs, population and sample sources and nature and sources of data, data gathering procedure, methods and analysis of data, analytical tools etc.

Chapter IV: Data Presentation and Analysis

It includes presentation and analysis of the data has been gathered. They help to draw conclusion using various methods mentioned in research methodology.

Chapter V: Summary

This chapter concludes the research with necessary summary, suggestions, conclusion and recommendations.

Appendix and bibliography are presented in the last part of the study.

CHAPTER-II
REVIEW OF LITERATURE

"Review of literature means reviewing research studies or other relevant proposition in the related area of the study so all the past studies, their conclusions and deficiencies may be known and furthers research can be conducted it is an integral and mandatory process in research work" (Joshi, 2007). Review of literature means to study the concept and a crucial aspect of planning of the study that is developed in the area of same kind of research.

This chapter includes the literature of previous studies and conceptual framework for the related studies such as books, journals, research paper and other studies related to the risk management. To present the real frame work of the research mere analysis is not enough; review of some related material should be included with to give the research a clear vision.

It covers the comparative study on risk management which is conducted between five commercial banks. It has been expected that the review will help to make the research more effective and useful. This helps to researchers to explore what kind of research studies have already been conducted in his field of study and thus reduces the probability of duplication. Conceptual theory of risk management provides by reviewing the related finance and accounting books and studies and articles from various journals.

2.1 Conceptual Framework

Banks are always faced with different types of risks that may have a potentially negative effect on their business. Risk-taking is an inherent element of banking and, indeed, profits are in part the reward for successful risk taking in business. On the other hand, excessive and poorly managed risk can lead to losses and thus endanger the safety of a bank's depositors. Risks are considered warranted when they are understandable, measurable,

controllable and within a bank's capacity to readily withstand adverse results. Sound risk management systems enable managers of banks to take risks knowingly, reduce risks where appropriate and strive to prepare for a future, which by its nature cannot be predicted.

Risk is the fundamental element that drives financial behavior. Without risk, the financial system would be vastly simplified. However, risk is omnipresent in the real world. Financial Institutions, therefore, should manage the risk efficiently to survive in this highly uncertain world. The future of banking will undoubtedly rest on risk management dynamics. Only those banks that have efficient risk management system will survive in the market in the long run. The effective management of credit risk is a critical component of comprehensive risk management essential for long-term success of a banking institution. So, the banks are in the business of managing risk, not avoiding it and a bank's success lies in its ability to assume and aggregate risk within tolerable and manageable limits.

2.1.1 Meaning of risk

Risk is often defined as the chance of loss. In investment theory, refers to the chance of alternative outcomes. It is measured by the variability associated with alternative rate of return. In general, risk can be defined as the likelihood of losses resulting from events such as change in market price and other variables. Stated differently, it is the variability of return from an investment. Risk management requires having practices in place to identify and then monitor risk; convenient access to dependable, current information about risk; the correct balance of control in place to deal with the risk; and decision-making processes that are supported by a framework of risk analysis and evaluation. "Risk management, on the other hand, is the process of measuring, or assessing risk and the developing strategies to manage the risk. In general, the strategies employed include transferring the risk to another party, avoiding the risk, reducing the negative affect of the risk, and accepting some or all of the consequences of a particular risk. Traditional risk management, which is discuss here, focus on risks stemming from physical or legal causes (e.g. natural disasters or fires, accidents, death and lawsuits). Financial risk management, on the other hand, focus on risk that can be managed using traded financial

instruments. Regardless of the type of risk management, all large corporation have risk management teams and small groups and corporations practice informal, if not formal, risk management" (Kupper, 2000).

Saunders and Cornet (2002) explained that "A major objective of the financial management is to increase the Financial Institutions' return for its owners. They often come however at the cost of increased risk. The effective management of this risk is central to a financial institutions' performance. Indeed, it can be argue that the main business of financial institution is to manage the risk for the purpose of maximization of return. So, financial institution manager must devote the significant time to understanding and managing the various risks to which their financial institution are exposed".

2.1.2 Different Types of Risk Faced by Commercial Banks

In the course of their operations, banks are invariably faced with different types of risks that may have a potentially negative effect on their business. Risk management in bank operations includes risk identification, measurement and assessment, and its objective is to minimize negative effects risks can have on the financial result and capital of a bank. Banks are therefore required to form a special organizational unit in charge of risk management. Also, they are required to prescribe procedures for risk identification, measurement and assessment, as well as procedures for risk management. The risks to which a bank is particularly exposed in its operations are: credit risk, market risk (liquidity risk, interest risk, foreign exchange risk) and operation risk which are clarified as under:

2.1.2.1 Credit Risk

Credit risk refers to the risk of negative effects on the financial result and capital of the bank caused by borrower's default on its obligations to the bank. Credit risk is the likelihood that a debtor or financial instrument issuer is unwilling or unable to pay interest or repay the principal according to the terms specified in a credit agreement resulting in economic loss to the bank.

Credit risk is the major risk that banks are exposed to during the normal course of lending and credit underwriting. Credit risk arises from non-performance by a borrower. For most

banks, loans are the largest and most obvious source of credit risk; however, credit risk could stem from activities both on and off balance sheet. It may arise from either an inability or an unwillingness to perform in the pre-committed contracted manner. In a bank's portfolio, losses arise from outright default due to inability or unwillingness of a customer or counter party to meet commitments in relation to lending, trading, settlement and other financial transactions. Alternatively losses may result from reduction in portfolio value due to actual or perceived deterioration in credit quality.

Saunders and Cornet have outlined three principles as follows:

Principal 1: It is the risk losing principal and interest amount.

Principle 2: When financial institution makes loans or buys securities maturities. There is chance of higher credit risk where principal plus interest earned many not recover adequate in full amount.

Principal 3: Credit risk can be firm specific and systematic risk.

2.1.2.2 Market Risk

Market risk is the risk incurred in the trading of assets and liabilities due to changes in interest rates, exchange rates, and other asset prices. So, Market risk is exposure to the uncertain market value of the firm's asset. Major factors affecting Market risk are:

a. Liquidity Risk
b. Interest Rate Risk
c. Foreign Exchange Risk

a. Liquidity Risk:

Anthony Saunders says, **"**Liquidity risk arises whenever financial institutions' liability holders, such as depositors or insurance policyholders, demand immediate cash for their financial claims". When liability holders demand cash immediately – that is, put their financial claims back to the FI – the FI must either borrow additional funds or sell off assets to meet the demand for the withdrawal of funds. An institution is said to have liquidity if it can easily meet its liability holders' demand for cash either because it has cash on hand or can otherwise raise or borrow cash. In banking sector, Liquidity risk is created when banks hold different sizes of assets and liabilities and mismatch occurs in

maturity of the assets and liabilities. Extreme illiquid asset in bank may result in bankruptcy where as excess liquid asset may carry interest rate risk over the period of time. As it is fatal risk, prudent liquidity management is the primary function of banking sector. Liquidity management is also to make sure that expected shortfall amounts are funded at a reasonable cost, ensure excess fund are invested properly with reasonable returns and without carrying any interest rate risk to the bank.

b. Interest Rate Risk (IRR)

Interest rate risk is the risk incurred by a financial institution when the maturities of its assets and liabilities are mismatched. Interest Rate Risk is the probability of decline in earnings, due to the adverse movements of the interest rates in various markets. The applicable interest earned on assets and liabilities and hence net interest margin is the function of market variables and it may get changed overnight or over a period of time according to the market situation. Changes in the interest rate can significantly alter net interest income depending on the mismatch of assets and liabilities held by the bank. Changes in interest rates also affect the market value of bank's equity.

c. Foreign Exchange Risk:

Foreign exchange risk is the risk that exchange rate changes can affect the value of a bank's assets and liabilities denominated in foreign currencies. The bank is also exposed to foreign exchange risk, which arises from the maturity mismatching of foreign currency positions. In the foreign exchange business, banks also face the risk of default of the counterparties or settlement risk. While such type of risk crystallization will not cause principal loss, banks may have to undertake fresh transactions in the cash/spot market to replace the failed transactions. Thus, the bank may incur replacement cost, which depends upon the currency rate movements.

2.2.2.3 Other risk

a. Operational Risk

Operational risk *is* associated with the problems of accurately processing, settling, and taking or making delivery on trades in exchange for cash. It also arises in record keeping, processing system failures and compliance with various regulations. The Basel

Committee on Banking Supervision (2000), defines operational risk as "the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events." Operational risk arises from inadequate control systems, operational problems and breaches in internal controls, fraud and unforeseen catastrophes leading to unexpected losses for a bank. Many of the operational-risk-related functions such as regulatory compliance, finance management, frauds, IT, legal, and insurance are carried out by the staff and thus human resources itself becomes a cause for operational risk.

b. Industrial Risk

An industry may be viewed as a group of companies that compete with each other to market homogenous products. Industry risk is that portion of risk that can be an investment variability of return caused by events that affects the product and firms that make up of an industry. The stage of industry cycle, international tariffs and/of quotas on the product produced by an industry related taxes, industry wide labor union problems, environmental restriction, raw materials acts and affect all the firms in the industry simultaneously. As a result of these commonalities, the prices of the securities issued by competing firms tend to rise and fall together.

c. Call ability Risk

Some bonds and preferred stocks are issued with a provision that allows the issuer to call them in for repurchase. Issuer likes the call provision because it allows them to buyback outstanding preferred stock and on bond with funds from a newer issue if market interest rate drop below the level being paid on the outstanding securities. There is chance of creating call ability risk.

That portion of a security's total variability of returns which derives from the possibility that the issue may be called is the call ability risk. Call ability risk commands a risk premium that comes in the form of a slightly higher average rate of return. This additional return should increase as the risk that the issue will be called increase.

d. Convertibility Risk

Call ability risk and convertibility risks are in two aspects. First both are contractual stipulations that included in the term of original security issue. Second, both of these

provisions alter the variability of return from the affected security. Convertibility risk is that portion of the variability of return from a convertible bond of convertible preferred stocks. That reflects the possibility that the investment may be converted into the issuer's common stocks at a time or under terms harmful to the investor's best interest.

e. Political Risk

Political risk arises from the exploitation of a politically weak group for the benefits of politically strong group, with the efforts of various groups to improve their relative positions increasing the variability return from the affected assets. Regardless of whether the changes that cause political or by economic interests, the resulting variability of return is called political risk if it is accomplished through legislative, judicial or administrative branches of government. Political risk can be classified as international political risk and domestic political risk.

2.1.3 Measuring risk:

2.1.3.1 Standard Deviation (SD)

Standard deviation is the statistical tools to calculate the investment risk. It's measure the total risk of the security. Higher the standard deviation higher the total risk and vice-versa. Mathematically, it is defined as the positive square root of their arithmetic mean of squares of the deviation of the given observations from their arithmetic mean of a set of value. Here, it is denoted by the letter S.D. and sigma (σ).

To calculate the SD we can follow given formula.

1) We calculate the mean rate of return:

$(\overline{X}) = \frac{\sum X}{N}$,Thapa, K. and Rana, S.B. (2011).

OR,

$(\overline{X}) = \sum (X \times \text{Prob.})$, Thapa, K. and Rana, S.B. (2011).

Where,

$(\overline{X})$ =mean.

$\sum X$ =Sum of the all variable X.

N = Number of items in the series.

Prob. = Probability.

2) Calculate the deviation:

Deviation=$X - \overline{X}$, Thapa, K. and Rana, S.B. (2011).

3) Calculate the variance:

$(\sigma)^2 = \frac{\sum(X-\overline{X})^2}{n}$, Thapa, K. and Rana, S.B. (2011).

OR,

$(\sigma)^2 = \sum[X - (\overline{X})^2] \times Prob$, Thapa, K. and Rana, S.B. (2011).

4) Standard deviation:

(S.D.)/ $(\sigma) = \sqrt{\frac{\sum(X-\overline{X})^2}{n}}$,Thapa, K. and Rana, S.B. (2011).

OR,

(S.D.)/ $(\sigma) = \sqrt{(\sigma)^2}$, Thapa, K. and Rana, S.B. (2011).

2.1.3.2 Coefficient of Variation (CV)

Coefficient of Variance is the ratio of standard deviation and expected return or average return. It's measure the total risk in per unit basis. Where two or more investment

alternative are available with the same expected rate of return and standard deviation investor will choose the one with the lowest coefficient of variance (CV)and vice-versa.

It can be calculated by the following formula.

C.V. $=\frac{\sigma}{\overline{X}}$, Thapa, K. and Rana, S.B. (2011).

Where,

σ=Standard deviation.

$(\overline{X})$ = Mean rate of return.

2.1.3.3 Beta Coefficient:

Beta coefficient is an index of systematic risk. If an investment has a beta greater than the market it will be classified as an 'aggressive' investment. If an investment has a beta which is less than the market then it is known as a 'defensive' investment. If an investment has a beta of 1 it is expected to fluctuate in line with market and called 'neutral' investment. Beta of market is always one.

Risk has two parts. That part of the risk which can be eliminated through diversification is called unsystematic risk. It is risk unique to specific securities when individual securities are there unique risks cancel out. The other part of risk cannot be eliminated through diversification and is called systematic risk. It is a market related risk. It arises because individual securities move with the change in the market.

Total risk = Systematic risk + Unsystematic risk. Thapa, K. and Rana, S.B. (2011). Investors are risk averse. They will take risk only if they are compensated for the risk, which they bear. Since unsystematic risk can be eliminated through diversification, they will be compensated for assuming systematic risk. The market price securities is a manner that they yield higher expected return than risk free securities. Risk free investors can be reduced to hold risky securities when they are offered risk premium.

The relation between as assets return and its systematic risk can be expressed by CAPM, which is also called security market line showing the relationship between the systematic risk index (beta) and the required rate of return. The equation for the CAPM or SML is,

E (RJ) = Risk free rate + Risk premium.

E (RJ) = Risk free rate + Quantity of risk × Price of risk.

E (RJ)= RF + [E(RM) – RF] βJ, Thapa, K. and Rana, S.B. (2011).

Where,

E (RJ) = required rate of return on the assets.

RF = rate of return of risk free assets.

E (RM)= expected or ex-ante return on the market portfolio.

βJ = a measure of the non-diversifiable risk of the Jth security called beta. It can be calculated as,

$\beta J = \frac{COV\ (RJ \times RM)}{VAR\ (RM)}$, Thapa, K. and Rana, S.B. (2011).

Where,

COV (RJ×RM) = covariance between risk free return and market return.

VAR (RM) = variance of market return.

The model explaining the risk return relationship as discussed above is called that Capital Asset Pricing Model (CAPM). It provides that in a well functioning capital market the risk premium various in direct proportion to risk.

2.2 Review of Capital Assets Pricing Model:

Based on the underlying idea of Markowitz diversification, Sharpe (1964), linter (1965), Mossin (1966) and Black (1972), almost simultaneously, extended the assets pricing theory, popularly known as the Capital Assets Pricing Model (CAPM). The CAPM suggested the concept of market equilibrium to determine the market price and appropriate measurement of risk for single asset. CAPM portfolio is the portfolio of risky (denoted by market) and risk free assets (denoted by T-bills). Total risk is measured by standard deviation and it is classified in to systematic and unsystematic risk.

Originally developed by Sharpe (1964), linter (1965), Mossin (1966) and Black (1972), the CAPM equation is usually written as,

E(Rj) = Rf + [E(Rm) – Rf] βJ

Where,

E(Rj) = required return on the jth security (risky asset).

Rf = the risk-free rate of borrowing and lending, or the rate of return on riskless asset.

E (Rm) = expected return on the market portfolio.

βJ = beta coefficient of security 'j'

The capital assets pricing model states that, the risk premium on each investment is proportional to its beta .This means that each investment should lie on the sloping security market line connecting treasury bills and market portfolio.

Based on the behavior of risk adverse investors, there is an implied equilibrium relationship, between risk and expected return for each security. In market equilibrium a security is supposed to provide an expected return commensurate with its systematic risk of a security. "Greater the systematic risk grater the return that investor will expect for the security, the relationship between expected return and systematic risk and the valuation of security. That following the essence of Nobel Laureate William Sharpe's capital assets pricing model.

2.3 Review of Legal Provision Related to Risk Management of Licensed Institution

The main focus of the study is analysis of the directives of Nepal Rastra Bank issued to commercial banks. The directives issued from time to time are one of the tools used by the central bank to control and monitor the commercial banks. The first directives were basically concerned with the acceptance of deposits and disbursement of loans. In the present context, the directives are issued by NRB quite regularly. In 2005, NRB has issued unified directives to regulate all three categories of financial sectors in Nepal to ensure that the banking industry functions as per the international standard. NRB (2005)I prescribes following prudential in different aspects of risk.

The following directives have been issue3d with regard to minimizing the risks associated with liquidity, interests rate, foreign exchange in transactions of licensed institutions having exercised the powers conferred by section 79 of Nepal Rastra Bank Act, 2002.

1) Classification of Risks

For the purpose of monitoring the risks relation to banking and financial activities by institutes, the risk have been classified in to the following groups:

a) Liquidity risks.
b) Interest rate risk.
c) Foreign exchange risks.
d) Credit and investment risks.

2) Arrangements for minimization liquidity risks

a) In order to minimize the liquidity related risks the licensed institutions shall group the assets and liabilities into their appropriate maturity period of various time intervals. For this purpose, the liquidity profile according to the enclosed format in directives from No. 5.1 shall be prepaid quarterly and be submitted within 15 days from the closure of the quarter (end of Aswin, Poush, Chaitra, and Ashadh), to the concerned supervision department of this bank.
b) The licensed institutions shall, on the basis of maturity periods, classified the time interval as follows.

- Assets and liabilities having maturity period up to ninety days.
- Assets and liabilities having maturity period of over ninety days to one hundred eighty days.
- Assets and liabilities having maturity period of over 180 days to 270 days.
- Assets and liabilities having maturity period of over 270 days to 365 days.
- Assets and liabilities having maturity period of over 1 year.

c) Assets and liabilities having fixed maturity period shall be included under the time interval as provided in Sub –section(1) above.
d) In respect of the liabilities of the licensed institutions without having fixed maturity period like current deposits and savings deposits the amount of core deposits and the minimum required balance has to be included under the time interval of over one year period. The realistic estimation of such proportion of current deposits which the licensed institutions themselves. Proportion of current deposits, which the licensed institutions generally maintain on permanent basis, shall have to be considered as core deposit.
e) With the objectives of minimizing the liquidity risk of banks and financial institutions, a limit has been fixed so that proportion of the total loan and advance

may not exceed 80% in resource mobilization (local deposit and core capital) of the bank and financial institution.

3) Arrangements for the minimization of interest rate risks

a) The licensed institutions shall have to adopt the following means with a view to minimize the interest rate risk:

- Only the interest sensitive assets and liabilities that may be affected due to change in interest rate have to be included in assets and liabilities.
- Generally in the gap analysis of the assets and liabilities the maturities of which mismatch no amount of the "cash Balance" and "Non-cash bearing account" shall be include.
- In order to manage and minimize the interest rate risk, the licensed institutions shall prepare quarterly statement according to the enclosed format Directives Form No. 5.2 and sum it with 15 days from the closure of the quarter to this Bank's concerned supervision departments.

b) For the purpose of monitoring interest rate risks, classification of the time interval shall be made per Sub-clause 2(2).

c) Assets and liabilities without fixed maturity periods shall be included as follows:

- A floating rate loan with interest adjusted periodically shall be included under the same time interval in which period the interest rate is adjusted.
- A term loan with a floating interest rate tied to the movements of a specific change shall be assigned a minimum time interval period.
- Only the interest sensitive floating rate liabilities shall be included under time interval in which the interest rate has been adjusted.

d) Gap shall be measure as follows:

- The gap between assets and liabilities shall be measured by subtracting the total liabilities from the total assets pertaining to each time intervals. Such gap may be positive or negative both.
- For the purpose of minimizing the interest rate risk, the cumulative gap of each time interval shall also be measured. The cumulative gap is measured by summing the individual gaps up to and including the gap under consideration.

- Possible changes in interest rate shall be estimated. For this purpose, generally the effect that may arise from change of interest rates by one percent may be considered.
- The expected change ininterest rate estimated according clause (3) shall be adjusted to each of the time interval. For this purpose interest rate change (IRC) shall multiplied by the following ratio:

  $= \frac{\text{Daysinthetimeinterval}}{365}$

  For instance, where interest rate is changed by 2% , it the case of 180 days time interval,

  $\text{IRC} = \frac{180}{365} \times 0.02$

  $= 0.0099.$

- With a view to examine the effect on profitability of the bank on account of change in interest rate, the Cumulative Gap of various time intervals shall be multiplied by the interest rate determined per sub-clause (4).

4) Arrangement for the minimization of foreign exchange risks

a) For the purpose of monitoring the effect in the financial position of the licensed institutions (LI) owing to possible change in the foreign exchange rates, the licensed institutions shall submit particulars according to the enclosed format Directive Form No. 5.3 on weekly basis within seven days from the closure of the week to the concerned supervision department of the Bank.

b) In order to minimize the risk arising from changes in foreign exchange rate, the licensed institutions shall maintain an Exchange Fluctuation Fund as required under the Directive relating to Accounting Policy and Format of Financial issued by this Bank.

c) The LI shall group the currency wise foreign exchange into short term and long term maturity periods and exhibit the net position under both the categories. Explanation: for this purpose, “short-term” is defined to cover a period of one month or less.

d) The limit of LI daily net position of foreign exchange has been fixed up to maximum of 30% of the Core Capital. Where the net position exceeds such limit, the respective LI shall put efforts to bring down the same to limit. In case the net position is not adjusted to the limit with one month, action under Nepal Rastra Bank Act, 2002 shall be initiated. For the purpose of calculation of net position, the foreign currency deposit liability and amount under Forward Exchange contract sales/purchase deals shall be adjusted.

