DETERMINANTS OF NET INTEREST MARGIN AND ITS IMPACT ON NEPALESE COMMERCIAL BANKS PERFORMANCE

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RECOMMENDATION

This is to certify that the thesis

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Entitled:

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has been prepared as approved by this Department in the prescribed format of the Faculty of Management. This thesis is forwarded for examination.

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And found the thesis to be the original work of the student and written according to the prescribed format. We recommend the thesis to be accepted as partial fulfillment of the requirement for the degree of

Master of Business Studies (MBS)

Viva-Voce Committee

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DECLARATION

I hereby declare that the work reported in this thesis entitled **"Determinants of Net Interest Margin and its Impact on Nepalese Commercial Banks Performance''** submitted to Office of the Dean, Faculty of Management, Tribhuvan University, is my original work done in the form of partial fulfillment of the requirement for the degree of Master of Business Studies (M.B.S) under the supervision of**. Prof. Dr. Keshav Raj Joshi** of Shanker Dev Campus, T.U.

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Roja Shrestha

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ABBREVIATIONS

ABL	:	Agricultural Development Bank Limited
ASST	:	Assets
BNBB	:	Nepal Bangladesh Bank Limited
BOK	:	Bank of Kathmandu Limited
CAR	:	Capital Adequacy Ratio
CBL	:	Citizen Bank Limited
CD	:	Credit to Deposit Ratio
COF	:	Cost of Fund
DEP	:	Deposit
DEPT	:	Deposit
DISCOUNT	:	Bank Discount Rate
EBL	:	Everest Bank Limited
ENIM	:	Net Interest Margin
EXP	:	Expenses
GBL	:	Global IME Bank Limited
GDP	:	Gross Domestic Product
GRP	:	Graduate Research Project
HBL	:	Himalayan Bank Limited
INC	:	Income
INF	:	Inflation
INTERBANK	:	Interbank Rate
KBL	:	Kumari Bank Limited
LaBL	:	Laxmi Bank Limited
LAGGED ENIM	:	Lagged Net Interest Margin
LBL	:	Lumbini Bank Limited
LOAN	:	Loan and Advances
LR	:	Liquidity Ratio
LTD	:	Loan to Total Deposit
MBA	:	Master of Business Administration
MBL	:	Machhapurchhre Bank Limited
NAIBL	:	Nabil Bank Limited

NBL	:	Nepal Bank Limited
NCC	:	Nepal Industrial and Commercial Bank
NIBL	:	Nepal Investment Bank Limited
NIM	:	Net Interest Margin
NMB	:	National Microfinance Bank
NPA	:	Non- Performing Assets
NRB	:	Nepal Rastra Bank
NRG	:	Ratio of noninterest revenue to gross revenue
PBL	:	Prime Bank Limited
RFR	:	Risk Free Rate
SBI	:	Stated Bank of India Limited
SBL	:	Sunrise Bank Limited
SCBL	:	Standard Chartered Bank Limited
SIZE	:	Total Size of Banks
SPSS	:	Statistical Package of Social Science
TU	:	Tribhuvan University

CHAPTER-I
INTRODUCTION

1.1 General Background

Banks achieve higher profits with increasing the market area served and wide variety of products and services. Banks earn profit in the form of interest income. Interest rate is the price paid to the borrowed capital. Interest is the price that one pays for utilizing a certain amount of money for a specific period of time. It is the rent paid for using money provided by a lender. There are three components in the interest rates – risk free rate, risk premium and adjustment for inflationary or deflationary situations. Interest rate is sometimes referred to as the financial oil of the economy. Interest rate in the free market economy is determined by the free interplay of the demand and supply forces. Although interest rate is influenced by various factors, the main factors, which determine the interest rate, are demand for and supply of loanable fund.

Highnet interest margins are associated with a low degree of efficiency and non-competitive market conditions. On the other hand, high margins may be a reflection of inadequate regulatory banking environment and a high degree of information irregularity. In such circumstances, high margins would be indicative of high risk premium. If, in this type of environment, competition increases, it might induce gambling behavior by banks; causing financial instability (Angabazo, L., 1997). Highly concentrated banking systems are less likely to suffer from crises. Therefore, in less developed economies like Nepal, relatively high bank margins may be necessary, at least temporarily, to sustain bank operation and avoid financial instability (Barajas et. al, 1999).