5) Provisions for Minimization of Credit and Investment Risks

The directives issued by this NRB in respect of "Regulation Relation to Classification of Loan and Advances and Provisioning Requirements (Directives No.2)" and "Regulation Relating to limit on Credit Exposure and facilities Provided by the LI to a single borrower, group of related borrowers and single sector of the economy (Directive No. 3)" and Regulation relating to investment (Directive No.8) shall be considered basis for minimization of risk relation to credit and investment.

2.4 Review of Related Studies

Gitman(1985) focused on risk implication of banking and private sectors. The research paper has included many other studies some of the studies find that bank expansion into banking activities can affect of events that permitted only limited entry by banks into non-banking activities. The study is conducted on systematic, unsystematic and total risk, such risk are calculated by using statistical tools i.e. variance and standard deviation, T-statistical and signed rank which is recently by Aminud, Delong and Saunder in 2002, A.D. The study has included 340 banks for the sample size than they partition two sub-samples: 46 large banks and 294 small banks. The major finding of the study is that evidence of a significant decline in systematic risk for the banks securities firm and insurance companies but a significant increase in total and unsystematic risk for the banks and insurance companies. The study has included five years period data. The study also found that bank and insurance companies are less risk than other securities business. If security wants to decline in risk, security firm can be explained by their ability to diversify into less risky banking and insurance activities. The research paper result

suggests that regulators should carefully monitor and supervise banking activities in new era of financial modernization to mitigate adverse effects from the increase in risk.

E. Kupper (2000) to identify the different type of risk and prescribes the method to handle those risks. He has identified three type of risk in the banking business (i.e. credit risk, market risk and operating risk).

He has presented the role of banks risk management function in the context of the need to break various cycle of risk. The cycle refers to the process by which a bank assumes uneconomic risks and by definition, key large losses. As a consequence, the risk appetite of the bank is reduced, lending and trading risks are foregone and the bank loses market share . In turn, the bank deposit an aggressive marketing strategy to regain market share and the cycle starts over. His vicious cycle aptly describes the risk taking practices observed in the industry time and time again.

Rana (2001) The article gives bird's eye view of major changes made in the new directive and suggests measures to be taken by NRB to commercial banks and finance companies are similar in some aspects, this article is also relevant to finance companies. The policy of NRB seems to be vague. The existing policies might be ambiguous as a result of which people try to manipulate as per their personal requirement. However, it can be said that NRB has initiated directives, which have control on the promoters and other senior officials of commercial banks, but it is still to be found whether such directives are consistently followed. The article failed to give a clear picture on what exactly happened after the instruction of NRB. This article highlights the importance of compliance with the directives issued by NRB.

Berkowitz and Brien's (2002) in their article have focused on first direct evidence on the performance of value at risk model for trading firms. The result shows that VAR forecasts for six large commercial banks have exceed nominal coverage levels over the past two years and for the some banks, VARs we substantially removed from the lower range of trading P & l. While such conservative estimates imply higher levels of capital

coverage for trading risk, the reported VARs are less useful as a measure of actual portfolio risk.

Shrestha (2003) Aim to analyzed impact of NRB directives on commercial banks. Whether the directives are actually implemented and are being monitored by NRB or not In this thesis as well, researcher has studied the impact of NRB directive, especially related to loan loss provisioning, on selected banks. Major findings are; there exists a gap regarding the study of management teams formed by the commercial banks. To manage the credit risk besides those NRB directives. Similarly, commercial banks compliance in regard to those directives as well as banks policy and procedure to manage credit risks can be studied further.

Subba (2006) the major finding of his study was that in commercial banks, minimizing the risk is the major challenge. For minimizing the risk, both the banks have taken several measures. One of the major measures is capital adequacy ratio. The capital adequacy ratio depicts that both LBL and MBL has higher CAR than statutory requirement.

He concludes that: For credit risk management, both banks have Credit Policies Guidelines (CPG). Similarly, NPL is regularly monitored by both the banks on regular basis and provisioning is done on quarterly basis by categorizing the loan as per NRB guidelines. Similarly, sector wise and security wise lending is being analyzed by these banks on monthly basis. Gap analysis of both types of asset and liabilities (i.e. Rate Sensitive and Fixed Rate) is required for the interest rate risk management. Besides, analysis of cost of fund, yield on loan & spread is made continuously in these banks to ensure that banks have competitive interest rate, which is profitable for the banks.

In regard to operational risk, the major steps banks are taking to reduce it are preparing and implementing the different operational guidelines and policies & frequently monitoring their compliance. Most of these policies are prepared as per NRB guidelines. Similarly, employees' training is also the major tools for minimizing the operation risk in these banks. For minimizing the loss arising due to occurrence of the above risks, capital and reserve have been maintained by these banks within the standard prescribed by NRB.

However, the trend of Capital Adequacy ratio of these banks suggests that both the banks need to increase their capital fund, which is possible mainly by issuing shares, debentures or preference share. The major gap in this study is the focus on the credit risk. This research has been made on the study on different types of risk including market risk and operational risk.

Shrestha (2008) his major objectives of the study were to find out and analyze the risk and return behavior. His research has been based on the collected data from secondary source as same information primary source. For analyzing data, he has applied various statistical tools in her study to find out the risk and return

Karki (2008) has conducted a study on Risk Management of Himalayan Bank Ltd. In order to achieve the basic objectives are: To analyze the level of different types of risk faced by Himalayan Bank Ltd. and assess the financial performance of HBL through the help of financial ratios and standards. His study major findings are proper policies, procedures, guidelines and tools have been developed with appropriate triggers. That forms the guiding pillars for its operations. The banks believe in corporate culture that emanates from the "Think Customers" philosophy at all levels of the banks. Teamwork, camaraderie, sincerity, dedication, trust, respect, equality, dignity and valuing each contribution are key pillars on which the corporate culture of the banks thrives on. The banks have a competitive salary package in place that is revised on a regular basis to reward strong performance. The employees are also provided with early bonus another facilities on a requirement basis.

Maharjan (2009)has made an attempt to find out the risk management of commercial banks. He has concluded that: proper risk management is required to remain competitive in the market and achieve the goals. The major banking risks include credit risk, market risk (i.e. liquidity risk, foreign exchange risk, interest risk) and operation risk. Among these credit risk has the major impact on banking. Poor management of asset and liabilities having different maturity period is the main problem that brings market risk. Commercial Banks (MBL and NCC Bank as sample) have their own set of policies and

practices, which is in consistence with NRB guidelines. Operational risk can be reduced if banks take major step in preparing and implementing the different operational guidelines and policies. His study is made on credit risk, market risk (interest risk, foreign exchange risk, liquidity risk) and operation risk and their management is the key areas where further research can be made.

Simkhada (2010) has carried out a research her major objectives of the study were to find out the analysis of credit risk. Her research study is based on descriptive and analytical research design. The main objective of the study was to analyze the risk and return of the common stock of commercial banks in Nepalese stock market, the study focused on the common stock of commercial banks, one of the objectives that are related to this study was to evaluate common stock of listed commercial banks in term of risk and return.

Rana (2013) the importance of risk management is manifold in bank business; we have been witnesses to be past and have seen banking failures to be past and have seen banking failures and subsequent regulatory stringencies. It is a must for the banks to have an effective framework and system of risk management need to play a supporting role and must maintain an oversight in this matter. Monitoring, reporting and control including independent audit reviews need to be in place. Risk management culture need to be embedded among all staff member so that it becomes a state of mind and way of life.

Nepal (2013) internal control refers to a mechanism guiding and controlling organization's overall operations. Organizational bye-laws, rules, regulations and other operational parameters come under the internal control mechanism. Simply understanding, it confirms that every organizational procedures and resources are being executed within the set organizational boundary, without violating any pre-determined set of control mechanism. Similar to internal control system, risk management also serves to mitigate organizational risks via pre-defined risk management guidelines and framework. For instance, BFIs are basically exposed to credit, operational and market risk and the

regulator, i.e., Nepal Rastra Bank (NRB) and BFIs themselves streamline risk management tools to mitigate these risks. BASEL II framework, unified directives issued by NRB, Credit Policy Guidelines (CPGs), Manuals, product papers etc. are the tools that are generally used to minimize the overall risk that BFIs are exposed to. Further, committees like Assets and Liability Management Committee, Management Committee to look after liquidity, quality of asset and liability, maturity etc are rigorously exercised as risk management mechanisms in financial industry, especially BFIs.

2.5 Research gap

Although there are many study and researches have been done about the risk management of commercial banks. These research are related with loan loss provision and non-performing loan. This research work concentrate for further research on credit risk, liquidity risk, interest rate risk etc. All research are about the loan provisioning and capital adequacy which has been conducted relating to the NRB Directives and their implementation. Likewise, no research has been made regarding credit, liquidity and interest rate risk of the bank. Those are the significant portion in total risk, which has not been studied till now.

Hence resent study has made an attempt to fill this gap by studying the overall risk management system of EBL,NIBL, KBL, MBL & GIBL

CHAPTER - III

RESEARCH METHODOLOGY

3.1 Introduction

Research methodology refers to the numerous processes adopted by the researchers during the research period. It is the technique to solve the research problem in systematic manner. This includes many techniques and is crucial for every research work. The main objective of this research work is to analyze the risk management procedure adopted by the five commercial banks i.e. EBL, NIBL, KBL, MBL & GIBL.

Research methodology is the process of arriving at solution of the problem through planned and systematic dealing with the collection, analysis and interpretation of facts and figures (Kothari, 1989).

Research methodology refers to the various methods of practices applied by the researcher in the entire aspect of the study. This chapter includes the research design, population and sample, nature and sources of data and analysis of data. This study will seek the conclusion to the point that what kind of position EBL, NIBL, KBL, MBL& GIBL have got and suggested the precious and meaningful points so that all concerned can fruitful from this research work.

3.2 Research Design

A Research Design is the arrangement of condition for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure (Kothari, 1992). Research design is the plan, structure and strategy of investigation conceived so as to obtain answers to the research question and to control variances. To achieve the objectives of the study, descriptive an analytical research design has been used. Some statistical and financial tools have also been applied to examine facts and descriptive techniques have been analyzed the study of management system, organizational structure and policies for mitigating the risk and risk management

procedures. The study is based on secondary data. So the descriptive and analytical research designs have been used.

3.3 Population and Sample

The method of selecting for study a small portion of the population to draw conclusion about characteristics of the population is known as sampling. Sampling may be defined as the selection of part of the population on the basis of which a judgment or inference about the universe is made. There are 30 commercial banks are operating in Nepal. Only 27 commercial banks are listed in Nepal Stock Exchange which is regarded as a population of the study. But it is not possible to cover all the NEPSE listed commercial banks under the study. So, only five NEPSE listed commercial banks have been taken as sample i.e.

1. Everest Bank Ltd.
2. Nepal Investment Bank Ltd.
3. Kumari bank ltd.
4. Machhapuchhre bank ltd.
5. Global IME bank ltd.

3.4 Sources of Data

The study is mainly based on secondary data. The secondary sources of data collections are those that have been used from published on used by someone previously. The secondary sources of data are Balance Sheet, Profit & Loss account and literature publication of the concerned banks. The NEPSE report of the concerned bank has furnished some important data to this research work. Some supplementary data and information have been collected from the authoritative sources like Banks web sites, Nepal Rastra Bank, Central Library of T.U., Shankar Dev Campus library, Nepal Commerce Campus library, Nepal Stock Exchange Limited, Security Exchange Board, Economic Survey, National Planning Commission, different journals, magazines and other published and unpublished reports documented by the authorities.

In order to fulfill the objectives of this research work, all the secondary data are compiled, processed and tabulated in time series. And to judge the reliability of data provided by the banks and other sources, they were compiled with the annual reports of auditors. Formal and informal talks to the concerned head of the department of the bank were also helpful to obtain the additional information of the related problem.

3.5 Nature of Data

In case of primary data, some personal views and ideas of individual's respondent are collected. But in case of entire study secondary data used are basically of the following nature. Most of the data taken for the analysis is collected in the form of published by the concerned banks through their annual reports.

Since all the banks which are taken into account for the study are listed in NEPSE, the figures are all most reliable and suitable too.

3.6 Data Analysis Tools

Analysis and presentation of the data is the core of each and every research work. This study requires some financial and statistical tools to accomplish the objective of the study. The financial and statistical tools are most reliable. In this study various financial, statistical and accounting tools have been used. These tools make the analysis more effective, convenience, reliable and authentic. The various results obtained with the help of financial, accounting and statistical tools are tabulated under different headings. Then they are compared with each others to interpret the results. Two kinds of tools have been used to achieve the certain goals.

1. Financial Tools
2. Statistical Tools

3.6.1 Financial Tools

Financial tools are those which help to study the financial position of the firms. The financial tools used in this study are as follows:

Ratio Analysis

In this study, various ratios have been used as per requirement. The major ratios are used in this study includes:

i.Loans and Advances to Total Asset Ratio

$$= \frac{\text{Loan and Advances}}{\text{Total Assets}}$$

ii.Loan and Advances to Total Deposits Ratio

$$= \frac{\text{Loan and Advances}}{\text{Total Deposits}}$$

iii. Non Performing Loan to Total Loans and Advances Ratio

$$= \frac{\text{Non Perfoming Loan}}{\text{Total Loan and Advances}}$$

iv. Loan Loss Provision to Non Performing Loan Ratio

$$= \frac{\text{Loan Loss Provision}}{\text{Non Perfoming Loan}}$$

v. Loan Loss Provision to Total Loans and Advances Ratio

$$= \frac{\text{Loan Loss Provision}}{\text{Total Loans and Advances}}$$

vi. Return on Loan & Advances

$$= \frac{\text{Net Profit/Return}}{\text{Total Loan and Advances}}$$

vii. Current Ratio

$$= \frac{\text{Currnt Assets}}{\text{Current Liabilities}}$$

viii. Cash and Bank Balance to Total Assets Ratio

$$= \frac{\text{Cash and Bank Balance}}{\text{Total Assets}}$$

ix. Cash Reserve Ratio (CRR)

$$= \frac{\text{Cash Balance in NRB}}{\text{Total Deposits}}$$

x. Interest Income to Total Income

$$= \frac{\text{Interest Income}}{\text{Total Income}}$$

xi. Interest Income to Total Expenses

$$= \frac{\text{Ineterest Income}}{\text{Total Expenses}}$$

3.6.2 Statistical Tools

The research holds various statistical tools, which are defined as follows.

i. Arithmetic Mean ($\overline{X}$)

In this study we have widely used the arithmetic mean. The arithmetic mean of loan, deposits, net profit, non performing loan, loan loss provision etc. have been calculated in this study. It has been used as to calculate the average for 5 years data in some cases for 4 years due to unavailability of complete data. This tool has been used to calculate the single figure that can represent the whole data for the period. it is computed by using following formulae:

$$\text{A.M.} = \frac{\text{Sum of total values}}{\text{No. of values}}$$

$$(\overline{X}) = \frac{\sum X}{N}$$

Where,

$(\overline{X})$ = mean

$\sum X$ = Sum of the all variable X

N = Number of items in the series.

ii. Standard Deviation(S.D.)

It is quantitative measure of the risk of assets. It provides more information about the risk of the assets. It is a measure of the dispersion of returns around the mean. The formulae for calculating the standard deviation is,

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

Where,

(σ) = standard deviation.

iii. Coefficient of Variations (C. V.)

Coefficient of variables reflects the relation between standard deviation and mean. The relative measure of dispersion based on the standard deviation is known as coefficient of standard deviation. The coefficient of dispersion based on standard deviation multiplied by 100 is known as the C.V. it is used for comparing variability of two distributions. If the $(\overline{X})$ be the arithmetic mean and (σ) the standard deviation of the distribution, then the C.V. is defined as,

$$\text{C.V.} = \frac{\sigma}{\overline{X}} \times 100$$

Where,

C.V. = coefficient of variation

σ = Standard deviation.

$(\overline{X})$ = Mean rate of return.

Less the C.V. more will be the uniformity; consistency and more the C.V. less will be the uniformity, consistency.

3.7 Microsoft Excel

Microsoft Excel is a data processing program. The data in this study are processed in this program. This program is also useful to calculate descriptive statistical and to produce necessary charts and diagrams. The mean, standard deviation, coefficient of variation and other necessary calculation and charts are prepared with the use of Microsoft Excel.

CHAPTER – IV
DATA PRESENTATION AND ANALYSIS

4.1 Background

This chapter is basically focused upon the analysis of data collected from different secondary sources. This chapter includes analysis of collected data and their presentation. With reference to various readings and literature review in the proceeding, chapter effort is made to analyze and establish the relationship between risk and return of stock investment with a special reference to listed commercial banks. This chapter also analyzes the systematic and unsystematic risk of each commercial bank. This chapter consists of various calculation made for the analysis of different risk of the selected banks. To make the study effective, precise and easily understandable, this chapter is categorized in three parts; presentation, analysis and interpretation. In presentation section data are presented in term of table. The presented data are then analyzed using different statistical tools mentioned in chapter three. At last the results of analysis are interpreted.

4.2 Comparative Analysis of Credit Risk

"Credit risk is generally made up of transaction risk or default risk and portfolio risk. The portfolio risk in turn comprises intrinsic and concentration risk. The portfolio risk depends on both external and internal factors. The external factors are the state of the economy, wide swings in commodity/equity prices, foreign exchange rates and interest rates, trade restrictions, economic sanctions, government policies, etc. the internal factors are deficiencies in loan policies/administration, absence of prudential credit concentration limits, inadequately defined lending limits for Loan Officers/Credit Committees, deficiencies in appraisal of borrowings, financial position, excessive dependence on collaterals and inadequate risk pricing, absence of loan review mechanism and past sanction surveillance, etc." (Santomero, 1997)

4.3 Ratio Analysis

Ratio analysis, financial techniques which were used to analyzed and interprets financial statements. It helps in making decision as it helps establishing relationship between various financial figures. Ratio analysis isn't just comparing different numbers of the balance sheet, income statement, and cash flow statement. Ratios evaluate the relationships between individual values and relate them to how a company has performed in the past, and might perform in the future. Financial analysis is an evaluation of firm's post financial performance and its prospects for the figure. Financial statement analysis involves the calculation of various ratios. The ratio analysis is the financial tools by which the financial strength and weakness are measured by relating two accounting data. The following ratios were used to analyses financial data;

4.3.1 Loans and Advances to Total Assets Ratio

The ratio of loans advances to total assets measures the volume of loan and advance in the structure of total assets. The high degree of ratio indicates the good performance of the banks in mobilizing its fund by way of lending functions. However, in its reverse side, the high degree is representative of low liquidity ratio. Granting loans and advances always carry a certain degree of risk. Thus this asset of banking business is regarded as risky assets. Hence this ratio measures the management attitude towards risky assets. The lower ratio is indicative of lower proportion of income generating asset and high degree of safety in liquidity and vice versa.

Table 4.1

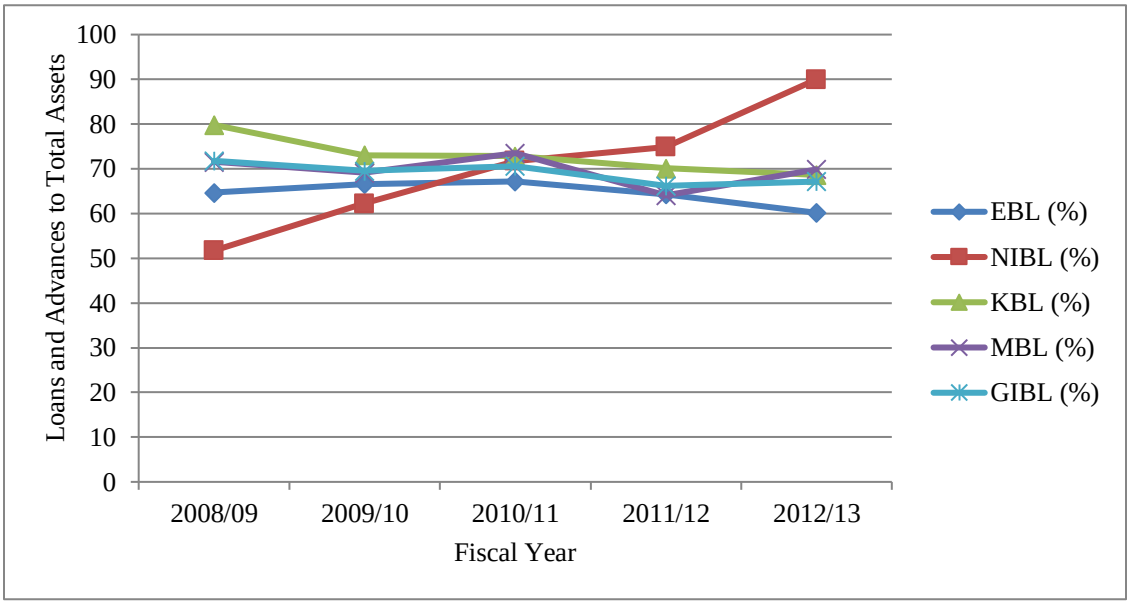
Loans and Advances to Total Assets Ratio (%)

Fiscal Year	EBL (%)	NIBL (%)	KBL (%)	MBL (%)	GIBL (%)
2008/09	64.70	51.71	79.81	71.56	71.78
2009/10	66.60	62.27	73.05	69.10	69.53
2010/11	67.17	71.78	72.84	73.49	70.61
2011/12	64.34	74.87	70.09	64.06	66.19
2012/13	60.16	89.98	68.63	69.86	67.18
Mean	65.72	70.12	72.88	69.61	69.06
S.D.	2.73	12.81	3.84	3.16	2.09
C.V.	4.15%	18.27%	4.15%	4.54%	3.03%

Source: Annual report of EBL, NIBL, KBL, MBL & GIBL (Appendix 1)

Figure 4.1

Loans and Advances to Total Assets Ratio (%)



Above table and Figure shows that the loans and advances to total assets of five commercial banks for five fiscal years. This ratio shows the fluctuation trend of these banks. The overall ratio of EBL is 65.72%, NIBL is 70.12%, KBL is 72.88%, MBL is 69.61% and GIBL is 69.06%. Fromthis, it is clear that out of total assets in balance items

the proportion of loans and advances is higher in KBL as compared to other selected banks. This means that the credit risk is slightly higher in KBL as compared to other selected banks. Likewise, the standard deviation of EBL, NIBL, KBL, MBL and GIBL are 2.73, 12.81, 3.84, 3.16 and 2.09 percent respectively. This indicates that the ratio deviate more from the average in case of NIBL then other selected banks. The coefficient of variation (C.V.) is 4.15%, 18.27%, 4.15%, 4.54% and 3.03% in EBL, NIBL, KBL, MBL and GIBL respectively, which means that per unit variation of the ratio of NIBL is more than that of other selected banks. This indicate that the loans and advances to total assets ratio of NIBL has more variation than that of other selected banks, which means higher risk in case of HIBL then other selected banks.

4.3.2 Loans and Advances to Total Deposits Ratio

The core banking function is to mobilize the funds obtained from the depositors to borrowers and earn profit and loan and advances to total deposit ratio, often called credit deposit ratio (CD ratio), is the fundamental parameter to ascertain fund deployment efficiency of commercial bank. In other words, this ratio is calculated to find out how successfully the banks are utilizing their total deposits on credit or loans and advances for profit generating purposes as loans and advances for profit generating purposes as loans and advances yield high rate of return. Greater CD ratio implies the better utilization of total deposits and better earning, however, liquidity requirements also needs due consideration. Hence 70-80% of CD ratio is considered as appropriate. This ratio is calculated by dividing total credit by total deposits.

Table 4.2

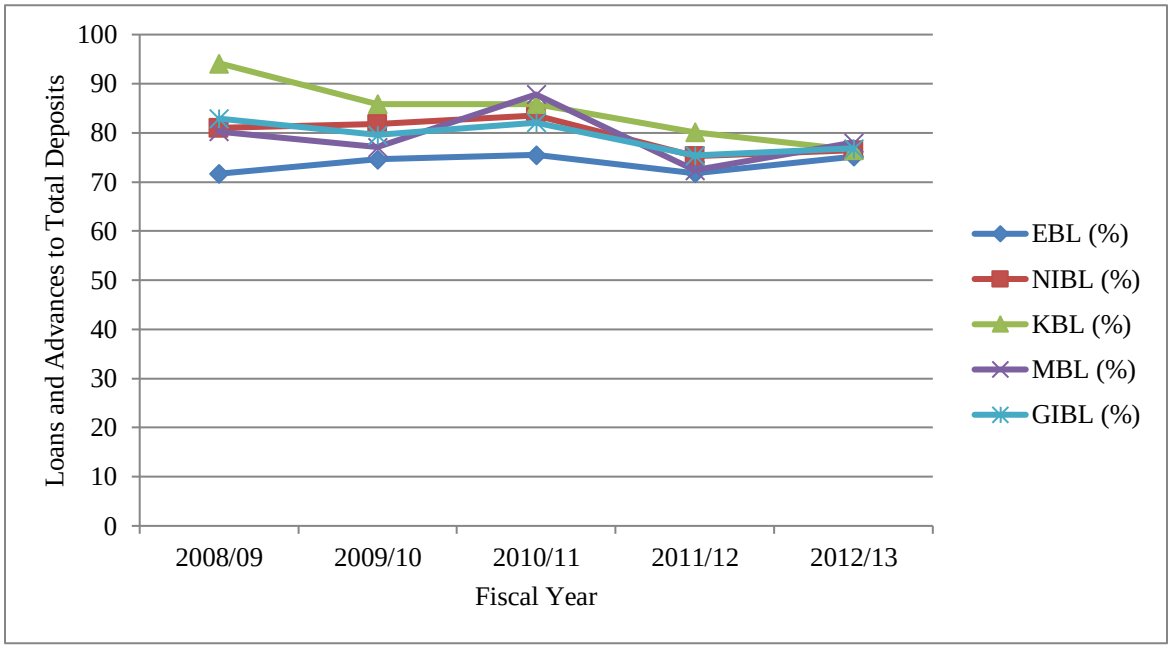
Loans and Advance to Total Deposits Ratio (%)

Fiscal Year	EBL (%)	NIBL (%)	KBL (%)	MBL (%)	GIBL (%)
2008/09	71.68	81.00	94.17	80.25	82.90
2009/10	74.61	81.74	85.85	77.09	79.57
2010/11	75.52	83.54	85.90	87.81	82.12
2011/12	71.81	75.26	80.12	72.41	75.41
2012/13	75.18	76.41	76.50	77.99	76.84
Mean	73.76	79.59	84.51	79.11	79.37
S.D.	1.67	3.20	6.01	5.04	2.90
C.V.	2.26%	4.02%	7.11%	6.37%	3.65%

Source: Annual report of EBL, NIBL, KBL, MBL & GIBL (Appendix 2)

Figure 4.2

Loans and Advances to Total Deposits Ratio (%)



Above table and figure show that the loans and advances to total assets ratio of five commercial banks for five consecutive years. The loans and advances to total deposits ratio of all banks are fluctuating. The average CD ratio of EBL, NIBL, KBL, MBL and

GIBL for five years is 73.76%, 79.59%, 84.51%, 79.11% and 73.37% respectively. The EBL has lower ratio then other selected banks. This means that other selected banks are utilized its deposits higher than EBL. This again means that the other selected banks also are the higher risk than EBL.

4.3.3 Non-Performing Loan to Total Loans and Advances Ratio

This ratio determines the proportion of non-performing loans in the total portfolio. As per Nepal Rastra Bank directives the loans failing under category of substandard, doubtful and bad loan are regarded as non-performing loan. Higher the ration implies the bad quality of assets of banks in the form of loans and advances. Hence the lower non-performing loan to total credit ratio is preferred.

Table 4.3

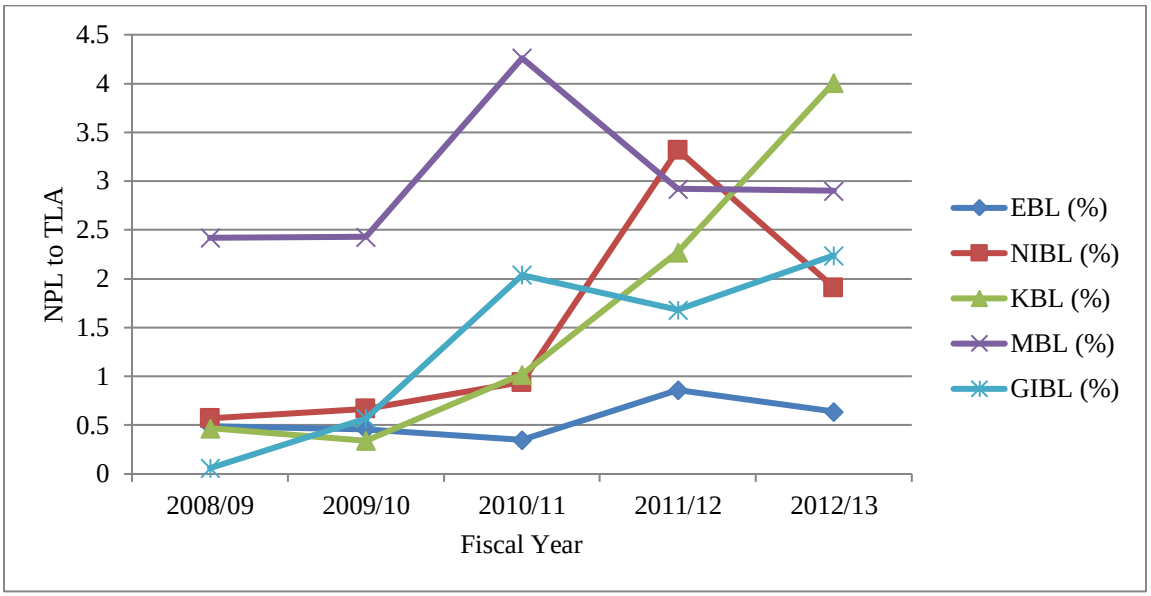
Non-performing Loan to Total Loans and Advance Ratio (%)

Fiscal Year	EBL (%)	NIBL (%)	KBL (%)	MBL (%)	GIBL (%)
2008/09	0.49	0.57	0.47	2.42	0.06
2009/10	0.46	0.67	0.34	2.43	0.57
2010/11	0.35	0.94	1.02	4.26	2.04
2011/12	0.86	3.32	2.27	2.92	1.68
2012/13	0.64	1.91	4.01	2.90	2.24
Mean	0.56	1.48	1.62	2.99	1.32
S.D.	0.18	1.03	1.37	0.67	0.85
C.V.	32.14%	69.59%	84.57%	22.41%	64.39%

Source: Annual report of EBL, NIBL, KBL, MBL & GIBL (Appendix 3)

Figure 4.3

Non-performing Loan to Total Loans and Advances Ratio (%)



Above table and figure exhibits the ratio of non-performing loan to total loans and advances of 5 selected banks for 5 consecutive years. It is found that the average NPL to TLA ratios of EBL, NIBL, KBL, MBL and GIBL are 0.56%, 1.48%, 1.62%, 2.99% and 1.32% respectively. It can be inferred that the ratio of MBL is higher than of other selected banks. The standard deviation of EBL, NIBL, KBL, MBL and GIBL are 0.18, 1.03, 1.37, 0.67 and 0.85 where as the coefficient of variation (C.V.) are 32.14%, 69.57%, 84.57%, 22.41% and 64.39% respectively. Thus it explains that EBL ratios deviate less the average ratio than other banks, which refers less risk to EBL. Which make other selected banks more risks.

4.3.4. Loan Loss Provision to Non Performing Loan Ratio

This ratio measures up to what extent of risk inherent in NPL is covered by total loan loss provision. This ratio determines the proportion of provision held to non-performing of bank. The higher the ratio, it means that the bank provides for recovering from loss caused by NPL. Hence higher ratio signifies the better financial position of bank.

Table 4.4

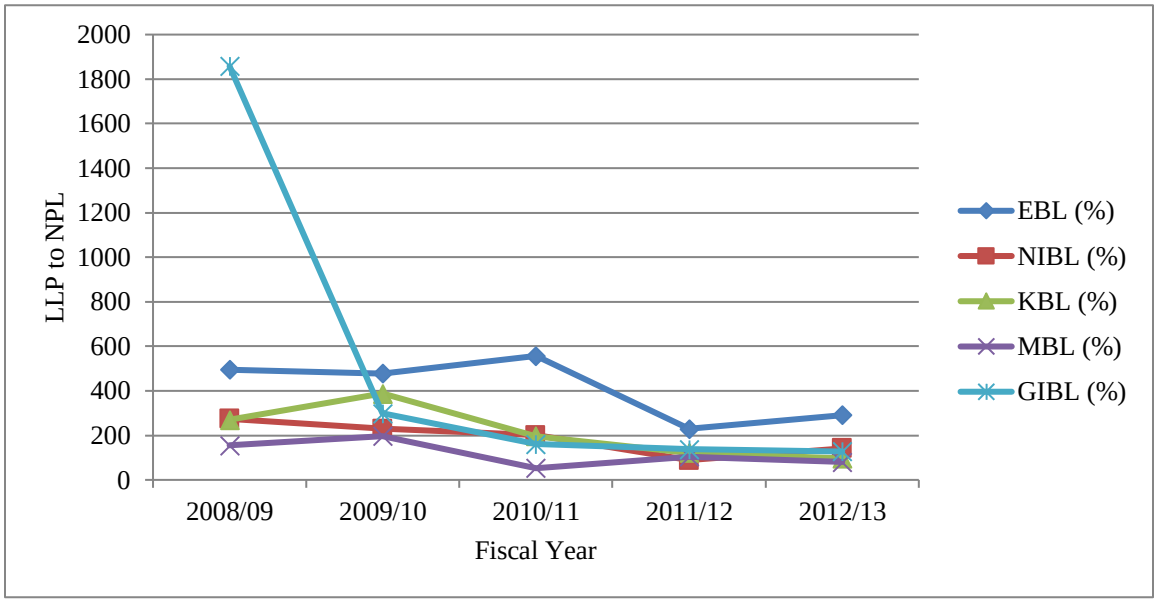
Loan Loss Provision to Non Performing Loan Ratio (%)

Fiscal Year	EBL (%)	NIBL (%)	KBL (%)	MBL (%)	GIBL (%)
2008/09	495.70	273.92	269.27	154.69	1857.69
2009/10	477.89	229.70	388.25	196.43	298.87
2010/11	556.77	200.41	196.54	52.49	161.19
2011/12	229.56	89.08	121.76	104.25	137.31
2012/13	291.30	142.43	96.63	79.36	127.27
Mean	410.24	187.12	214.49	117.44	516.47
S.D.	126.60	65.01	105.34	51.90	673.45
C.V.	29.88%	34.74%	49.11%	44.19%	130.39%

Source: Annual report of EBL, NIBL, KBL, MBL & GIBL (Appendix 4)

Figure 4.4

Loan Loss Provision to Non Performing Loan Ratio (%)



Above table and figure show the ratio between LLP to NPL of EBL, NIBL, KBL, MBL and GIBL. The overall ratios of LLP to NPL of EBL, NIBL, KBL, MBL and GIBL are 410.24, 187.12, 214.49, 117.44 and 516.47 respectively. This shows that GIBL has provided higher cushion of provisioning to non-performing loan compare to other banks.

The standard deviation of EBL, NIBL, KBL, MBL and GIBL are 126.60, 65.01, 105.34, 51.90 and 673.45 respectively. This means that there exists the higher deviation in this ratio in context of GIBL then other selected banks. The coefficient of variation of EBL, NIBL, KBL, MBL and GIBL is 29.88, 34.74, 49.11, 44.19 and 130.39 percent respectively, which reflects that GIBL loan loss provision to non-performing loan ratio fluctuate more from the average than that of other banks.

4.3.5 Loan Loss Provision to Total Loan and Advances Ratio

This ratio indicates the amount of loan loss provision, a impact for the possibility of default, to total loan and advances of a bank. Since higher position has to be made for non-performing loan, higher position for loan loss reflects increasing non-performing loan in volume of total loans and advances. The low ratio signifies the good quality of assets in the volume of loans and advances and makes efforts to cope with probable loan loss. Higher ratio implies that the bank has the higher proportion of NPL in bank loan portfolio, which is show from table and figure below:

Table 4.5

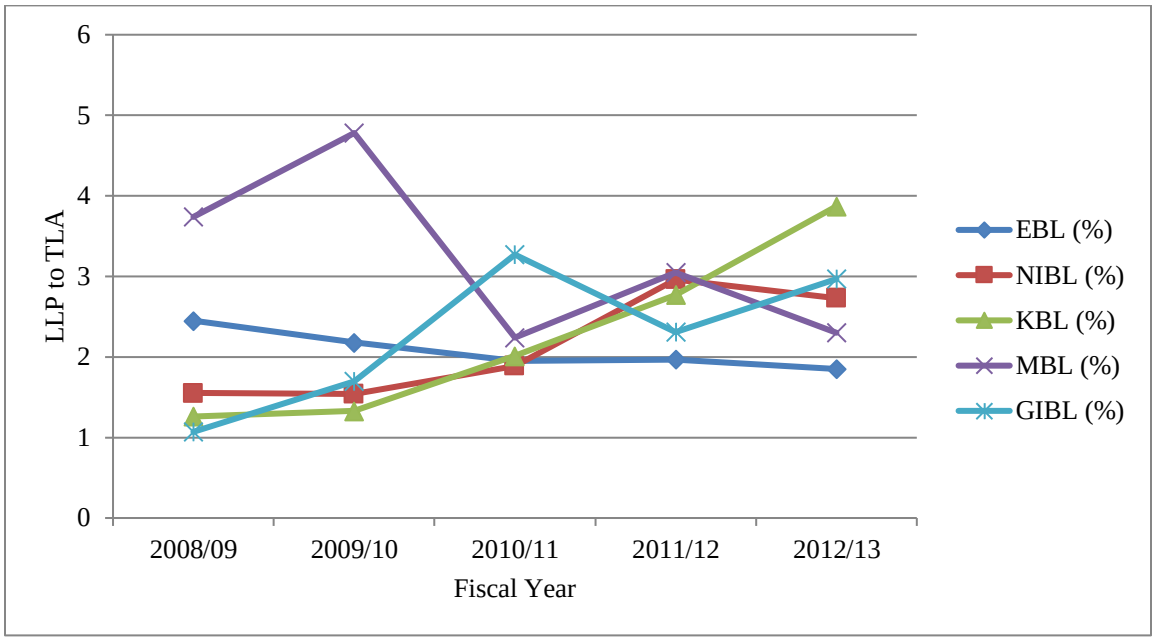
Loan Loss Provision to Total Loan and Advances Ratio (%)

Fiscal Year	EBL (%)	NIBL (%)	KBL (%)	MBL (%)	GIBL (%)
2008/09	2.45	1.55	1.26	3.74	1.07
2009/10	2.18	1.54	1.33	4.78	1.70
2010/11	1.95	1.89	2.01	2.24	3.27
2011/12	1.97	2.96	2.77	3.05	2.31
2012/13	1.85	2.73	3.87	2.30	2.97
Mean	2.08	2.13	2.25	3.22	2.26
S.D.	0.21	0.60	0.98	0.95	0.81
C.V.	10.10%	28.17%	43.56%	29.50%	35.84%

Source: Annual report of EBL, NIBL, KBL, MBL & GIBL (Appendix 5)

Figure 4.5

Loan Loss Provision to Total Loan and Advances Ratio (%)



From above table and figure, it is found that the all banks have least portion of loan loss provision. This means that all banks have least amount of non-performing loan. The average LLP to TLA ratio are 2.08, 2.13, 2.25, 3.22 and 2.26 percent of EBL, NIBL, KBL, MBL and GIBL respectively. The ratio is higher in MBL than other banks. This higher ratio reflects that the MBL has higher non-performing loan to other selected banks. Likewise the standard deviation and coefficient of variation of KBL are 0.98 and 43.56% respectively, which is higher than that of other selected banks. In comparison, it is clear that the KBL has higher risk than that other selected banks.

4.3.6 Return on Total Loans and Advances Ratio

This ratio indicates the efficiency of the bank which has employed its resources in the form of loans and advances. This ratio is calculated by dividing net profit of the bank by total loan and advances. Net profit refers to that profit which is obtained after all types of deduction like employee bonus, tax, provision etc. hence this ratio measures bank's profitability with respect to loans and advances. Higher the ratio better is the performance of the bank.