Interest rate in the free market economy is determined by the free interplay of the demand and supply forces. Although interest rate is influenced by various factors, the main factors which determine the interest rate are demand for and supply of loan able fund. If supply increases and demand remains constant, interest rates in the market decrease. Similarly if demand for loan able fund increases and supply remain constant, interest rates in the market increase. But Nepalese economy has not developed up to that level so that free market can determine the interest rates. Nepal Rastra Bank, as a guardian, fixes the terms and conditions

regarding the interest and other activities of financial institutions in Nepal. But in recent years, banks are permitted to fix the interest rate they charge and offer on loan and deposit.

In banking research, the determinants of net interest margins (bank spreads) are empirically well explored. Results strongly suggest that net interest margin determinants vary across countries and among regions of the world. For instance, studies on banking systems of developed countries show that net interest margins have significant positive relationships with a bank's level of capital, loan loss provisions, reserve requirements, implicit interest payments, and interest rate volatility *(Brimmer et al, 1999).* These results are considered benchmarks because banks in developed countries operate in mature financial systems. On the other hand, a study of Latin American bank spreads rarely confined and even contradicted some of the benchmark results *(Brock and Suarez; 2000).* For example, loan losses and bank capital were shown to have significant negative relationships with bank spreads in some Latin American countries. These anomalous findings were partly explained by distortions caused by inadequate regulatory systems that allow weak banks to continue operating, unreliable financial reporting practices that result in misstated bank capital, and extensive government guarantees that encourage excessive risk taking among banks.

Higher net interest margins usually imply lower banking sector efficiency, markedly higher costs due to inefficient control of operating expenses, and have a negative impact on financial developments, resulting with lower investments and slower economic activity. They might also reflect a high risk premier due to in appropriate regulation of the banking sector or a significant information asymmetry. (Chou. C, 1999) On the other hand, lower net interest margin us usually mark deeper and more developed financial markets, encourage investment activities and support economic growth. However, as emphasized by Dickinson (2002), the benefits of a lower cost of financial intermediation will only be effectuated if banks price risks in a prudent manner.

Banks charge and pay many types of interest rates and have a variety of different categories of assets and liabilities and there is no unique way of measuring the difference between what they charge for lending and the price of their funding sources. One of the best and most widely used indicator of the cost and efficiency of financial intermediation is a bank's net interest margin. It is calculated as the ratio of net interest income and total bank earning

assets, where net interest income is equal to the difference between interest earned and interest paid. Regardless of its common use, it should be noted that this indicator has some potential weaknesses, as it does not take into account other sources of income and costs for the bank and is not good representative of a bank's marginal costs and revenues *(Brock and Suarez; 2000).*

Interest rate margin is among the most important factors that gauge the efficiency of financial institutions, and wide interest margins are seen to have negative implications for financial intermediation and financial development. There are concerns mainly in the developing economies about the structure and the level and of interest rates (which remain high) and their implications for the efficiency of the banking sector, where high intermediation margins may imply inefficiency of the financial sector and could act as a disincentive to investment and may also slow the economic growth. Thus, interest margins are an important policy factor as it shows how efficiently banks perform their intermediary roles of collecting savings and allocating loans

In Nepalese context, bank interest rates, both on deposits and loan, are determined in two ways: Legislative determined, and Market determined. Before the economic liberalization, Nepal Rastra Bank used to determine the interest rate for all commercial bank. But after the liberalization, it is deregulated. It is now determined by the commercial banks through market forces. At present, interest rate on saving account ranges from as low as 2 percent to as high as 12 percent. Similarly, interest rate on loan and advances ranges from 7 percent to 18 percent. (NRB economic Bulletin 2012/13). This shows varying level of spread among banks. There are many determinants on such a wide range of difference in interest rates offered by various commercial banks. This study is devoted to exploring the major determinants of bank's net interest margin and its impact on the bank's profitability.