Table 4.6

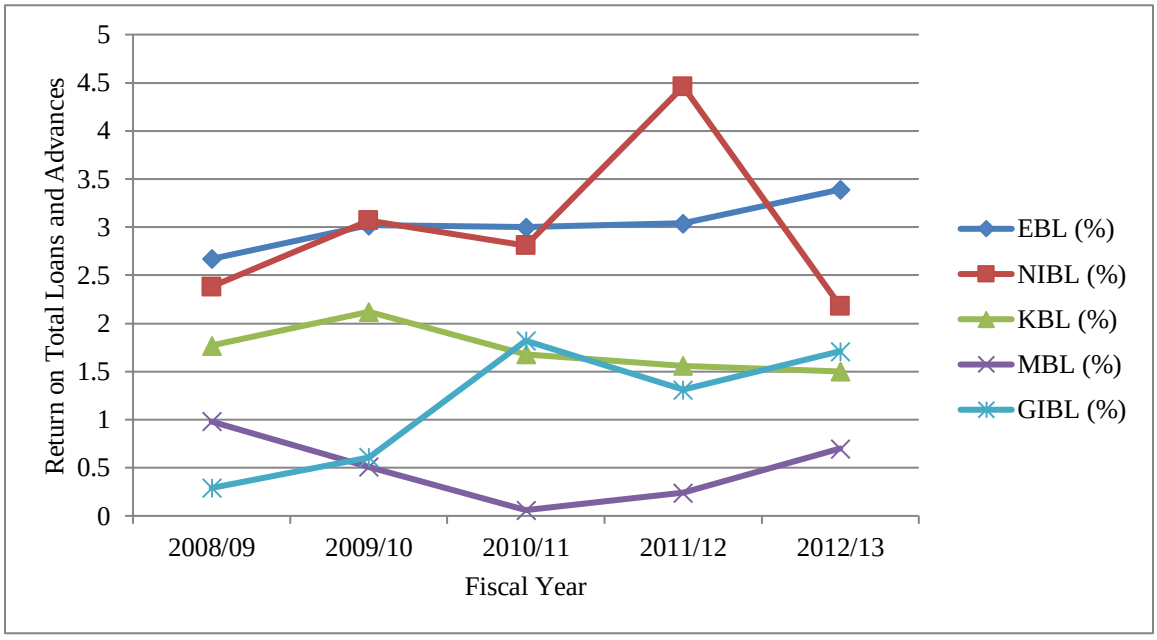
Return on Total Loans and Advances Ratio (%)

Fiscal Year	EBL (%)	NIBL (%)	KBL (%)	MBL (%)	GIBL (%)
2008/09	2.67	2.38	1.77	0.98	0.29
2009/10	3.02	3.07	2.12	0.51	0.61
2010/11	3.00	2.81	1.68	0.06	1.82
2011/12	3.04	4.46	1.56	0.24	1.31
2012/13	3.39	2.18	1.50	0.70	1.71
Mean	3.02	2.98	1.73	0.50	1.15
S.D.	0.23	0.80	0.22	0.33	0.60
C.V.	7.62%	26.85%	12.76%	66%	52.17%

Source: Annual report of EBL, NIBL, KBL, MBL & GIBL (Appendix 6)

Figure 4.6

Return on Total Loans and Advances Ratio (%)



The above table with figure exhibits the ratio of return on loans and advances of selected banks EBL, NIBL, KBL, MBL and GIBL for past 5 years. The figure represented in the above table shows that the ratio of EBL is in increasing trend as both the net profit and

lending are increasing over the all five fiscal years. The ratio of other banks is fluctuating trend. The average ratio for 5 years of EBL, NIBL, KBL, MBL and GIBL is 15.12, 14.90, 8.63, 2.49 and 5.74 respectively. This shows that EBL has better return than other banks. The coefficient of variation of EBL, NIBL, KBL, MBL and GIBL is 7.62%, 26.85%, 12.72%, 66% and 52.17% respectively. The figure indicates that the variation of return percentage of EBL is less volatile than other banks, which also signifies the less risk. From this, it can be said that EBL is better position than other banks.

4.3.7 Current Ratio of EBL, NIBL, KBL, MBL and GIBL

This ratio is computed by dividing the current assets by the current liabilities. This ratio usually expressed as a pure ratio 2:1 is considered to be a satisfactory level. Current assets refers to all assets, which has a maturity period less than 1 year and the current liabilities means all the liabilities less than 1 year maturity period. The current ratio indicates how much proportion of current assets has been financed by the current liabilities. If the current ratio is 2 or more, it means that the firm is adequately liquid and has the ability to meet its current obligations in time, if the CR is less than 2 it means the firm has difficulty in meeting its current obligations.

Table 4.7

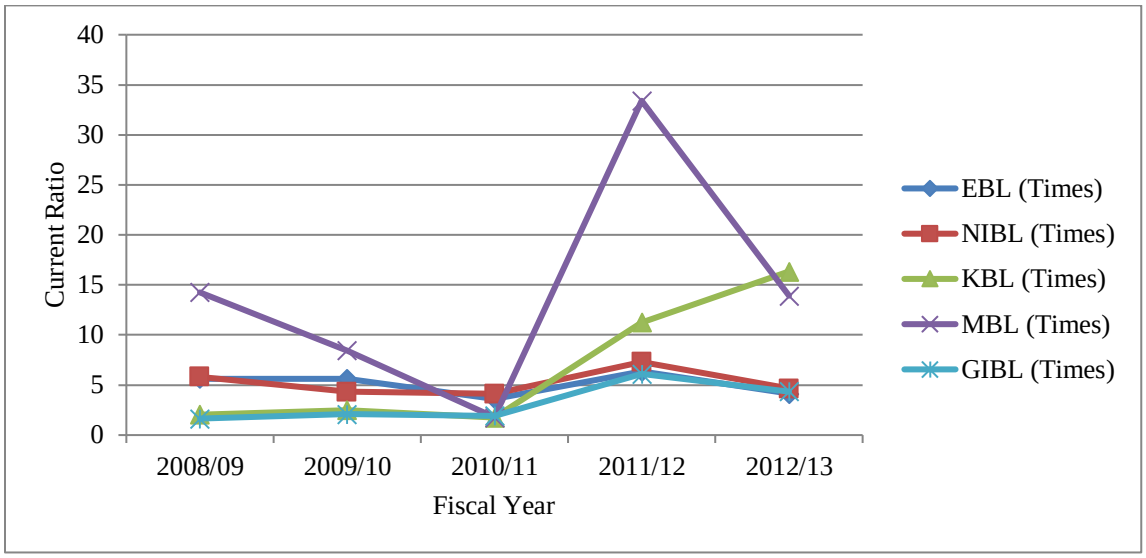
Current Ratio of EBL, NIBL, KBL, MBL and GIBL

Fiscal Year	EBL (Times)	NIBL (Times)	KBL (Times)	MBL (Times)	GIBL (Times)
2008/09	5.65	5.84	2.07	14.28	1.65
2009/10	5.62	4.33	2.49	8.45	2.08
2010/11	3.61	4.13	1.75	1.78	1.92
2011/12	6.36	7.30	11.27	33.40	6.11
2012/13	4.13	4.66	16.35	13.90	4.36
Mean	5.07	5.25	6.79	14.36	3.22

Source: Annual report of EBL, NIBL, KBL, MBL & GIBL (Appendix 7)

Figure 4.7

Current Ratio of EBL, NIBL, KBL, MBL and GIBL



From the above table with figure, it shows that the CR of EBL, NIBL, KBL, MBL and GIBL. It is clear that the average CR of EBL, NIBL, KBL, MBL and GIBL is 5.07, 5.25, 6.79, 14.36 and 3.22 times respectively. This means that the GIBL has used most of current liabilities to finance the current assets where as other selected banks has also used current liabilities to finance the long –term asset. It means that the other selected banks is adequately liquid and has the ability to meet its current obligation in time. Where, as the GIBL has difficulty in meeting its current obligation in time.

4.3.8 Cash and Bank Balance to Total Assets Ratio

Cash and bank balance to total assets ratio measures the proportion of total cash and bank balance on total assets of the bank. This helps to measure how much liquid fund does the bank has out of the total assets. Higher the ratio, better the bank's liquidity position and vice versa. In other sense, higher the cash and bank balance, higher will be bank's idle cash, which reduces the banks profit. However, the bank should have to be enough liquid position to fulfill its liabilities. The cash and bank balance to total assets ratio of selected banks is calculated below:

Table 4.8

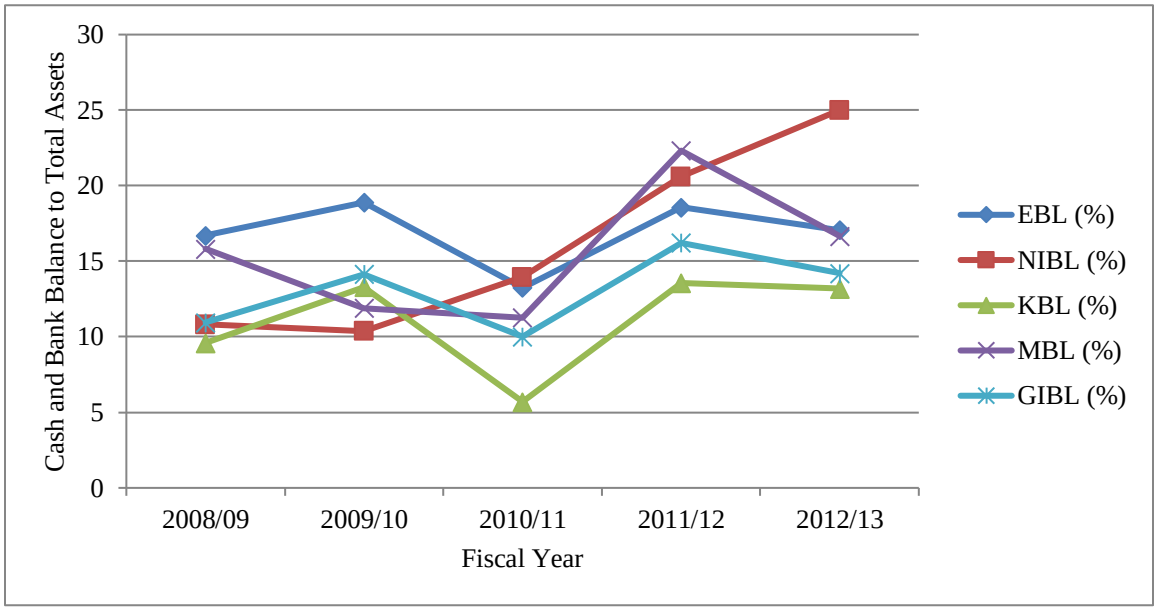
Cash and Bank Balance to Total Assets Ratio (%)

Fiscal Year	EBL (%)	NIBL (%)	KBL (%)	MBL (%)	GIBL (%)
2008/09	16.70	10.82	9.58	15.82	10.95
2009/10	18.89	10.37	13.30	11.89	14.15
2010/11	13.24	13.95	5.70	11.26	10.01
2011/12	18.57	20.60	13.56	22.32	16.21
2012/13	17.06	25.00	13.19	16.65	14.21
Mean	16.89	16.15	11.07	15.59	13.11
S.D.	2.01	5.74	3.06	3.97	2.29
C.V.	11.90%	35.54%	27.64%	25.47%	17.47%

Source: Annual report of EBL, NIBL, KBL, MBL & GIBL (Appendix 8)

Figure 4.8

Cash and Bank Balance to Total Assets Ratio (%)



Above table and figure exhibits the cash and bank balance to total assets ratio of EBL, NIBL, KBL, MBL and GIBL for five years. The ratio of EBL is the highest of 18.89% in fiscal year 2009/10and the lowest of 13.24% in fiscal year 2010/11, the ratio of NIBL is highest of 25% in fiscal year 2012/13 and the lowest of 10.37% in fiscal year 2009/10,

the ratio of KBL is the highest of 13.56% in fiscal year 2011/12 and lowest of 5.7% in fiscal year 2010/11, the ratio of MBL is the highest of 22.32% in fiscal year 2011/12 and lowest of 11.26% in fiscal year 2010/11 on other hand, the ratio of GIBL is the highest of 16.21% in fiscal year2011/12 and lowest of 10.01% in fiscal year 2010/11 respectively. The average ratio EBL, NIBL, KBL, MBL and GIBL is 16.89, 16.15, 11.07, 15.59 and 13.11 percent respectively. This shows that the EBL has high amount of liquid fund such as cash and bank balance than the other 4 banks. This means the EBL is in more liquid position than other banks, which also indicates the lower level of liquidity risk. The standard deviation of EBL, NIBL, KBL, MBL and GIBL is 2.01, 5.74, 3.06, 3.97 and 2.29 respectively. This means that the flotation rate of cash and bank balance is lower in EBL than other selected banks. This indicates that the EBL has less variation in cash and bank balance out of total asset, which indicates the least risk. In other hand the CV ratio of other selected banks is more than that of EBL.

4.3.9 Cash Reserve Ratio (CRR)

Cash reserve ratio refers to the portion of total deposit the commercial banks maintain in NRB. It is a statutory reserve that the bank should have to maintain in NRB. Higher CRR means higher amount of bank fund is tied up in NRB, which means lower investment etc.

Table 4.9

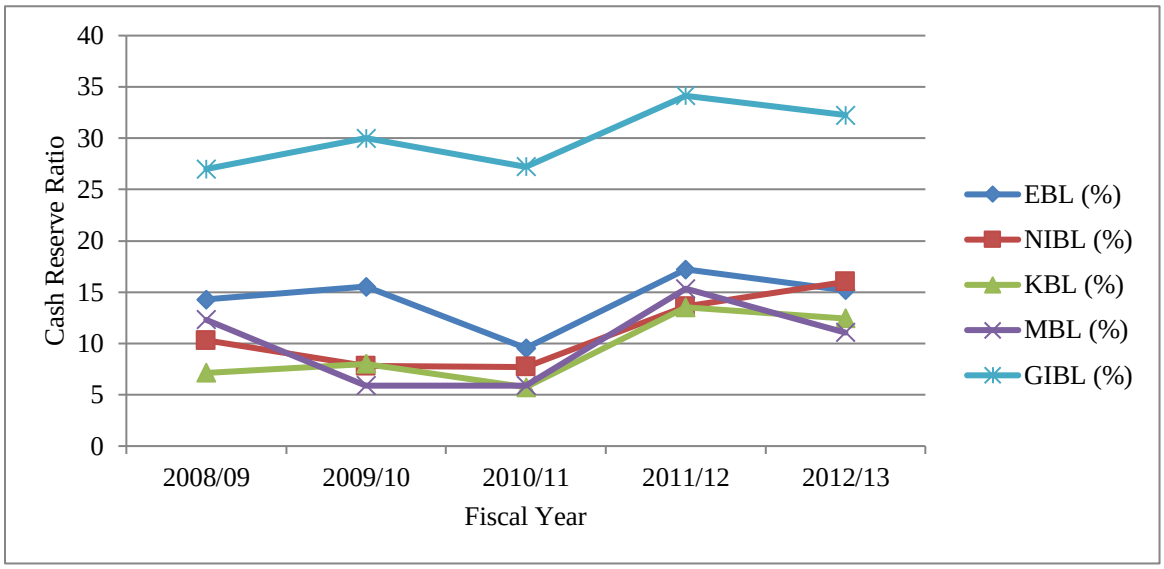
Cash Reserve Ratio of EBL, NIBL, KBL, MBL and GIBL (%)

Fiscal Year	EBL (%)	NIBL (%)	KBL (%)	MBL (%)	GIBL (%)
2008/09	14.28	10.30	7.13	12.33	27.00
2009/10	15.53	7.80	8.02	5.89	30.00
2010/11	9.55	7.70	5.74	5.89	27.23
2011/12	17.22	13.60	13.52	15.34	34.13
2012/13	15.19	16.00	12.43	11.07	32.25
Mean	14.35	11.08	9.37	10.10	30.12
S.D.	2.58	3.27	3.05	3.71	2.78
C.V.	17.98	29.51	32.55	36.73	9.23

Source: Annual report of EBL, NIBL, KBL, MBL & GIBL (Appendix 9)

Figure 4.9

Cash Reserve Ratio of EBL, NIBL, KBL, MBL and GIBL (%)



From above table and figure we can see the CRR of five commercial banks EBL, NIBL, KBL, MBL and GIBL. The CRR indicates the total amount of deposits of commercial banks in NRB. Here the average ratio of CRR is 14.35%, 11.08%, 9.37%, 10.10% and 30.12% of EBL, NIBL, KBL, MBL and GIBL respectively, which means that GIBL has better than other banks. The standard deviation of EBL, NIBL, KBL, MBL and GIBL is 2.58, 3.27, 3.05, 3.71 and 2.78 respectively, which refers EBL has less risk than other banks. But CV of selected banks is 17.98, 29.51, 32.55, 36.73 and 9.23% it clear that GBIL has less risky than other banks.

NRB prescribes CRR for the commercial banks each year. In fiscal year 2012/13, CRR is 5%, which means that the bank has to maintain 5% of total deposit in NRB. From above, it is clear that GBIL has higher CRR in each fiscal years than that of other selected banks, which means that GBIL has keep more funds in NRB and also reflects its strong liquidity position. All selected banks had maintained more than 5% CRR in each fiscal year, which means that the liquidity position of all selected banks has better by NRB directive.

From above, it can be concluded that the GIBL is in more liquid position than other banks. The more liquid position does the bank maintain, the more likely that the bank can easily met its liabilities. However, higher liquidity is also associated with opportunity loss due to the idle cash balance.

4.3.10 Interest Income to Total Income

This ratio indicates the proportion of interest income on total income of a bank. Higher the ratio does a bank maintain, more the dependency of bank on interest income unveil, which indicates higher level of risk to the bank. On the other hand, lower ratio indicates that the bank has diversification on sources of income. Higher level of ratio also indicates the higher level of interest rate risk because the changes in interest rate on market will make significant impact on bank total income and net profit. The interest incomes to total income of both banks are presented below:

Table 4.10

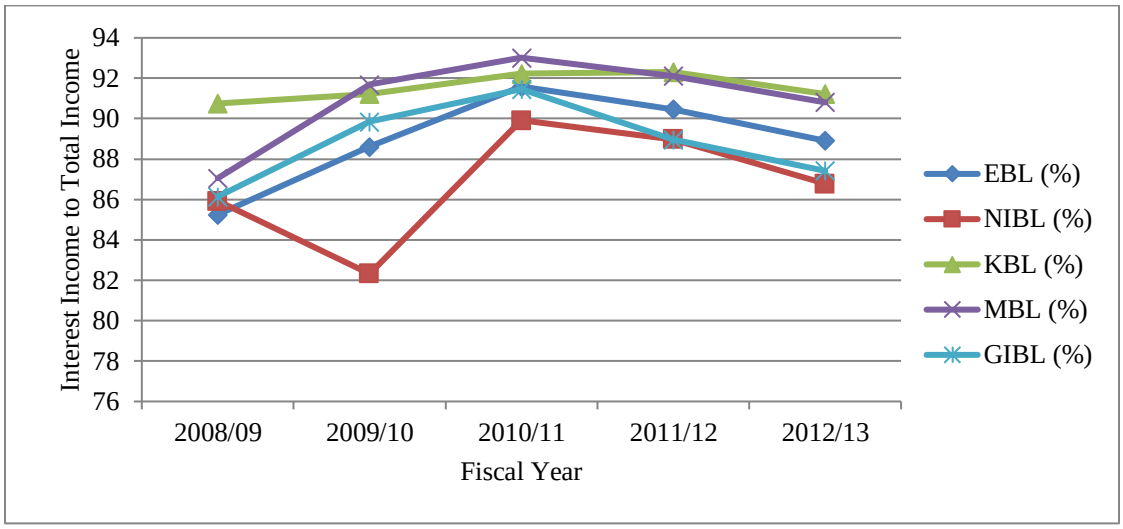
Interest Income to Total Income Ratio (%)

Fiscal Year	EBL (%)	NIBL (%)	KBL (%)	MBL (%)	GIBL (%)
2008/09	85.25	85.92	90.75	87.05	86.14
2009/10	88.62	82.32	91.23	91.68	89.85
2010/11	91.59	89.92	92.22	93.02	91.46
2011/12	90.46	88.97	92.31	92.12	88.96
2012/13	88.92	86.77	91.22	90.82	87.43
Mean	88.97	86.78	91.55	90.94	88.77
S.D.	2.15	2.66	0.61	2.07	1.85
C.V.	2.42%	3.06%	0.67%	2.28%	2.08%

Source: Annual report of EBL, NIBL, KBL, MBL & GIBL (Appendix 10)

Figure 4.10

Interest Income to Total Income Ratio (%)



Above table and figure exhibits the interest income to total income of five commercial banks. The interest Income to total income ratio of EBL, KBL, MBL and GIBL is increasing trend in fiscal year 2010/11 but ratio of NIBL is fluctuation trend in fiscal year 2010/11. And the ratio of all 5 banks is decreasing trend in fiscal year 2010/11 to 2012/13.The mean ratio of EBL, NIBL, KBL, MBL and GIBL are 88.97, 86.78, 91.55, 90.94 and 88.77 percent respectively. This ratio indicates that all selected banks are highly dependent on interest-based income, which shows the sign of high risk for selected banks. All selected banks have very least diversification on investment. The proportion of fee and commission based income is very low in these banks. The standard deviation of EBL, NIBL, KBL MBL and GIBL is 2.15, 2.66, 0.61, 2.07 and 1.85percent respectively. This shows that NIBL has higher deviation on ratio than other banks. The CV of EBL, NIBL, KBL MBL and GIBL is 2.42%, 3.06%, 0.67%, 2.28% and 2.08% respectively. This shows that the interest income of NIBL is more fluctuate than that of other 4 banks.

4.3.11 Interest Expenses to Total Expenses

This ratio indicates the proportion of interest expenses on total expenses of a bank. Higher ratio indicates that the bank has to pay high amount of interest expenses out of its total expenses, which means higher level of risk. On the other hand, lower ratio indicates

that the bank has the diversification on its expenses. Higher level of ratio also indicates the higher level of interest rate risk because the changes in interest rate on market will make significant impact on bank's interest expenses, which will ultimately affect on total income and net profit. The interest expenses to total expenses of selected banks are presented below:

Table 4.11

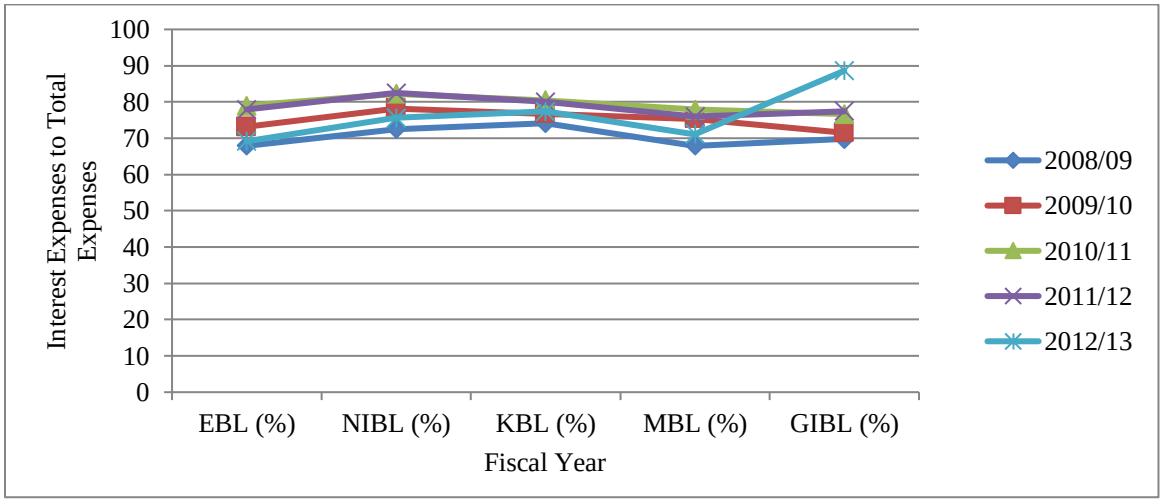
Interest Expenses to Total Expenses Ratio (%)

Fiscal Year	EBL (%)	NIBL (%)	KBL (%)	MBL (%)	GIBL (%)
2008/09	67.90	72.51	74.13	67.93	69.77
2009/10	73.10	78.16	76.71	75.30	71.51
2010/11	78.95	82.23	80.42	77.88	76.65
2011/12	77.92	82.50	79.97	75.99	77.44
2012/13	69.17	75.60	77.39	71.14	88.61
Mean	73.41	78.20	77.72	73.65	76.80
S.D.	4.46	3.84	2.30	3.61	6.59
C.V.	6.08	4.91	2.96	4.90	8.58

Source: Annual report of EBL, NIBL, KBL, MBL & GIBL (Appendix 11)

Figure 4.11

Interest Expenses to Total Expenses Ratio (%)



Above table and figures exhibits the interest expenses to total expenses of five commercial banks. The interest expenses to total expenses ratio of all banks is in fluctuation trend. The mean ratio of EBL, NIBL, KBL, MBL and GIBL for five years is 73.41, 78.20, 77.72, 73.65 and 76.80 percent respectively. This ratio indicates that the interest expense has higher proportion in GIBL than in other banks. This implies that the changing interest rate on deposit and borrowing will have higher impact on GIBL than other banks. This produces the higher amount of interest rate risk to GIBL than other selected banks. The standard deviation ratio of EBL, NIBL, KBL, MBL and GIBL are 4.46, 3.84, 2.30, 3.61 and 6.59 percent respectively. This shows that GIBL has higher deviation on average ratio than other banks. The coefficient of variation of EBL, NIBL, KBL, MBL and GIBL are 6.08, 4.91, 2.96, 4.90 and 8.58 percent respectively. This ratio indicates that GIBL proportion of interest expenses on total expenses fluctuates more than that of other selected banks, which shows the sign of higher risk.

4.4 Gap Analysis

4.4.1 Gap Analysis of Interest Rate Sensitive Assets and Interest Rate Sensitive Liabilities (IRSA and IRSL)

Interest rate sensitive assets and liabilities refer to such an assets/ liabilities, interest rates of which keep on changing in the market. Such types of assets includes the inter bank loan/ placement financial derivatives etc, the interest rate on which changes over night. Rate sensitive liabilities includes inter bank borrowing etc. Gap refers to difference between IRSA and IRSL. Gap analysis refers to analysis of the gap between IRSA and IRSL. The bank has to bear higher losses if the gap is high (either positive or negative). The bank will not bear interest rate risk if the gap between IRSA and IRSL is zero. The gap analysis of interest rate sensitive assets and interest rate sensitive liabilities of Everest Bank Limited, Nepal Invest Bank Limited, Kumari Bank Limited, Machhapuchhre Bank Limited and Global IME Bank Limited are presented below:

Table 4.12

Gap Analysis of IRSA and IRSL

(In millions)

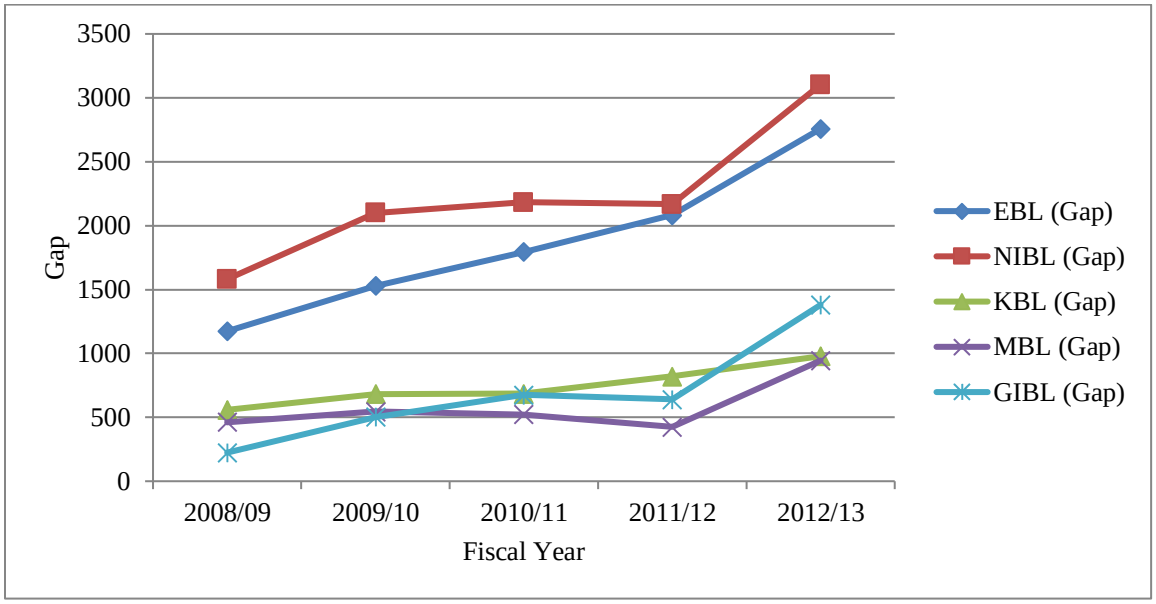
Fiscal Year	EBL (Gap)	NIBL (Gap)	KBL (Gap)	MBL (Gap)	GIBL (Gap)
2008/09	1173.91	1580.97	558.52	461.43	224.15
2009/10	1529.66	2099.65	682.75	543.81	502.97
2010/11	1795.15	2183.1	686.24	523.02	675.58
2011/12	2082.67	2168.23	819.09	425.36	639.57
2012/13	2757.74	3103.48	978.03	944.04	1379.87
Mean	1867.83	2227.09	774.53	579.53	684.43

Source: Annual report of EBL, NIBL, KBL, MBL & GIBL (Appendix 12)

Figure 4.12

Gap Analysis of IRSA and IRSL

(In millions)



The above table and figures shows that all banks have high level of gap in every year. We found that all banks have positive gap in all years. The average gap of EBL, NIBL, KBL, MBL and GIBL are 1867.83, 2227.09, 774.93, 579.53 and 684.43 million respectively. The average gap shows that MBL has matched the IRSA and IRSL than other banks. This

also indicates the less interest risk. However, this low average gap is due to lower gap of MBL in fiscal year 2011/12. So, the mean gap will misleading here to come to a conclusion. Therefore, it can be said that the all banks have high level of interest rate risk, as the mismatch between assets and liabilities seems to be very high in recent year (2012/13). However, if we see the latest gap position, the interest rate change will have different impact on these banks. MBL will suffer losses if the interest rate increase and vice versa, whereas other 4 banks will suffer loss if the interest rate decrease and vice versa.

4.4.2 Net Interest Margin

Net interest margin refers to the difference between interest received from bank's earning assets and the interest paid bank's liabilities. The net interest margin (NIM) measures how much profit or loss bank will suffer if the interest rate on both interest sensitive assets and liabilities increases. Following table shows the NIM of 5 selected banks assuming that the market interest rates will changes by 1 percent.

Table 4.13

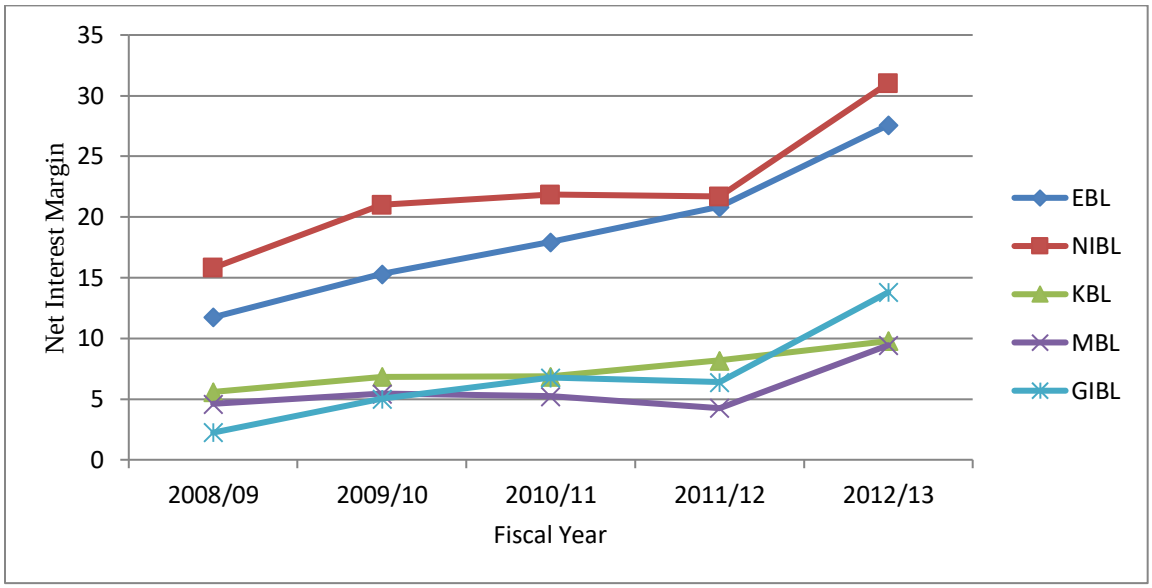
Net Interest Margin

Fiscal Year	EBL	NIBL	KBL	MBL	GIBL
2008/09	11.74	15.81	5.59	4.61	2.24
2009/10	15.30	21.00	6.83	5.44	5.03
2010/11	17.95	21.83	6.86	5.23	6.76
2011/12	20.83	21.68	8.19	4.25	6.40
2012/13	27.58	31.03	9.78	9.44	13.80
Mean	18.68	22.27	7.45	5.79	6.85

Source: Annual report of EBL, NIBL, KBL, MBL & GIBL (Appendix 13)

Figure 4.13

Net Interest Margin



Above table and figures exhibits the net interest margin of EBL, NIBL, KBL, MBL and GIBL for 5 fiscal years. When the interest rate change is assumed to be 1% in both RSA and RSL, this shows the positive earning in each year. All banks have positive NIM. The average net interest margin of EBL, NIBL, KBL, MBL and GIBL are 18.68, 22.27, 7.45, 5.79 and 6.85 respectively. This shows that MBL has lower mean on NIM then other selected banks. Which means MBL will suffer losses if the interest rate increases whereas, other banks will suffer losses if the interest rate decreases and vice versa.

4.5 Major Finding of the Study

The major finding of the study from the analysis of different risks, we have found some conclusions which are as follows:

4.5.1 Credit Risk

The key performance indicators of EBL, NIBL, KBL, MBL and GIBL in regard to credit management are found as follows:

The overall loan and advance to total assets ratio of EBL, NIBL, KBL, MBL and GIBL are 65.72%, 70.12%, 72.88%, 69.61% and 69.06% respectively. From this, it clear that

out of total assets in balance items the proportion of loans and advances is higher in KBL as compared to other 4 banks. This means that the credit risk is slightly higher in KBL as compare other selected banks. Likewise, the standard deviation of EBL, NIBL, KBL, MBL and GIBL are 2.73, 12.81, 3.84, 3.16 and 2.09 percent respectively. This indicates that the ratio deviate more from the average in case of NIBL than other banks. This means that higher risk in case of NIBL as compared to other selected banks.

The loans and advances to total deposits ratio of all banks are fluctuating trend. The average CD ratio of EBL, NIBL, KBL, MBL and GIBL are 73.76, 79.59, 84.51, 79.11 and 79.37 percent respectively. The EBL has lower CD ratio than compared to other selected banks. This means that the other selected banks have utilized its deposits higher than EBL.

The overall ratios of LLP to NPL of EBL, NIBL, KBL, MBL and GIBL are 410.24, 187.12, 214.49, 117.44 and 516.47 respectively. This shows that GIBL has provided higher cushion of provisioning to non-performing loan compare to other banks. The standard deviation of EBL, NIBL, KBL, MBL and GIBL are 126.60, 65.01, 105.34, 51.90 and 673.45 respectively. This means that there exists the higher deviation in this ratio in context of GIBL then other selected banks. The coefficient of variation of EBL, NIBL, KBL, MBL and GIBL is 29.88, 34.74, 49.11, 44.19 and 130.39 percent respectively. Thus explains that EBL ratio less from the average ratio than of other banks, which refers less risk to other banks.

The average LLP to TLA ratio is 2.08, 2.13, 2.25, 3.22 and 2.26 percent of EBL, NIBL, KBL, MBL and GIBL respectively. This ratio is higher in MBL than other four banks. This higher ratio reflects that the MBL has higher non- performing loan compared to other selected banks. Likewise the standard deviation and coefficient of variation of KBL are 0.98 and 43.56% respectively, which is higher than that of other selected banks. In comparison, it is clear that the KBL has higher risk than that other selected banks.

4.5.2 Liquidity Risk

Liquidity risk arises from funding needs during difficult market and capital adequacy challenges. Liquidity risk is that short-term assets values are not sufficient to match short-term liabilities or unexpected cash outflows. The liquidity risk is one of the market

determines the liquidity of the assets. From the above analysis, the average current ratio of EBL, NIBL, KBL, MBL and GIBL over five years are 5.07, 5.25, 6.79, 14.36 and 3.22 times. This figure indicates that GIBL has matched it current assets and liabilities nicely than other four banks. This means that other banks have used higher amount of current liabilities to finance asset with higher maturity period compared to GIBL.

Cash and bank balance to total assets ratio of all selected banks EBL, NIBL, KBL, MBL and GIBL shows the proportion of liquid assets in total assets portfolio. The higher ratio does a bank have, the better is the liquidity position of the bank (i.e. lower the liquidity risk) and vice versa. The average ratio for EBL, NIBL, KBL, MBL and GIBL over five years are 16.89, 16.15, 11.07, 15.59 and 13.11 percent respectively. This ratio indicates that EBL has kept more liquid assets in its assets portfolio than other selected banks, which signifies the lower liquidity risk. On the country, the higher portion of cash and bank balance also portrays that bank has kept more idle fund.

Another important indicator of liquidity risk is Cash Reserve Ratio (CRR). The CRR is the amount of deposit commercial banks needs to maintain in Nepal Rastra Bank out of their total deposits. The average CRR of EBL, NIBL, KBL, MBL and GIBL over five years are 14.35, 11.08, 9.37, 10.10 and 30.12 percent respectively. This shows that GIBL has maintained higher amount of liquidity in NRB than compared to other 4 banks. The standard deviation of CRR of EBL, NIBL, KBL, MBL and GIBL over five years 2.54, 3.27, 3.05, 3.71 and 2.78 percent respectively. This ratio indicates that MBL has more fluctuation in maintaining the CRR than other 4 banks. It is also associated with higher risk.

4.5.3 Interest Rate Risk

Interest rate risk is the mismatching the maturities of assets and liabilities as part of their assets transformation function. Financial institutions potentially expose themselves the interest rate risks. Suppose when interest rate increase and maturity period of assets is greater than the maturity period of liabilities. At that time, if interest rate increases the market value of assets is decrease in comparison of its liabilities.

The mean ratio of EBL, NIBL, KBL, MBL and GIBL are 88.97, 86.78, 91.55, 90.94 and 88.77 percent respectively. This ratio indicates that all selected banks are highly

dependent on interest-based income, which shows the sign of high risk for selected banks. All selected banks have very least diversification on investment. The proportion of fee and commission based income is very low in these banks. The standard deviation of EBL, NIBL, KBL MBL and GIBL is 2.15, 2.66, 0.61, 2.07 and 1.85percent respectively. This shows that NIBL has higher deviation on ratio than other banks. The CV of EBL, NIBL, KBL MBL and GIBL is 2.42%, 3.06%, 0.67%, 2.28% and 2.08% respectively. This shows that the interest income of NIBL is more fluctuate than that of other 4 banks.

The interest expenses to total expenses ratio of all banks is in fluctuation trend. The mean ratio of EBL, NIBL, KBL, MBL and GIBL for five years is 73.41, 78.20, 77.72, 73.65 and 76.80 percent respectively. This ratio indicates that the interest expense has higher proportion in GIBL than in other banks. This implies that the changing interest rate on deposit and borrowing will have higher impact on GIBL than other banks. This produces the higher amount of interest rate risk to GIBL than other selected banks. The standard deviation ratio of EBL, NIBL, KBL, MBL and GIBL are 4.46, 3.84, 2.30, 3.61 and 6.59 percent respectively. This shows that GIBL has higher deviation on average ratio than other banks. The coefficient of variation of EBL, NIBL, KBL, MBL and GIBL are 6.08, 4.91, 2.96, 4.90 and 8.58 percent respectively. This ratio indicates that GIBL proportion of interest expenses on total expenses fluctuates more than that of other selected banks, which shows the sign of higher risk.

The average net interest margin of EBL, NIBL, KBL, MBL and GIBL are 18.68, 22.27, 7.45, 5.79 and 6.85 respectively. This shows that MBL has lower mean on NIM then other selected banks. Which means MBL will suffer losses if the interest rate increases whereas, other banks will suffer losses if the interest rate decreases and vice versa.

Interest rate sensitive assets and interest rate sensitive liabilities refer to such as assets/liabilities, interest rates of which keep on challenging in the market. Such type of assets includes the inter rate bank loan/ placement financial derivatives etc, the interest rate on which changes over night. Rate sensitive liabilities includes inter rate borrowing etc. Gap refers to difference between IRSA and IRSL and gap analysis refers to the analysis of the gap between IRSA and IRSL. The bank has to bear higher losses if the gap is higher (either positive or negative). The bank will not bear inter rate risk if the gap

between IRSA and IRSL is zero. The average gap shows that MBL has matched the IRSA and IRSL than other banks. This also indicates the less interest risk. However, this low average gap is due to lower gap of MBL in fiscal year 2011/12. So, the mean gap will misleading here to come to a conclusion. Therefore, it can be said that the all banks have high level of interest rate risk, as the mismatch between assets and liabilities seems to be very high in recent year (2012/13). However, if we see the latest gap position, the interest rate change will have different impact on these banks. MBL will suffer losses if the interest rate increase and vice versa, whereas other 4 banks will suffer loss if the interest rate decrease and vice versa.

CHAPTER-V

SUMMARY, CONCLUSIONS AND RECOMMENDATION

5.1 Summary

Today is business age is a globalization and competitive age. Therefore, business word of today is very different form the past. The changing life style of people has also changed their desires and needs. Due to this, WTO has also given more fluctuation and opportunities in the business. Due to development of technology and different opportunity, today's business is more developing than the past. Inventories are also aware of how and where to invest their capital. So, no investors want to invest their capital on risky assets unless they are fully assured that investment is safe for the future. There are different types of investors with their nature. According to the risk bearing capacity some are risk seeking, some are risk averse and some may be neutral. Risk is the fact of life and return is reward for bearing risk. Risk plays a central role in the analysis of investment. Higher risk give higher return and the trade0ff between the two assumes a linear relationship between risk and return.

Economic development is not possible without the proper development of banking sector in a country, as banks are the real facilitator for mobilizing the resources. Banks are the institutions, which collect the scattered small savings from the public and invest them into productive sector that ultimately contributes to economic development of a country. Besides providing the services for economic development, they are established to earn profit. In the context of current competitive scenario, banks need to face challenges from all around. Once of the major challenges for Nepalese commercial banks are to properly manage the risk. Considering the importance of risk management in commercial banks, this research aimed at studying the risk management system of selected commercial banks. For this purpose, descriptive analytical research design was adopted. Out of the total population of 31 commercial banks, five commercial banks EBL, NIBL, KBL, MBL and GIBL have been taken for comparative study because of their similarities in term of business size, data of establishment, capital size etc. Basically secondary data has been used in this study. Annual reports and other publication of these banks and NRB are the

basis of secondary data. The data collection from various sources are recorded systematically and presented. Appropriate statistical and financial tools have been analyzed to meet the objective of the study. The major risk in EBL, NIBL, KBL, MBL and GIBL is associated with credit decision as the proportion of credit risk on total risk is high. The average loan and advance to total assets ratio of EBL is 65.72%, NIBL is 70.12%, KBL is 72.88%, MBL is 69.61% and GIBL is 69.06% respectively. This means that loan and advances hold major portion in total assets.

After the credit risk market risk such as liquidity risk and interest risk has significant impact on organization prosperity. The liquidity risk of banks is mainly studied by analyzing the ratio analysis such as current ratio, cash reserve ratio, cash and bank balance to total assets ratio etc.MBL has higher current ratio than that of other selected banks, which means that MBL has used more current liabilities to financial the current assets or higher amount of current liabilities. MBL has been used both to finance current assets and long term assets than that of other selected banks. Likewise MBL holds higher amount of cash and bank balance than that of other banks, which means that in comparison other selected banks, MBL has more liquidity.