1.2 Statement of the Problem

The interest rate plays important role for the banking development. The favorable investment climate makes appropriate interest rate. The Interest is a price of money. The interest rate is different in depositor and lender. That differences margin is the gain of bank. The interest rate charged and offered of financial institution and commercial banks was regulated by central bank until before few years, But now these institution are free to fix their interest rate. As the economy has taken a reverse turn making the financial sector hitting the record low

return it has not left the banking sector either. Though banking sector has always been the promising sector giving high return and value to its promoters and shareholders, its down looking financial scenario has created very less investment alternatives and comparatively lower return. The deteriorating situation of peace and security of the country has rendered the economy further sluggish, whereby the pace of lending to private sector is yet to accelerate. The establishments of new industries and organizations have come to halt giving banks fewer opportunities to mobilize its resources. This has caused interest rates dipping the lowest point, which was 2 to 3 times higher earlier.

A substantial body of literature has explored various determinants of interest margin including (1) bank-specific factors, (3) macroeconomic variables, and (4) financial regulations. The industrial organization literature predicts that an oligopolistic market structure may result in higher spreads.Macro-economic variables are the most relevant factors to explain the behavior of bank interest spread *(Drakos; 2003).*

However, Saunders (1981) argued that a better measure of competition is contestability, peroxide by Emmanuelle, (2003) measure the bank behavioral response. Other on other hand, the one of the pioneer studies, the authors also make the point that of imperfections and regulatory restrictions have an impact on the spread. Though there are these findings in the context of developed capital market, no such studies exists in context of Nepal.

In one of the study the correlation between interest rate on deposit and risk-free rate (RBF) of all sample organizations were observed to be positive. Wong, K. P. (1997),it ranged from 0.5522 to 0.9242. Theoretically, there should be positive correlation between these two variables. From this study, we find that interest rate on deposit of sample organizations are positively affected by risk-free rate. The relationship between interest rate on lending and inflation rate (RDE) of sample organizations are found to be negative.
In one of the studies the correlation analysis between the deposit rate and deposit amount, lending rate and lending amount show the negative correlation.

The main determinants factors which affect the bank interest rate are risk return maturity period, demand and supply, inflation and risk free rate. Environmental factor analysis show that market competition is important factor in interest rate and also political instability and violence affect the interest rate which is bad for economic sector. Interest rate is importance

factor in commercial bank. It plays prime role for banking competition. Interest rate affects customers service cost, profit, stock price and price of goods etc. Commercial banks apply the different rate for lending in different sector and most of the commercial banks are used to the simple regular method in lending rate. The results also show that bank-specific factors such as credit risk, liquidity risk, and bank equity are important determinants of interest margins. Finally, interest margins are sensitive to inflation, but not to economic growth or public or foreign ownership. There are regional differences within SSA regarding the level of interest margins even after controlling for other factors. (Ross 2013).

Macroeconomic conditions are also found to play an important role in determining interest margins. Saunders and Schumacher (2000) showed that interest rate volatility increases interest margins. Demirgüç-Kunt and Huizinga (1999) found that macroeconomic conditions, implicit and explicit bank taxation, and legal and institutional variables are important determinants of interest margins. Some studies stress the importance of credit and macroeconomic risk premia for the determination of interest *margins (Angbazo; 1997).*

Thus, attempt has been made to study the functioning of Nepalese commercial banks especially in the area of bank's profitability. Studies carried out in international context, found different factors that affect the bank's net interest margin. Hence, this study attempts to find whether those factors are relevant in the context of Nepalese commercial banks. This study basically deals with the following research questions:

- What relationship exists between bank's net interest margin and its profitability?
- What is the relationship between capital adequacy ratio, credit to deposit ratio, inflation and net interest margin?
- How is Non-interest revenue to gross revenue, expenses, income, assets, customer deposit related to net interest margin?
- What is the main factor of interest rate in attracting customers- depositors and borrowers of banks?
- How are cost of fund, non-performing assets, liquidity of the bank related to net interest margin?
- What is the relationship between bank size, customer deposit, and expanded net interest margin?

- What is the relationship between loan and advances, discount rate and expanded net interest margin?
- How are gross domestic product, inflation, and lagged net interest margin related to expanded net interest margin?

1.3 Objectives of the Study

The major objective of this study is to analyze the determinants of bank's net interest margin. Other specific objectives of this study are as follows:

- To examine the major qualitative factors determining net interest margin.
- To access the impact of net interest margin on the profitability of banks.
- To examine the relationship between capital adequacy ratios, credit to deposit ratio, inflation and net interest margin.
- To access the relationship between non-performing assets, cost of fund and net interest margin.
- To examine the relationship between the expanded net interest margin and liquidity of the banks.
- To analyze the relation between non-interest revenue to gross revenue, expenses, income, assets, customer deposit related to expanded net interest margin.