The CRR depicts that on an average GIBL has maintained more bank balance in NRB than other selected banks. However, all 5 banks have shortfall to the statutory requirement in different years, which refers the poor liquidity management by these banks. Another part of market risk is the interest rate risk. The high proportion of interest income on total income of all these banks also indicates the high level of interest rate risk, and when there is a change in interest rate this will severely hurt the banks' net income. In fiscal year 2008/09 to 2012/13, the average interest income to total income ratio of EBL, NIBL, KBL, MBL and GIBL are 88.97, 86.78, 91.55, 90.94 and 88.77 percent respectively, which is the sign of high interest rate risk.

The main indicators of loan default indicate that average non- performing loan to total loans and advances of MBL is more than that of other selected 4 banks. Collateral is also one of the important factors while extending credit. When the borrowers default, collateral is the only means to cover such losses. The credit practice of EBL shows that EBL is also granting loan without collateral, which is the poor sign of credit practice. 100% of provision is to be made for this sort of loan, which reduces the bank's profits,

and also bank doesn't have any asset to claim on in case of default. This sort of practice is not found in case of MBL.

Since the basic or main objectives of this, study is to know the risk of the individual banks, to find out the relationship between various ratios of the commercial banks, to measure systematic and unsystematic risk of individual banks, the study is focused on the common stock of listed commercial banks of EBL, NIBL, KBL, MBL and GIBL. From this analysis following findings are summarized and made conclusion of as follows.

5.2 Conclusions

Proper management of risk is required to remain competitive in the market and achieve the goals. The major banking risks include credit risk, market risk (i.e. liquidity risk, interest risk, operation risk etc). Among thesis risks, credit risk has the major impact on banking (i.e. more than 60%). Because of the credit risk, the Non Performing Loan (NPL) of bank will increase. With the increase in NPL, the loan loss provisioning also increase simultaneously which lending to decrease in profit. The decrease in profit results low dividend to shareholder and bonus to employees. To streamline the financial sector of a country, the Nepalese government has started to liberalize the financial sector started from 1980s. Prior to the liberalization, there were 2 commercial banks, 1 central bank and 2 development banks. After the adoption of the liberalization policy in financial sector, the financial sector widened with more banks and financial institutions. Commercial banking sectors make a significant mark with the establishment of 31 commercial banks. Through banking sector developed rapidly in quantity, it has remained far behind of the commercial banks of developed banks in term of quality.

For the interest rate risk management as well the major tools of employed in these banks is gap analysis of asset and liabilities. In regard of operational risk, the major steps banks are taking to reduce it are preparing and implementing the different operational guidelines and policies and frequently monitoring there compliance. Most of these policies are prepared as per NRB guidelines. Similarly, training to employees of the banks is also the major tools for minimizing the operation risk in these banks. Through all banks have their own set of procedures for assessing the various risks and for their

management, problems are still prevalent in these banks. In credit risk, single sector loan concentration is main problem in selected banks.

Similarly, poor management of asset and liabilities having different maturity period is the main problem that arises other market risk such as liquidity risk, interest rate risk etc. The other component of market risk includes the interest rate risk. Similarly tactfully dealing with market interest movement by adjusting the interest sensitive assets and liabilities is also remains challenge to these banks. To remain alert and prepare plans and policies to tackle unpredictable factors such as violence riots, natural disaster, technology and employees, fault and fraud of customers and outsiders is also one of the challenges for these commercial banks.

Likewise for managing the liquidity risk, gap analysis is the major tool. The top management analyzed the gap between assets and liabilities and make decision to make adjustment for it. Further the top management decides how much liquid asset is needed to be kept in bank. Treasury and finance department of these banks continuously manage the CRR in NRB to ensure that statutory requirement is met.

Commercial banks are established with an objective to maximize the shareholders value by performing the function of mobilizing the idle funds collected from the society to productive sector, which will help to achieve the economic development of a country. However operating a bank successfully is not as easy as to set the objective. For the existence of bank needs to properly handling the several problem and challenges. In current scenario, the major challenge of commercial banks is competition for 31 commercial banks.

5.3 Recommendations

From the above analysis of the various risk management procedure of EBL, NIBL, KBL, MBL and GIBL, following recommendation is made to these banks.

1) All selected banks have extended the highest amount of loan against the movable and non-movable property. So, all selected banks need to diversify its lending against different securities.

2) All selected banks EBL, NIBL, KBL, MBL and GIBL has higher amount of loan and advances in total assets. So to minimize the credit risk, the diversification in investment is needed in selected banks. These banks need to diversify in government bonds, placements etc.
3) All selected banks have high mismatch amount, which needs to be frequently revised and brought under control. Assets liabilities mismatch needs to be given higher priority in selected banks.
4) All selected banks need to set up policy for the maximum mismatch amount between assets and liabilities. Similarly, NRB should make the benchmark for assets liabilities mismatch for assets and liabilities of different time bucket.
5) Interest income has major portion in total income of all selected banks. As there is change in interest rate, it will have huge impact on total income. So all banks need to increase their fees and commission based income to minimize income concentration risk.
6) Interest risk analysis according to NRB directive should not be prepared for reporting purpose only. It needs to be taken as a tool for proper risk management.
7) Interest rate sensitive assets/liabilities the mean gap of NIBL is higher than that of other selected banks. So NIBL needs to focus more on managing the assets and liabilities.

From above analysis we can suggest the banks under study from given points below:

- **Upgrade System**

All the selected banks need to upgrade the system with the change in both level and pace of technological changes in external environment.

- **Training and Development**

All selected banks are recommended to initiate training and development programmed for the employees to make them efficient and professional in terms of managing various risks. Training for credit appraisal, monitoring and management of different risk can be operational. Similarly, handling of new system and procedures also assist banks to decrease it operation risk.

- **Old Techniques**

In the current context, all selected banks have been applying old techniques for managing the risk. These techniques should be changed with changes in environmental forces. For management of risk associated with assets and liabilities management, banks need to adopt new methods such as Simulation Method, Value at Risk (VAR) method etc.

- **System of Check and Balance**

All selected banks should give focus the system of check and balance, which helps to reduce the risk.

- **Preventive Measures**

It is often said, "Prevention is better than cure". Hence it is recommended for all selected banks to take preventive measures before the risk occur in bank and bank will suffer loss. All selected banks are recommended to develop an information system to gather all the possible information and activities that provides necessary information to take timely precaution.

All banks need to properly diversify its lending portfolio. The high amount of lending in manufacturing sectors need to be diversified into various sectors, which will decrease concentration risk.

At last, Nepal Government has allowed establishing banks in Nepal by foreigners without joint venture of Nepalese investors. This will certainly provide threat to Nepalese banks. So, Nepalese Government should provide some incentives to local banks to face the intense competition of foreign banks. On other hand NRB has been mainly focusing on credit risk of the banks. Therefore, NRB needs to focus on market. NRB, in addition to imposing directives, needs to provide training for commercial banks to apply new methods and system.

REFREENCES

Books:

Adhikari, R.K. (2008), "*Fundamentals of research methodology".* Kathmandu: Januka Publications.

Gautam, R.R. (2011), *"Capital Structure Management"* Kathmandu: Asmita Books Publisher and Distributors, Kathmandu.

Gitman, Lowrence J. (1985), *"Principle of Managerial Finance"* New Delhi: Prentice Hall.

Joshi, P.R., (2005), "*Corporate Finance"* Asmita Books Publisher and Distributors, Kathmandu.

Khadka, S. and Hridaya (2007),*"Banking and Insurance",* Asia Publication, Kathmandu.

Manandhar, K.D., Dhakal, A.P., Thapa, K., Koirala, N., and Basnet, J.B. (2010), *"Managerial Finance".* Kathmandu: Khanal Publication Pvt. Ltd.

Pant P.R. (2009), "*Social Science Research and Thesis writing"*, Kathmandu: Buddha Publication.

Paudel, B. R. Baral J. K, Gautam R. R. and Rana B. S (2010),*Managerial Finance.* Kathmandu: Asmita Books Publisher and Distributor P. Ltd.

Poudel, R.B., Baral, K.J., Gautam R.R., and Rana, S.B. (2010). "*Managerial Finance"*. Kathmandu: Asmita Books Publisher and Distributors.

Thapa, K. and Rana, S.B. (2011), *Investment Management*". Kathmandu: Asmita Books Publisher and Distributors.

Van Horne, J.C. (2000), "*Financial Management and Policy*". New Delhi: Prentice Hall.

Weston, J. F. and Brigham, E. F. (1972), *Managerial Finance.* New York: Holt Saunders, International Editions.

Journals and Articles:

Borkowitz and Brien's (2002),*"How Accurate are Value-At-Risk Models at Commercial Banks"* Chicago, Blackwell Publishers.

Federal Reserve Bank (2006), "*Money Laundering Issues and Control"* A Publication of Federal Reserve Bank of Chicago. USA.

Kupper, E. (2000), "*Risk Management in Banking"* New Delhi: Vikash Publishing House Pvt. Ltd.

Nepal Rastra Bank (2013), "*Unified Directives for Banking and Financial Institution*" Kathmandu. Nepal.

Nepal Rastra Bank (2013), "*Banking & Financial Statistics"* A Journal of Banking Operation Department. NRB. Kathmandu.

Rana, Himalayan (2001), "*New Directives Issued by Nepal Rastra Bank"* ACAN. Newsletter. Vol. 5.

Rana, Shobha Bdr. (2013), *"Risk Management in Banks: Tuugh and Challenging"* The Himalayan Times.

Thesis

Karki, K. (2008), *"Risk Management of Himalayan Bank Ltd. "A Case Study of Himalayan Bank Ltd."*An Unpublished Master's Thesis, Kathmandu: Shanker Dev Campus, Faculty of Management, T.U.

Maharjan, M. (2009), "*Risk Management of Commercial Banks in Nepal: A Comparative Study between Nepal Credit & Commerce Bank Ltd. and Machhapuchhre Bank Ltd*." An Unpublished Thesis. Submitted to Shanker Dev Campus. Tribhuvan University. Kathmandu.

Shrestha, S. (2003), "*Impact and Implementation of Nepal Rastra Bank (NRB's Guidelines (Directives) on Commercial Banks: A Study of Nabil Bank Limited and Nepal SBI Bank Limited*" An Unpublished Master degree Thesis, Submitted to Shanker Dev Campus, Tribhuvan University. Kathmandu.

Shrestha, N. (2008), "Risk and Return Behavior of Listed Commercial Banks in NEPSE" An Unpublished Master degree Thesis, Tribhuvan University, Kathmandu.

Simkhada, S. (2010), *"Credit Policy of Commercial Banks in Nepal"* An Unpublished Master Degree Thesis, Sankar Dev Campus, Tribhuvan University, Kathmandu.

Subba, R. (2006), *"Study to Credit Management of Commercial Banks (i.e. Machchhapuchhre Bank Ltd. and Kumari Bank Ltd.)"* Shanker Dev Campus, Tribhuvan University, Kathmandu.

Annual Reports

Annual Reports of Everest Bank Limited, Kathmandu.

Annual Reports of Nepal Investment Bank Limited, Kathmandu.

Annual Reports of Kumari Bank Limited, Kathmandu.

Annual Reports of Machhapuchhre Bank Limited, Pokhara.

Annual Reports of Global IME Bank Limited, Birgunj.

Websites:

www.nepalstock.com

www.risk management.com

www.ebl.com.np

www.nibl.com.np

www.kbl.com.np

www.mbl.com.np

www.gibl.com.np

www.nrb.org.np.

APPENDICES

Appendix 1

Loans and Advances to Total Assets Ratio (%)

(In millions)

Fiscal Year	EBL		Ratio (%) (V)	$(V-\overline{V})^2$	Fiscal Year	NIBL		Ratio (%) (W)	$(W-\overline{W})^2$
	Loans& Advances	Total Assets				Loans& Advances	Total Assets		
2008/09	23884.67	36916.85	64.70	1.12	2008/09	37827.00	73152.15	51.71	338.93
2009/10	27556.37	41382.76	66.60	0.72	2009/10	40948.00	65756.23	62.27	61.62
2010/11	31057.69	46236.21	67.17	1.99	2010/11	41887.00	58357.00	71.78	2.76
2011/12	35910.97	55813.13	64.34	2.02	2011/12	42907.00	57305.00	74.87	22.56
2012/13	43393.19	65741.15	60.16	31.36	2012/13	47700.00	53010.00	89.98	394.42
Total	161802.89	246090.10	328.81	37.21	Total	211269	307580.38	350.61	820.29
Fiscal Year	KBL		Ratio (%) (X)	$(X-\overline{X})^2$	Fiscal Year	MBL		Ratio (%) (Y)	$(Y-\overline{Y})^2$
	Loans& Advances	Total Assets				Loans& Advances	Total Assets		
2008/09	14795.26	18538.56	79.81	48.03	2008/09	12516.01	17490.78	71.56	3.80
2009/10	14966.00	20486.00	73.05	0.03	2009/10	14289.79	20678.79	69.10	0.26
2010/11	14926.00	20492.00	72.84	0.00	2010/11	14408.75	19605.87	73.49	15.05
2011/12	17614.35	25131.40	70.09	7.78	2011/12	15602.70	24357.25	64.06	30.80
2012/13	19369.32	28222.57	68.63	18.06	2012/13	21164.91	30296.20	69.86	0.06
Total	81670.93	112870.50	364.42	73.90	Total	77982.16	112428.89	348.07	49.97
Fiscal Year	GIBL		Ratio (%) (Z)	$(Z-\overline{Z})^2$					
	Loans& Advances	Total Assets							
2008/09	9063.09	12626.47	71.78	7.40					
2009/10	11960.45	17201.42	69.53	0.22					
2010/11	12372.42	17522.71	70.61	2.40					
2011/12	20296.50	30664.11	66.19	8.24					
2012/13	26212.30	39018.49	67.18	3.53					
Total	79904.76	117033.2	345.29	21.77					

$$\text{Mean of EBL } (\overline{V}) = \frac{\sum V}{n} = \frac{328.81}{5} = 65.72$$

$$\text{Mean of NIBL } (\overline{w}) = \frac{\sum W}{n} = \frac{350.61}{5} = 70.12$$

Mean of KBL $(\overline{X}) = \frac{\sum X}{n} = \frac{364.42}{5} = 72.88$

Mean of MBL $(\overline{Y}) = \frac{\sum Y}{n} = \frac{348.07}{5} = 69.61$

Mean of GIBL $(\overline{Z}) = \frac{\sum Z}{n} = \frac{345.29}{5} = 69.06$

S.D. of EBL $(\sigma) = \sqrt{\frac{\sum(V-\overline{V})^2}{n}} = \sqrt{\frac{37.21}{5}} = 2.73$

S.D. of NIBL $(\sigma) = \sqrt{\frac{\sum(W-\overline{W})^2}{n}} = \sqrt{\frac{820.29}{5}} = 12.81$

S.D. of KBL $(\sigma) = \sqrt{\frac{\sum(X-\overline{X})^2}{n}} = \sqrt{\frac{73.90}{5}} = 3.84$

S.D. of MBL $(\sigma) = \sqrt{\frac{\sum(Y-\overline{Y})^2}{n}} = \sqrt{\frac{49.97}{5}} = 3.16$

S.D. of GIBL $(\sigma) = \sqrt{\frac{\sum(Z-\overline{Z})^2}{n}} = \sqrt{\frac{21.77}{5}} = 2.09$

CV of EBL = $\frac{\text{SD of EBL}}{\text{Mean of EBL}} = \frac{2.73}{72.8} = 4.15\%$

CV of NIBL = $\frac{\text{SD of NIBL}}{\text{Mean of NIBL}} = \frac{12.81}{70.12} = 18.27\%$

CV of KBL = $\frac{\text{SD of KBL}}{\text{Mean of KBL}} = \frac{3.84}{72.88} = 4.15\%$

CV of MBL = $\frac{\text{SD of MBL}}{\text{Mean of MBL}} = \frac{3.16}{69.61} = 4.54\%$

CV of GIBL = $\frac{\text{SD of GIBL}}{\text{Mean of GIBL}} = \frac{2.09}{69.06} = 3.03\%$

Appendix 2

Loans and Advances to Total Deposits Ratio (%)

(In millions)

Fiscal Year	EBL		Ratio (%) (V)	$(V-\overline{V})^2$	Fiscal Year	NIBL		Ratio (%) (W)	$(W-\overline{W})^2$
	Loans& Advances	Total Deposits				Loan & Advances	Total Deposits		
2008/09	23884.67	33322.90	71.68	4.34	2008/09	37827	46698.00	81.00	2.00
2009/10	27556.37	36932.30	74.61	0.73	2009/10	40948	50094.00	81.74	4.63
2010/11	31057.69	41127.90	75.52	3.08	2010/11	41887	50138.00	83.54	15.63
2011/12	35910.97	50006.10	71.81	3.79	2011/12	42907	57010.00	75.26	18.73
2012/13	43393.19	57720.50	75.18	2.01	2012/13	47700	62428.00	76.41	10.12
Total	161802.89	219109.70	368.80	13.95	Total	211269	266368.00	397.95	51.11
Fiscal Year	KBL		Ratio (%) (X)	$(X-\overline{X})^2$	Fiscal Year	MBL		Ratio (%) (Y)	$(Y-\overline{Y})^2$
	Loans& Advances	Total Deposits				Loans& Advances	Total Deposits		
2008/09	14795.26	15710.90	94.17	93.35	2008/09	12516.01	15596.79	80.25	1.29
2009/10	14966	17432.20	85.85	1.80	2009/10	14289.79	18535.92	77.09	4.07
2010/11	14926	17377.00	85.90	1.92	2010/11	14408.75	16409.97	87.81	75.60
2011/12	17614.35	21985.20	80.12	19.28	2011/12	15602.7	21546.4	72.41	44.83
2012/13	19369.32	25318.57	76.50	64.12	2012/13	21164.91	27136.65	77.99	1.25
Total	81670.93	97823.87	422.54	180.48	Total	77982.16	99225.73	395.55	127.04
Fiscal Year	GIBL		Ratio (%) (Z)	$(Z-\overline{Z})^2$					
	Loans& Advances	Total Deposits							
2008/09	9063.09	10933.00	82.90	12.44					
2009/10	11960.45	15031.60	79.57	0.04					
2010/11	12372.42	15066.50	82.12	7.56					
2011/12	20296.50	26913.77	75.41	15.66					
2012/13	26212.30	34111.47	76.84	6.39					
Total	79904.76	102056.34	396.84	42.09					

Mean of EBL $(\overline{V}) = \frac{\sum V}{n} = \frac{368.80}{5} = 73.76$

Mean of NIBL $(\overline{w}) = \frac{\sum W}{n} = \frac{397.95}{5} = 79.59$

Mean of KBL $(\overline{X}) = \frac{\sum X}{n} = \frac{422.54}{5} = 84.51$

Mean of MBL $(\overline{Y}) = \frac{\sum Y}{n} = \frac{395.55}{5} = 79.11$

Mean of GIBL $(\overline{Z}) = \frac{\sum Z}{n} = \frac{396.84}{5} = 79.37$

S.D. of EBL (σ) $= \sqrt{\frac{\sum(V-\overline{V})^2}{n}} = \sqrt{\frac{13.95}{5}} = 1.67$

S.D. of NIBL (σ) $= \sqrt{\frac{\sum(W-\overline{W})^2}{n}} = \sqrt{\frac{51.11}{5}} = 3.20$

S.D. of KBL (σ) $= \sqrt{\frac{\sum(X-\overline{X})^2}{n}} = \sqrt{\frac{180.48}{5}} = 6.01$

S.D. of MBL (σ) $= \sqrt{\frac{\sum(Y-\overline{Y})^2}{n}} = \sqrt{\frac{127.04}{5}} = 5.04$

S.D. of GIBL (σ) $= \sqrt{\frac{\sum(Z-\overline{Z})^2}{n}} = \sqrt{\frac{42.09}{5}} = 2.90$

CV of EBL $= \frac{\text{SD of EBL}}{\text{Mean of EBL}} = \frac{1.67}{73.76} = 2.26\%$

CV of NIBL $= \frac{\text{SD of NIBL}}{\text{Mean of NIBL}} = \frac{3.20}{79.59} = 4.02\%$

CV of KBL $= \frac{\text{SD of KBL}}{\text{Mean of KBL}} = \frac{6.01}{84.51} = 7.11\%$

CV of MBL $= \frac{\text{SD of MBL}}{\text{Mean of MBL}} = \frac{5.04}{79.11} = 6.37\%$

CV of GIBL $= \frac{\text{SD of GIBL}}{\text{Mean of GIBL}} = \frac{2.90}{79.37} = 3.65\%$

Appendix 3

Non-performing Loan to Total Loans and Advances Ratio (%)

(In millions)

Fiscal Year	EBL		Ratio (%) (V)	$(V-\overline{V})^2$	Fiscal Year	NIBL		Ratio (%) (W)	$(W-\overline{W})^2$
	NPL	Loans& Advances				NPL	Loans & Advances		
2008/09	117.99	23884.67	0.49	0.01	2008/09	213.91	37827.00	0.57	0.83
2009/10	125.56	27556.37	0.46	0.01	2009/10	274.33	40948.00	0.67	0.57
2010/11	108.51	31057.69	0.35	0.04	2010/11	395.28	41887.00	0.94	0.29
2011/12	307.49	35910.97	0.86	0.09	2011/12	1425.39	42907.00	3.32	3.39
2012/13	276.20	43393.19	0.64	0.01	2012/13	913.10	47700.00	1.91	0.18
Total	935.75	161802.89	2.80	0.16	Total	3222.01	211269.00	7.41	5.26
Fiscal Year	KBL		Ratio (%) (X)	$(X-\overline{X})^2$	Fiscal Year	MBL		Ratio (%) (Y)	$(Y-\overline{Y})^2$
	NPL	Loans& Advances				NPL	Loans& Advances		
2008/09	69.25	14795.26	0.47	1.32	2008/09	302.84	12516.01	2.42	0.32
2009/10	51.31	14966.00	0.34	1.64	2009/10	347.58	14289.79	2.43	0.31
2010/11	152.58	14926.00	1.02	0.36	2010/11	614.01	14408.75	4.26	1.61
2011/12	399.96	17614.35	2.27	0.42	2011/12	455.95	15602.70	2.92	0.01
2012/13	776.65	19369.32	4.01	5.71	2012/13	614.30	21164.91	2.90	0.01
Total	1449.75	81670.93	8.11	9.45	Total	2334.68	77982.16	14.93	2.26
Fiscal Year	GIBL		Ratio (%) (Z)	$(Z-\overline{Z})^2$					
	NPL	Loans& Advances							
2008/09	5.20	9063.09	0.06	1.59					
2009/10	67.90	11960.45	0.57	0.56					
2010/11	252.23	12372.42	2.04	0.52					
2011/12	341.32	20296.50	1.68	0.13					
2012/13	612.36	26212.30	2.24	0.85					
Total	1279.01	79904.76	6.59	3.65					

Mean of EBL $(\overline{V}) = \frac{\sum V}{n} = \frac{2.80}{5} = 0.56$

Mean of NIBL $(\overline{w}) = \frac{\sum W}{n} = \frac{7.41}{5} = 1.48$

Mean of KBL $(\overline{X}) = \frac{\sum X}{n} = \frac{8.11}{5} = 1.62$

Mean of MBL $(\overline{Y}) = \frac{\sum Y}{n} = \frac{14.93}{5} = 2.99$

Mean of GIBL $(\overline{Z}) = \frac{\sum Z}{n} = \frac{6.69}{5} = 1.32$

S.D. of EBL (σ) $= \sqrt{\frac{\sum(V-\overline{V})^2}{n}} = \sqrt{\frac{0.16}{5}} = 0.18$

S.D. of NIBL (σ) $= \sqrt{\frac{\sum(W-\overline{W})^2}{n}} = \sqrt{\frac{5.26}{5}} = 1.03$

S.D. of KBL (σ) $= \sqrt{\frac{\sum(X-\overline{X})^2}{n}} = \sqrt{\frac{9.45}{5}} = 1.37$

S.D. of MBL (σ) $= \sqrt{\frac{\sum(Y-\overline{Y})^2}{n}} = \sqrt{\frac{2.26}{5}} = 5.04$

S.D. of GIBL (σ) $= \sqrt{\frac{\sum(Z-\overline{Z})^2}{n}} = \sqrt{\frac{3.65}{5}} = 0.85$

CV of EBL $= \frac{\text{SD of EBL}}{\text{Mean of EBL}} = \frac{0.18}{0.56} = 32.14\%$

CV of NIBL $= \frac{\text{SD of NIBL}}{\text{Mean of NIBL}} = \frac{1.03}{1.48} = 69.59\%$

CV of KBL $= \frac{\text{SD of KBL}}{\text{Mean of KBL}} = \frac{1.37}{1.62} = 84.57\%$

CV of MBL $= \frac{\text{SD of MBL}}{\text{Mean of MBL}} = \frac{0.67}{2.99} = 22.41\%$

CV of GIBL $= \frac{\text{SD of GIBL}}{\text{Mean of GIBL}} = \frac{0.85}{1.32} = 64.39\%$

Appendix 4

Loan Loss Provision toNon-performing Loan Ratio (%)

(In millions)

Fiscal Year	EBL		Ratio (%) (V)	$(V-\overline{V})^2$	Fiscal Year	NIBL		Ratio (%) (W)	$(W-\overline{W})^2$
	LLP	NPL				LLP	NPL		
2008/09	584.88	117.99	495.70	7303.41	2008/09	585.95	213.91	273.92	7534.24
2009/10	600.04	125.56	477.89	4576.52	2009/10	630.13	274.33	229.70	1813.06
2010/11	604.15	108.51	556.77	21471.04	2010/11	792.18	395.28	200.41	176.62
2011/12	705.86	307.49	229.56	32645.26	2011/12	1269.69	1425.39	89.08	9611.84
2012/13	804.58	276.20	291.30	14146.72	2012/13	1300.57	913.10	142.43	1997.20
Total	3299.51	935.75	2051.22	80142.95	Total	4578.52	3222.01	935.54	21132.96
Fiscal Year	KBL		Ratio (%) (X)	$(X-\overline{X})^2$	Fiscal Year	MBL		Ratio (%) (Y)	$(Y-\overline{Y})^2$
	LLP	NPL				LLP	NPL		
2008/09	186.47	69.25	269.27	3000.85	2008/09	468.45	302.84	154.69	1387.56
2009/10	199.21	51.31	388.25	30192.54	2009/10	682.74	347.58	196.43	6239.42
2010/11	299.88	152.58	196.54	322.20	2010/11	322.29	614.01	52.49	4218.50
2011/12	486.99	399.96	121.76	8598.85	2011/12	475.31	455.95	104.25	173.98
2012/13	750.47	776.65	96.63	13890.98	2012/13	487.53	614.30	79.36	1450.09
Total	1923.02	1449.75	1072.45	56005.42	Total	2436.32	2334.68	587.22	13469.55
Fiscal Year	GIBL		Ratio (%) (Z)	$(Z-\overline{Z})^2$					
	LLP	NPL							
2008/09	96.60	5.20	1857.69	1798871.09					
2009/10	202.93	67.90	298.87	47349.76					
2010/11	406.58	252.23	161.19	126223.87					
2011/12	468.68	341.32	137.31	143762.30					
2012/13	779.32	612.36	127.27	151476.64					
Total	1954.11	1279.01	2582.33	2267683.66					

$$\text{Mean of EBL } (\overline{V}) = \frac{\sum V}{n} = \frac{2051.22}{5} = 410.24$$

$$\text{Mean of NIBL } (\overline{w}) = \frac{\sum W}{n} = \frac{935.54}{5} = 187.11$$

$$\text{Mean of KBL } (\overline{X}) = \frac{\sum X}{n} = \frac{1072.45}{5} = 214.49$$

Mean of MBL $(\overline{Y}) = \frac{\sum Y}{n} = \frac{587.22}{5} = 117.44$

Mean of GIBL $(\overline{Z}) = \frac{\sum Z}{n} = \frac{2582.33}{5} = 516.47$

S.D. of EBL (σ) $= \sqrt{\frac{\sum(V-\overline{V})^2}{n}} = \sqrt{\frac{80142.95}{5}} = 126.60$

S.D. of NIBL (σ) $= \sqrt{\frac{\sum(W-\overline{W})^2}{n}} = \sqrt{\frac{21132.96}{5}} = 65.01$

S.D. of KBL (σ) $= \sqrt{\frac{\sum(X-\overline{X})^2}{n}} = \sqrt{\frac{56005.42}{5}} = 105.34$

S.D. of MBL (σ) $= \sqrt{\frac{\sum(Y-\overline{Y})^2}{n}} = \sqrt{\frac{13469.55}{5}} = 51.90$

S.D. of GIBL (σ) $= \sqrt{\frac{\sum(Z-\overline{Z})^2}{n}} = \sqrt{\frac{2267683.66}{5}} = 673.45$

CV of EBL $= \frac{\text{SD of EBL}}{\text{Mean of EBL}} = \frac{126.60}{410.24} = 29.88\%$

CV of NIBL $= \frac{\text{SD of NIBL}}{\text{Mean of NIBL}} = \frac{65.01}{187.12} = 34.74\%$

CV of KBL $= \frac{\text{SD of KBL}}{\text{Mean of KBL}} = \frac{105.34}{214.49} = 49.11\%$

CV of MBL $= \frac{\text{SD of MBL}}{\text{Mean of MBL}} = \frac{51.90}{117.44} = 44.19\%$

CV of GIBL $= \frac{\text{SD of GIBL}}{\text{Mean of GIBL}} = \frac{673.45}{516.47} = 130.39\%$

Appendix 5

Loan Loss Provision to Total Loans and advances Ratio (%)

(In millions)

Fiscal Year	EBL		Ratio (%) (V)	$(V-\overline{V})^2$	Fiscal Year	NIBL		Ratio (%) (W)	$(W-\overline{W})^2$
	LLP	Loans & Advances				LLP	Loans & Advances		
2008/09	584.88	23884.67	2.45	0.14	2008/09	585.95	37827.00	1.55	0.34
2009/10	600.04	27556.37	2.18	0.01	2009/10	630.13	40948.00	1.54	0.35
2010/11	604.15	31057.69	1.95	0.02	2010/11	792.18	41887.00	1.89	0.06
2011/12	705.86	35910.97	1.97	0.01	2011/12	1269.69	42907.00	2.96	0.69
2012/13	804.58	43393.19	1.85	0.05	2012/13	1300.57	47700.00	2.73	0.36
Total	3299.51	161802.89	10.40	0.23	Total	4578.52	211269.00	10.67	1.80
Fiscal Year	KBL		Ratio (%) (X)	$(X-\overline{X})^2$	Fiscal Year	MBL		Ratio (%) (Y)	$(Y-\overline{Y})^2$
	LLP	Loans & Advances				LLP	Loans & Advances		
2008/09	186.47	14795.26	1.26	0.98	2008/09	468.45	12516.01	3.74	0.27
2009/10	199.21	14966.00	1.33	0.85	2009/10	682.74	14289.79	4.78	2.43
2010/11	299.88	14926.00	2.01	0.06	2010/11	322.29	14408.75	2.24	0.96
2011/12	486.99	17614.35	2.77	0.27	2011/12	475.31	15602.70	3.05	0.03
2012/13	750.47	19369.32	3.87	2.62	2012/13	487.53	21164.91	2.30	0.85
Total	1923.02	81670.93	11.24	4.78	Total	2436.32	77982.16	16.11	4.54
Fiscal Year	GIBL		Ratio (%) (Z)	$(Z-\overline{Z})^2$					
	LLP	Loans & Advances							
2008/09	96.60	9063.09	1.07	1.42					
2009/10	202.93	11960.45	1.70	0.31					
2010/11	406.58	12372.42	3.27	1.02					
2011/12	468.68	20296.50	2.31	0.01					
2012/13	779.32	26212.30	2.97	0.50					
Total	1954.11	79904.76	11.32	3.26					

Mean of EBL $(\overline{V}) = \frac{\sum V}{n} = \frac{10.40}{5} = 2.08$

Mean of NIBL $(\overline{w}) = \frac{\sum W}{n} = \frac{10.67}{5} = 2.13$

Mean of KBL $(\overline{X}) = \frac{\sum X}{n} = \frac{11.24}{5} = 2.25$

Mean of MBL ($\overline{Y}$)= $\frac{\sum Y}{n} = \frac{16.11}{5} = 3.22$

Mean of GIBL ($\overline{Z}$)= $\frac{\sum Z}{n} = \frac{11.32}{5} = 2.26$

S.D. of EBL (σ) $= \sqrt{\frac{\sum(V-\overline{V})^2}{n}} = \sqrt{\frac{0.23}{5}} = 0.21$

S.D. of NIBL (σ) $= \sqrt{\frac{\sum(W-\overline{W})^2}{n}} = \sqrt{\frac{1.80}{5}} = 0.60$

S.D. of KBL (σ) $= \sqrt{\frac{\sum(X-\overline{X})^2}{n}} = \sqrt{\frac{4.78}{5}} = 0.98$

S.D. of MBL (σ) $= \sqrt{\frac{\sum(Y-\overline{Y})^2}{n}} = \sqrt{\frac{4.54}{5}} = 0.95$

S.D. of GIBL (σ) $= \sqrt{\frac{\sum(Z-\overline{Z})^2}{n}} = \sqrt{\frac{3.26}{5}} = 0.81$

CV of EBL = $\frac{\text{SD of EBL}}{\text{Mean of EBL}} = \frac{0.21}{2.08} = 10.10\%$

CV of NIBL = $\frac{\text{SD of NIBL}}{\text{Mean of NIBL}} = \frac{0.60}{2.13} = 28.17\%$

CV of KBL = $\frac{\text{SD of KBL}}{\text{Mean of KBL}} = \frac{0.98}{2.25} = 43.56\%$

CV of MBL = $\frac{\text{SD of MBL}}{\text{Mean of MBL}} = \frac{0.95}{3.22} = 29.50\%$

CV of GIBL = $\frac{\text{SD of GIBL}}{\text{Mean of GIBL}} = \frac{0.81}{2.26} = 35.84$

Appendix 6

Return on Total Loan and Advance Ratio (%)

(In millions)

Fiscal Year	EBL		Ratio (%) (V)	$(V-\overline{V})^2$	Fiscal Year	NIBL		Ratio (%) (W)	$(W-\overline{W})^2$
	Net profit	Loans & Advances				Net Profit	Loans & Advances		
2008/09	638.7	23884.67	2.67	0.1225	2008/09	901.00	37827.00	2.38	0.36
2009/10	831.77	27556.37	3.02	0	2009/10	1256.00	40948.00	3.07	0.01
2010/11	931.30	31057.69	3.00	0.0004	2010/11	1176.00	41887.00	2.81	0.03
2011/12	1090.56	35910.97	3.04	0.0004	2011/12	1915.00	42907.00	4.46	2.19
2012/13	1471.12	43393.19	3.39	0.1369	2012/13	1039.00	47700.00	2.18	0.64
Total	1471.12	161802.89	15.12	0.2602	Total	6287.00	211269.00	14.90	3.23
Fiscal Year	KBL		Ratio (%) (X)	$(X-\overline{X})^2$	Fiscal Year	MBL		Ratio (%) (Y)	$(Y-\overline{Y})^2$
	Net Profit	Loans & Advances				Net Profit	Loans & Advances		
2008/09	261.34	14795.26	1.77	0.0016	2008/09	123.25	12516.01	0.98	0.2304
2009/10	316.54	14966.00	2.12	0.1521	2009/10	73.31	14289.79	0.51	0.0001
2010/11	251.24	14926.00	1.68	0.0025	2010/11	8.92	14408.75	0.06	0.1936
2011/12	275.50	17614.35	1.56	0.0289	2011/12	38.21	15602.70	0.24	0.0676
2012/13	291.45	19369.32	1.50	0.0529	2012/13	148.60	21164.91	0.70	0.04
Total	1396.07	81670.93	8.63	0.238	Total	392.29	77982.16	2.49	0.5317

Fiscal Year	GIBL		Ratio (%) (Z)	$(Z-\overline{Z})^2$
	Net profit	Loans & Advances		
2008/09	26.30	9063.09	0.29	0.7396
2009/10	73.03	11960.45	0.61	0.2916
2010/11	224.98	12372.42	1.82	0.4489
2011/12	265.32	20296.50	1.31	0.0256
2012/13	449.22	26212.30	1.71	0.3136
Total	1038.85	79904.76	5.74	1.8193

Mean of EBL $(\overline{V}) = \frac{\sum V}{n} = \frac{15.12}{5} = 3.02$

Mean of NIBL $(\overline{w}) = \frac{\sum W}{n} = \frac{14.90}{5} = 2.98$

Mean of KBL $(\overline{X}) = \frac{\sum X}{n} = \frac{8.63}{5} = 1.73$

Mean of MBL $(\overline{Y}) = \frac{\sum Y}{n} = \frac{2.49}{5} = 0.50$

Mean of GIBL $(\overline{Z}) = \frac{\sum Z}{n} = \frac{5.74}{5} = 1.15$

S.D. of EBL $(\sigma) = \sqrt{\frac{\sum(V-\overline{V})^2}{n}} = \sqrt{\frac{0.2602}{5}} = 0.23$

S.D. of NIBL $(\sigma) = \sqrt{\frac{\sum(W-\overline{W})^2}{n}} = \sqrt{\frac{3.23}{5}} = 0.80$

S.D. of KBL $(\sigma) = \sqrt{\frac{\sum(X-\overline{X})^2}{n}} = \sqrt{\frac{0.238}{5}} = 0.22$

S.D. of MBL $(\sigma) = \sqrt{\frac{\sum(Y-\overline{Y})^2}{n}} = \sqrt{\frac{0.5317}{5}} = 0.33$

S.D. of GIBL $(\sigma) = \sqrt{\frac{\sum(Z-\overline{Z})^2}{n}} = \sqrt{\frac{1.8193}{5}} = 0.6$

CV of EBL $= \frac{\text{SD of EBL}}{\text{Mean of EBL}} = \frac{0.23}{3.02} = 7.62\%$

CV of NIBL $= \frac{\text{SD of NIBL}}{\text{Mean of NIBL}} = \frac{0.80}{2.98} = 26.85\%$

CV of KBL $= \frac{\text{SD of KBL}}{\text{Mean of KBL}} = \frac{0.22}{1.73} = 12.72\%$

CV of MBL $= \frac{\text{SD of MBL}}{\text{Mean of MBL}} = \frac{0.33}{0.50} = 66\%$

CV of GIBL $= \frac{\text{SD of GIBL}}{\text{Mean of GIBL}} = \frac{0.60}{1.15} = 52.17\%$

Appendix 7

Current Ratio of EBL, NIBL, KBL, MBL and GIBL

(In millions)

Fiscal Year	EBL		Ratio (Times)) (V)	Fiscal Year	NIBL		Ratio (Times) (W)
	Current Assets	Current liabilities			Current Assets	Current Liabilities	
2008/09	6164.40	1090.28	5.65	2008/09	7918.00	1354.86	5.84
2009/10	7818.82	1391.31	5.62	2009/10	6815.89	1575.29	4.33
2010/11	6122.86	1694.75	3.61	2010/11	8290.37	2008.95	4.13
2011/12	10363.31	1629.73	6.36	2011/12	12009.11	1645.69	7.30
2012/13	11215.79	2724.00	4.13	2012/13	13519.49	2902.67	4.66
Total	41685.18	8530.07	25.37	Total	48552.86	9487.46	26.26
Fiscal Year	KBL		Ratio (Times) (X)	Fiscal Year	MBL		Ratio (Times) (Y)
	Current Assets	Current Liabilities			Current Assets	Current Liabilities	
2008/09	1666.56	803.22	2.07	2008/09	2766.65	193.79	14.28
2009/10	2498.67	1004.46	2.49	2009/10	3121.28	369.36	8.45
2010/11	1574.30	898.67	1.75	2010/11	2515.50	1413.47	1.78
2011/12	4160.29	369.13	11.27	2011/12	5437.24	162.78	33.40
2012/13	4043.87	247.29	16.35	2012/13	5044.18	362.87	13.90
Total	13943.69	3322.77	33.93	Total	18884.85	2502.27	71.81

Fiscal Year	GIBL		Ratio (Times) (Z)
	Current Assets	Current Liabilities	
2008/09	1155.45	702.11	1.65
2009/10	1903.44	915.54	2.08
2010/11	1655.87	860.42	1.92
2011/12	4969.34	813.65	6.11
2012/13	5560.06	1276.24	4.36
Total	15244.16	4567.96	16.12

Mean of EBL $(\overline{V}) = \frac{\sum V}{n} = \frac{25.37}{5} = 5.07$

Mean of NIBL $(\overline{w}) = \frac{\sum W}{n} = \frac{26.26}{5} = 5.25$

Mean of KBL $(\overline{X}) = \frac{\sum X}{n} = \frac{33.93}{5} = 6.79$

Mean of MBL $(\overline{Y}) = \frac{\sum Y}{n} = \frac{71.81}{5} = 14.36$

Mean of GIBL $(\overline{Z}) = \frac{\sum Z}{n} = \frac{16.12}{5} = 3.22$

Appendix 8

Cash and Bank Balance to Total Assets Ratio (%)

(In millions)