1.4 Significance of the Study

Banks are the financial intermediaries that pool scattered money through its various deposit schemes and invest it in various sectors of the economy. In this way, it channeling fund from surplus sectors to deficit sector of the economy. The role of financial institutions in the development of economy is crucial. There have been considerable studies on most of the area of banking. However, the area of interest margin is relatively under researched. Being net margin a dominant factor in determining the profitability, it has to be studied properly.The study of bank interest margin helps to explore its determinants and the effects of spread on the profitability.

Further from this study, the shareholder would get information to make decision while making investment on shares of various banks. This study is expected to help the bankers who will get information to improve the net interest margin in the Nepalese commercial

banks. Thus, this paper has made an attempt in the analysis of dynamics and determinants of net interest margin in Nepalese commercial banks, where few researches are carried out. With the help of this study, further work can be carried out to generalize the concept of banks net interest margin in the developing countries like Nepal.

1.5 Limitation of study

This study is simply a partial study for the fulfillment of M.B.S. degree, which had to finish within limited period. Hence this study is not far from several limitation of its own kind, which weakens the heart of study. It has certain limitation.

- This study is focused on the Nepalese commercial banks only. Hence, the findings may not be applicable to other banks (development banks, finance companies and other companies of Nepal.)
- The study covers 5 year fiscal years which will be tabulated and processed for drawing conclusion.

1.6 Operational Definition

Net Interest Margin

It is a measure of the difference between the interest income generated by banks or other financial institutions and the amount of interest paid out to their lenders (for example, deposits), relative to the amount of their (interest-earning) assets.

Capital Adequacy Ratio (CAR)

CAR is regarded as equity-to- assets ratio. The equity-to-assets ratio is one of many financial ratios used to determine the financial health and long-term profitability of a corporation. It is often used by investors to determine whether the corporation's shares are a safe investment. Though important, the equity-to-assets ratio should be used only with other financial ratios to determine a corporation's overall financial health.

Banks Assets

Bank assets refer to the physical and financial "property" of a bank. Physical property means land and buildings, furniture, equipment, etc. But the largest part of the bank's assets is financial assets which includes legal claims on the property or the wealth of others. The two most important asset categories are loans (which generate interest revenue) and reserves (which keep deposits safe). It is expected that those banks whose assets size is big have the higher capacity of lending. Similar result was found in the paper ofDjiogap& Ngoms (2012). For the establishment of any commercial banks in Nepal the bank should hold the capital of 200 million. For the establishment of any branch sum of five million rupees per branch in addition to the paid up capital is required to fulfill and one branch outside Kathmandu Valley and where a sum of 20 million rupees per branch in addition to the paid up capital should be fulfilled, one branch in the Kathmandu Valley may be opened.

Banks Liabilities

What a bank owes, including most notably customer deposits are the banks liabilities. Bank liabilities are typically listed on the right-hand side of a bank's balance sheet. Liabilities can be of various categories and the most important liability category of most banks is checkable deposits. The largest liability category includes other types of deposits like: savings deposits, certificates of deposit, etc. If the liability of the bank is higher the bank's lending capacity will be lower. In the paper of Djiogap & Ngoms (2012) it was found that those banks with more long-term liabilities are marginally more willing to lend.

Ratio of Non-Interest Revenue to Gross Revenue

Bank and creditor income derived primarily from fees. Examples of non-interest income include deposit and transaction fees, insufficient funds (NSF) fees, annual fees, monthly account service charges; inactivity fees, check and deposit slip fees, etc. Institutions charge

fees that provide non-interest income as a way of generating revenue and ensuring liquidity in the event of increased default rates.

Ratio of Loans to Customer Deposits

A commonly used statistic for assessing a bank's liquidity by dividing the banks total loans by its total deposits. This number, also known as the LTD ratio, is expressed as a percentage. If the ratio is too high, it means that banks might not have enough liquidity to cover any unforeseen fund requirements; if the ratio is too low, banks may not be earning as much as they could be. Net loans include: loans to banks or credit institutions; customer net loans; HP, lease or other loans; mortgages; loans to group companies and associates and trust account lending. Total deposits cover customer deposits, central bank deposits, banks and other credit institution deposits and other deposits.

Cost of Fund

The interest rate paid by financial institutions for the funds that they deploy in their business. The cost of funds is one of the most important input costs for a financial institution, since a lower cost will generate better returns when the funds are deployed in the form of short-term and long-term loans to borrowers. The spread between the cost of funds and the interest rate charged to borrowers represents one of the main sources of profit for most financial institutions.

Non- Performing Assets

A debt obligation where the borrower has not paid any previously agreed upon interest and principal repayments to the designated lender for an extended period of time. The nonperforming asset is therefore not yielding any income to the lender in the form of principal and interest payments. A loan or lease is not meeting its stated principal and interest payments. Banks usually classify as nonperforming assets any commercial loans which are more than 90 days overdue and any consumer loans which are more than 180 days overdue.

Liquidity Position of Bank

Bank liquidity refers to a bank's ability to meet its obligations at a reasonable cost when they come due. The point at which a bank becomes illiquid is hard to determine. At that point, the bank may find it difficult, if not impossible, to rise funds quickly at any cost.

Inflation

Inflation is a rise in the general level of prices of goods and services in an economy over a period of time. When the general price level rises, each unit of currency buys fewer goods and services. Consequently, inflation reflects a reduction in the purchasing power per unit of money – a loss of real value in the medium of exchange and unit of account within the economy. A chief measure of price inflation is the inflation rate, the annualized percentage change in a general price index (normally the consumer price index) over time.

Expanded Net Interest Margin

The expanded net interest margin represents the interest margin generated by banks on all their activities. This indicator is calculated as the ratio of net operating profit to total assets. This indicator includes, in addition to the other income and miscellaneous expenses, extraordinary income and expenses such as capital gain and loss on tangible and intangible assets.

Interbank Rate

The rate of interest charged on short-term loans made between banks. Banks borrow and lend money in the interbank market in order to manage liquidity and meet the requirements placed on them. The interest rate charged depends on the availability of money in the market, on prevailing rates and on the specific terms of the contract, such as term length.

Gross Domestic product

The monetary value of all the finished goods and services produced within a country's borders in a specific time period is called Gross domestic product. GDP is usually calculated on an annual basis. The gross domestic product (GDP) is one the primary indicators used to gauge the health of a country's economy.

1.6Organization of the Study

The whole study area will be divided into five different parts:

Chapter –I: Introduction

n1 this chapter contains the introduction part of the study, focus of the study, statement of the problem, objective of the study, significance of the study, limitation of the study and organization of the study.

Chapter –II: Review of Literature

Second is review of literature, this chapter includes review of literature about the interest rate of different commercial banks. For this purpose various books and journals as well as periodical annual have been adequately utilized.

Chapter –III: Research Methodology

Third is research methodology, this chapter includes research methodology, research design, nature and source of data, selection of sample banks and data analysis techniques and tools.

Chapter –IV: Presentation and Analysis of Data

Fourth is presentation and analysis of data under this chapter the analysis and interpretation of data has been presented.

Chapter –V: Summary, Conclusion and Recommendations

Last is summary, conclusion and recommendations, in this chapter, the summary of the entire study has been comprised. This chapter describes the summary and major findings of the thesis. This chapter also includes the conclusion of the study and possible recommendations.

CHAPTER-II
REVIEW OF LITERATURE AND CONCEPTUAL FRAMEWORK

It is an integral and mandatory process in research works that consist of reviewing research studies and other relevant proposition in the related area of the study so that all kind of information, and conclusion could be known and further study can be conducted. This chapter deals with the theoretical framework and empirical evidences on determinants of bank interest margin. The purpose of reviewing the literature is to develop some expertise in one's area, to see what new contributions can be made, and to receive some ideas for developing research design. In the first section, the conceptual framework is presented. The review of literature is the process of locating, reading and evaluating the research literature in area of the students interest (Wolf & Pant, 2003).The related empirical studies are reviewed and the concluding remark is presented at the end.