Fiscal Year	EBL		Ratio (%) (V)	$(V-\overline{V})^2$	Fiscal Year	NIBL		Ratio (%) (W)	$(W-\overline{W})^2$
	Cash and Bank Balance	Total Assets				Cash and Bank Balance	Total Assets		
2008/09	6164.40	36916.85	16.70	0.04	2008/09	7918.00	73152.15	10.82	28.41
2009/10	7818.81	41382.76	18.89	4.00	2009/10	6815.89	65756.23	10.37	33.41
2010/11	6122.86	46236.21	13.24	13.32	2010/11	8140.37	58357.00	13.95	4.84
2011/12	10363.30	55813.13	18.57	2.82	2011/12	11803.75	57305.00	20.60	19.80
2012/13	11215.79	65741.15	17.06	0.03	2012/13	13252.09	53010.00	25.00	78.32
Total	41685.16	246090.10	84.46	20.21	Total	47930.10	307580.38	80.74	164.78
Fiscal Year	KBL		Ratio (%) (X)	$(X-\overline{X})^2$	Fiscal Year	MBL		Ratio (%) (Y)	$(Y-\overline{Y})^2$
	Cash and Bank Balance	Total Assets				Cash and Bank Balance	Total Assets		
2008/09	1776.30	18538.56	9.58	2.22	2008/09	2766.65	17490.78	15.82	0.05
2009/10	2723.82	20486.00	13.30	4.97	2009/10	2459.72	20678.79	11.89	13.69
2010/11	1168.53	20492.00	5.70	28.84	2010/11	2207.56	19605.87	11.26	18.75
2011/12	3406.88	25131.40	13.56	6.20	2011/12	5437.24	24357.25	22.32	45.29
2012/13	3722.63	28222.57	13.19	4.49	2012/13	5044.18	30296.20	16.65	1.12
Total	12798.16	112870.53	55.33	46.72	Total	17915.35	112428.89	77.94	78.90
Fiscal Year	GIBL		Ratio (%) (Z)	$(Z-\overline{Z})^2$					
	Cash and Bank Balance	Total Assets							
2008/09	1382.14	12626.47	10.95	4.67					
2009/10	2434.33	17201.42	14.15	1.08					
2010/11	1754.44	17522.71	10.01	9.61					
2011/12	4969.34	30664.11	16.21	9.61					
2012/13	5543.98	39018.49	14.21	1.21					
Total	16084.23	117033.2	65.53	26.18					

Mean of EBL $(\overline{V}) = \frac{\sum V}{n} = \frac{84.46}{5} = 16.89$

Mean of NIBL $(\overline{w}) = \frac{\sum W}{n} = \frac{80.74}{5} = 16.15$

Mean of KBL $(\overline{X}) = \frac{\sum X}{n} = \frac{55.33}{5} = 11.07$

Mean of MBL $(\overline{Y}) = \frac{\sum Y}{n} = \frac{77.94}{5} = 15.59$

Mean of GIBL $(\overline{Z}) = \frac{\sum Z}{n} = \frac{65.53}{5} = 13.11$

S.D. of EBL $(\sigma) = \sqrt{\frac{\sum(V-\overline{V})^2}{n}} = \sqrt{\frac{20.21}{5}} = 2.01$

S.D. of NIBL $(\sigma) = \sqrt{\frac{\sum(W-\overline{W})^2}{n}} = \sqrt{\frac{164.78}{5}} = 5.74$

S.D. of KBL $(\sigma) = \sqrt{\frac{\sum(X-\overline{X})^2}{n}} = \sqrt{\frac{46.72}{5}} = 3.06$

S.D. of MBL $(\sigma) = \sqrt{\frac{\sum(Y-\overline{Y})^2}{n}} = \sqrt{\frac{78.90}{5}} = 3.97$

S.D. of GIBL $(\sigma) = \sqrt{\frac{\sum(Z-\overline{Z})^2}{n}} = \sqrt{\frac{26.18}{5}} = 2.29$

CV of EBL $= \frac{\text{SD of EBL}}{\text{Mean of EBL}} = \frac{2.01}{16.89} = 11.90\%$

CV of NIBL $= \frac{\text{SD of NIBL}}{\text{Mean of NIBL}} = \frac{5.74}{16.15} = 35.54\%$

CV of KBL $= \frac{\text{SD of KBL}}{\text{Mean of KBL}} = \frac{3.06}{11.07} = 27.64\%$

CV of MBL $= \frac{\text{SD of MBL}}{\text{Mean of MBL}} = \frac{3.97}{15.59} = 25.47\%$

CV of GIBL $= \frac{\text{SD of GIBL}}{\text{Mean of GIBL}} = \frac{2.29}{13.11} = 17.47\%$

Appendix 9

Cash Reserve Ratio of EBL, NIBL, KBL, MBL and GIBL (%)

Fiscal Year	EBL		NIBL		KBL		MBL		GIBL	
	Ratio (%) (V)	$(V-\overline{V})^2$	Ratio (%) (W)	$(W-\overline{W})^2$	Ratio (%) (X)	$(X-\overline{X})^2$	Ratio (%) (Y)	$(Y-\overline{Y})^2$	Ratio (%) (Z)	$(Z-\overline{Z})^2$
2008/09	14.28	0.01	10.30	0.61	7.13	5.02	12.33	4.97	27.00	9.73
2009/10	15.53	1.39	7.80	10.76	8.02	1.82	5.89	17.72	30.00	0.01
2010/11	9.55	23.04	7.70	11.42	5.74	13.18	5.89	17.72	27.23	8.35
2011/12	17.22	8.24	13.60	6.35	13.52	17.22	15.34	27.46	34.13	16.08
2012/13	15.19	0.71	16.00	24.21	12.43	9.36	11.07	0.94	32.25	4.54
Total	71.77	33.39	55.4	53.35	46.84	46.60	50.52	68.81	150.61	38.71

Mean of EBL $(\overline{V}) = \frac{\sum V}{n} = \frac{71.77}{5} = 14.35$

Mean of NIBL $(\overline{w}) = \frac{\sum W}{n} = \frac{55.40}{5} = 11.08$

Mean of KBL $(\overline{X}) = \frac{\sum X}{n} = \frac{46.84}{5} = 9.37$

Mean of MBL $(\overline{Y}) = \frac{\sum Y}{n} = \frac{50.52}{5} = 10.10$

Mean of GIBL $(\overline{Z}) = \frac{\sum Z}{n} = \frac{150.61}{5} = 30.12$

S.D. of EBL $(\sigma) = \sqrt{\frac{\sum(V-\overline{V})^2}{n}} = \sqrt{\frac{33.39}{5}} = 2.58$

S.D. of NIBL $(\sigma) = \sqrt{\frac{\sum(W-\overline{W})^2}{n}} = \sqrt{\frac{53.35}{5}} = 3.27$

S.D. of KBL $(\sigma) = \sqrt{\frac{\sum(X-\overline{X})^2}{n}} = \sqrt{\frac{46.40}{5}} = 3.05$

S.D. of MBL $(\sigma) = \sqrt{\frac{\sum(Y-\overline{Y})^2}{n}} = \sqrt{\frac{68.81}{5}} = 3.75$

S.D. of GIBL $(\sigma) = \sqrt{\frac{\sum(Z-\overline{Z})^2}{n}} = \sqrt{\frac{38.71}{5}} = 2.78$

CV of EBL $= \frac{\text{SD of EBL}}{\text{Mean of EBL}} = \frac{2.58}{14.35} = 17.98\%$

$$\text{CV of NIBL} = \frac{\text{SD of NIBL}}{\text{Mean of NIBL}} = \frac{3.27}{11.08} = 29.51\%$$

$$\text{CV of KBL} = \frac{\text{SD of KBL}}{\text{Mean of KBL}} = \frac{3.05}{9.37} = 4.15\%$$

$$\text{CV of MBL} = \frac{\text{SD of MBL}}{\text{Mean of MBL}} = \frac{3.71}{10.10} = 36.73\%$$

$$\text{CV of GIBL} = \frac{\text{SD of GIBL}}{\text{Mean of GIBL}} = \frac{2.78}{30.12} = 9.23\%$$

Appendix 10

Interest Income to Total Income Ratio (%)

(In millions)

Fiscal Year	EBL		Ratio (%) (V)	$(V-\overline{V})^2$	Fiscal Year	NIBL		Ratio (%) (W)	$(W-\overline{W})^2$
	Interest Income	Total Income				Interest Income	Total Income		
2008/09	2186.81	2565.30	85.25	13.84	2008/09	3267.94	3803.63	85.92	0.74
2009/10	3102.45	3500.77	88.62	0.12	2009/10	4353.52	5288.78	82.32	19.89
2010/11	4331.03	4728.82	91.59	6.86	2010/11	5803.44	6453.93	89.92	9.86
2011/12	4960.00	5483.07	90.46	2.22	2011/12	5982.64	6724.25	88.97	4.80
2012/13	4936.92	5552.04	88.92	0.01	2012/13	5878.27	6774.20	86.77	0.00
Total	19517.21	21830.00	444.84	23.05	Total	25285.81	29044.79	433.90	35.29
Fiscal Year	KBL		Ratio (%) (X)	$(X-\overline{X})^2$	Fiscal Year	MBL		Ratio (%) (Y)	$(Y-\overline{Y})^2$
	Interest Income	Total Income				Interest Income	Total income		
2008/09	1374.72	1514.86	90.75	0.64	2008/09	1041.47	1196.44	87.05	15.13
2009/10	1871.07	2050.94	91.23	0.10	2009/10	1688.62	1841.85	91.68	0.55
2010/11	2251.79	2441.85	92.22	0.45	2010/11	2067.75	2222.92	93.02	4.33
2011/12	2441.58	2644.95	92.31	0.58	2011/12	1926.13	2090.84	92.12	1.39
2012/13	2464.30	2701.36	91.22	0.11	2012/13	2429.63	2675.07	90.82	0.01
Total	10403.46	11353.96	457.73	1.88	Total	9153.6	10027.12	454.69	21.41

Fiscal Year	GIBL		Ratio (%) (Z)	$(Z-\overline{Z})^2$
	Interest Income	Total Income		
2008/09	683.94	794.00	86.14	6.92
2009/10	1464.98	1630.45	89.85	1.17
2010/11	1963.60	2147.02	91.46	7.24
2011/12	2226.13	2502.26	88.96	0.04
2012/13	3206.65	3667.49	87.43	1.80
Total	9545.30	10741.22	443.84	17.17

Mean of EBL $(\overline{V}) = \frac{\sum V}{n} = \frac{444.84}{5} = 88.97$

Mean of NIBL $(\overline{w}) = \frac{\sum W}{n} = \frac{433.90}{5} = 86.78$

Mean of KBL $(\overline{X}) = \frac{\sum X}{n} = \frac{457.73}{5} = 91.55$

Mean of MBL $(\overline{Y}) = \frac{\sum Y}{n} = \frac{443.84}{5} = 88.77$

Mean of GIBL $(\overline{Z}) = \frac{\sum Z}{n} = \frac{65.53}{5} = 13.11$

S.D. of EBL (σ) $= \sqrt{\frac{\sum(V-\overline{V})^2}{n}} = \sqrt{\frac{23.05}{5}} = 2.15$

S.D. of NIBL (σ) $= \sqrt{\frac{\sum(W-\overline{W})^2}{n}} = \sqrt{\frac{35.29}{5}} = 2.66$

S.D. of KBL (σ) $= \sqrt{\frac{\sum(X-\overline{X})^2}{n}} = \sqrt{\frac{1.88}{5}} = 0.61$

S.D. of MBL (σ) $= \sqrt{\frac{\sum(Y-\overline{Y})^2}{n}} = \sqrt{\frac{21.41}{5}} = 2.07$

S.D. of GIBL (σ) $= \sqrt{\frac{\sum(Z-\overline{Z})^2}{n}} = \sqrt{\frac{17.17}{5}} = 1.85$

CV of EBL = $\frac{\text{SD of EBL}}{\text{Mean of EBL}} = \frac{2.15}{88.97} = 2.42\%$

CV of NIBL = $\frac{\text{SD of NIBL}}{\text{Mean of NIBL}} = \frac{2.66}{86.78} = 3.06\%$

CV of KBL = $\frac{\text{SD of KBL}}{\text{Mean of KBL}} = \frac{0.61}{91.55} = 0.67\%$

CV of MBL = $\frac{\text{SD of MBL}}{\text{Mean of MBL}} = \frac{2.07}{90.94} = 2.28\%$

CV of GIBL = $\frac{\text{SD of GIBL}}{\text{Mean of GIBL}} = \frac{1.85}{88.77} = 2.08\%$

Appendix 11

Interest Expenses to Total Expenses Ratio (%)

(In millions)

Fiscal Year	EBL		Ratio (%) (V)	$(V-\overline{V})^2$	Fiscal Year	NIBL		Ratio (%) (W)	$(W-\overline{W})^2$
	Interest Expenses	Total Expenses				Interest Expenses	Total Expenses		
2008/09	1012.90	1491.8	67.90	30.36	2008/09	1686.97	2326.58	72.51	32.38
2009/10	1572.79	2151.67	73.10	0.10	2009/10	2553.85	3267.30	78.16	0.01
2010/11	2535.88	3212.12	78.95	30.69	2010/11	3620.34	4402.94	82.23	16.24
2011/12	2877.33	3692.68	77.92	20.34	2011/12	3814.41	4623.43	82.50	18.49
2012/13	2179.18	3150.48	69.17	17.98	2012/13	2774.79	3670.56	75.60	6.76
Total	10178.08	13698.75	367.04	99.47	Total	14450.36	18290.81	391.00	73.88
Fiscal Year	KBL		Ratio (%) (X)	$(X-\overline{X})^2$	Fiscal Year	MBL		Ratio (%) (Y)	$(Y-\overline{Y})^2$
	Interest Expenses	Total Expenses				Interest Expenses	Total Expenses		
2008/09	816.20	1100.98	74.13	12.89	2008/09	580.04	853.87	67.93	32.72
2009/10	1188.92	1549.81	76.71	1.02	2009/10	1144.81	1520.39	75.30	2.72
2010/11	1566.55	1947.84	80.42	7.29	2010/11	1544.73	1983.36	77.88	17.89
2011/12	1622.49	2028.82	79.97	5.06	2011/12	1500.77	1974.85	75.99	5.48
2012/13	1486.28	1920.56	77.39	0.11	2012/13	1485.59	2088.18	71.14	6.30
Total	6680.44	8548.01	388.62	26.37	Total	6255.94	8420.65	368.24	65.11

Fiscal Year	GIBL		Ratio (%) (Z)	$(Z-\overline{Z})^2$
	Interest Expenses	Total Expenses		
2008/09	459.78	659.00	69.77	49.42
2009/10	962.01	1345.37	71.51	27.98
2010/11	1288.05	1680.41	76.65	0.02
2011/12	1586.56	2048.85	77.44	0.41
2012/13	1826.78	2061.63	88.61	139.48
Total	6123.18	7795.26	383.98	217.31

Mean of EBL $(\overline{V}) = \frac{\sum V}{n} = \frac{367.04}{5} = 73.41$

Mean of NIBL $(\overline{w}) = \frac{\sum W}{n} = \frac{391.00}{5} = 78.20$

Mean of KBL $(\overline{X}) = \frac{\sum X}{n} = \frac{313.74}{5} = 77.72$

Mean of MBL $(\overline{Y}) = \frac{\sum Y}{n} = \frac{368.24}{5} = 73.65$

Mean of GIBL $(\overline{Z}) = \frac{\sum Z}{n} = \frac{383.98}{5} = 76.80$

S.D. of EBL (σ) $= \sqrt{\frac{\sum(V-\overline{V})^2}{n}} = \sqrt{\frac{99.47}{5}} = 4.46$

S.D. of NIBL (σ) $= \sqrt{\frac{\sum(W-\overline{W})^2}{n}} = \sqrt{\frac{73.88}{5}} = 3.84$

S.D. of KBL (σ) $= \sqrt{\frac{\sum(X-\overline{X})^2}{n}} = \sqrt{\frac{26.37}{5}} = 2.30$

S.D. of MBL (σ) $= \sqrt{\frac{\sum(Y-\overline{Y})^2}{n}} = \sqrt{\frac{65.11}{5}} = 3.61$

S.D. of GIBL (σ) $= \sqrt{\frac{\sum(Z-\overline{Z})^2}{n}} = \sqrt{\frac{217.31}{5}} = 6.59$

CV of EBL $= \frac{\text{SD of EBL}}{\text{Mean of EBL}} = \frac{4.46}{73.41} = 6.08\%$

CV of NIBL $= \frac{\text{SD of NIBL}}{\text{Mean of NIBL}} = \frac{3.84}{78.20} = 4.91\%$

CV of KBL $= \frac{\text{SD of KBL}}{\text{Mean of KBL}} = \frac{2.30}{77.72} = 2.96\%$

CV of MBL $= \frac{\text{SD of MBL}}{\text{Mean of MBL}} = \frac{3.61}{73.65} = 4.90\%$

CV of GIBL $= \frac{\text{SD of GIBL}}{\text{Mean of GIBL}} = \frac{6.59}{76.80} = 8.58\%$

Appendix 12

Gap Analysis of IRSA and IRSL of EBL, NIBL, KBL, MBL and GIBL

(In millions)

Fiscal Year	EBL			Fiscal Year	NIBL		
	IRSA	IRSL	Gap (V)		IRSA	IRSL	Gap (W)
2008/09	2186.81	1012.90	1173.91	2008/09	3267.94	1686.97	1580.97
2009/10	3102.45	1572.79	1529.66	2009/10	4653.52	2553.87	2099.65
2010/11	4331.03	2535.88	1795.15	2010/11	5803.44	3620.34	2183.1
2011/12	4956.00	2873.33	2082.67	2011/12	5982.64	3814.41	2168.23
2012/13	4936.92	2179.18	2757.74	2012/13	5878.27	2774.79	3103.48
Total	19513.21	10174.08	9339.13	Total	25585.81	14450.38	11135.43
Fiscal Year	KBL			Fiscal Year	MBL		
	IRSA	IRSL	Gap (X)		IRSA	IRSL	GAP (Y)
2008/09	1374.72	816.20	558.52	2008/09	1041.47	580.04	461.43
2009/10	1871.67	1188.92	682.75	2009/10	1688.62	1144.81	543.81
2010/11	2252.79	1566.55	686.24	2010/11	2067.75	1544.73	523.02
2011/12	2441.58	1622.49	819.09	2011/12	1926.13	1500.77	425.36
2012/13	2464.31	1486.28	978.03	2012/13	2429.63	1485.59	944.04
Total	10405.07	6680.44	3724.63	Total	9153.6	6255.94	2897.66
Fiscal Year	GIBL						
	IRSA	IRSL	GAP (Z)				
2008/09	683.93	459.78	224.15				
2009/10	1464.98	962.01	502.97				
2010/11	1963.63	1288.05	675.58				
2011/12	2226.13	1586.56	639.57				
2012/13	3206.65	1826.78	1379.87				
Total	9545.32	6123.18	3422.14				

Gap = IRSA – IRSL

Mean of EBL $(\overline{V}) = \frac{\sum V}{n} = \frac{9339.13}{5} = 1867.83$

Mean of NIBL $(\overline{w}) = \frac{\sum W}{n} = \frac{11135.43}{5} = 2227.09$

Mean of KBL $(\overline{X}) = \frac{\sum X}{n} = \frac{3724.63}{5} = 774.93$

Mean of MBL $(\overline{Y}) = \frac{\sum Y}{n} = \frac{2897.66}{5} = 579.53$

Mean of GIBL $(\overline{Z}) = \frac{\sum Z}{n} = \frac{3422.14}{5} = 684.43$

Appendix 13

Net Interest Margin of EBL, NIBL, KBL, MBL and GIBL

(In millions)

Fiscal Year	EBL			Fiscal Year	NIBL		
	IRSA	IRSL	NIM		IRSA	IRSL	NIM
2008/09	2186.81	1012.90	11.74	2008/09	3267.94	1686.97	15.81
2009/10	3102.45	1572.79	15.30	2009/10	4653.52	2553.87	21.00
2010/11	4331.03	2535.88	17.95	2010/11	5803.44	3620.34	21.83
2011/12	4956.00	2873.33	20.83	2011/12	5982.64	3814.41	21.68
2012/13	4936.92	2179.18	27.58	2012/13	5878.27	2774.79	31.03
Total	19513.21	10174.08	93.40	Total	25585.81	14450.38	111.35
Fiscal Year	KBL			Fiscal Year	MBL		
	IRSA	IRSL	NIM		IRSA	IRSL	NIM
2008/09	1374.72	816.20	5.59	2008/09	1041.47	580.04	4.61
2009/10	1871.67	1188.92	6.83	2009/10	1688.62	1144.81	5.44
2010/11	2252.79	1566.55	6.86	2010/11	2067.75	1544.73	5.23
2011/12	2441.58	1622.49	8.19	2011/12	1926.13	1500.77	4.25
2012/13	2464.31	1486.28	9.78	2012/13	2429.63	1485.59	9.44
Total	10405.07	6680.44	37.25	Total	9153.6	6255.94	28.97
Fiscal Year	GIBL						
	IRSA	IRSL	NIM				
2008/09	683.93	459.78	2.24				
2009/10	1464.98	962.01	5.03				
2010/11	1963.63	1288.05	6.76				
2011/12	2226.13	1586.56	6.40				
2012/13	3206.65	1826.78	13.80				
Total	9545.32	6123.18	34.23				

$\Delta NIM = (\sum IRSA - \Delta Ra) - (\sum IRSL \times \Delta Rl)$

Where,

IRSA = Interest Rate Sensitive Assets.

ΔRa = Changes on interest rate received on Rate Sensitive Assets.

IRSL = Interest Rate Sensitive Liabilities.

ΔRl = Change on interest rate paid on Rate Sensitive Liabilities.

Mean of EBL $(\overline{V}) = \frac{\sum V}{n} = \frac{93.40}{5} = 18.68$

Mean of NIBL $(\overline{w}) = \frac{\sum W}{n} = \frac{111.35}{5} = 22.27$

Mean of KBL $(\overline{X}) = \frac{\sum X}{n} = \frac{37.25}{5} = 7.45$

Mean of MBL $(\overline{Y}) = \frac{\sum Y}{n} = \frac{28.97}{5} = 5.79$

Mean of GIBL $(\overline{Z}) = \frac{\sum Z}{n} = \frac{34.23}{5} = 6.85$