2.1 Conceptual Framework

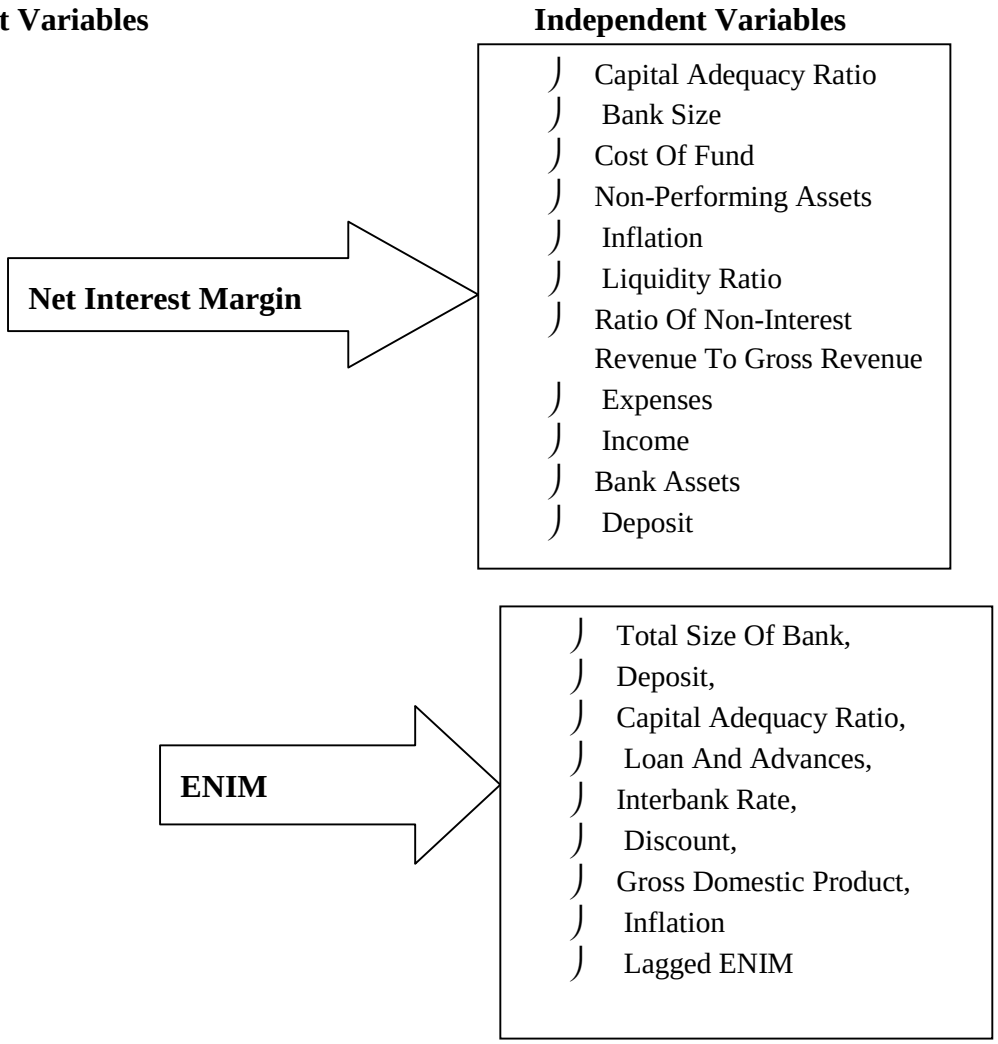
Conceptually, interest is both a payment and receipt for the use of money. Therefore, it can be considered from the above two viewpoints. If the interest is paid, it can be considered as a cost and if it is received it can be considered as a return. Since money can earn a return over a period of time, interest rates are often considered as an expression of the time value of money. Usually interest rates are expressed in percentages. Interest factor is the main factor in fund-based activities of commercial banks. In common parlance, interest is payment made by a borrower to the lender for the money borrowed and it is expressed a rate percent per year. Bank's success depends on its ability to generate larger net interest margin. The net interest margin, which is the difference between interest income and interest expenses, mirrors the profitability of banks especially when the banks emphasize on traditional deposit and lending businesses. The size of such margin serves as an indicator of efficiency in the financial sector because it reflects the costs of intermediation that the bank incurs. Interest margins are thus one of the key determinants of bank profit. The interest margin, in turn, depends on the pure spread (i.e. difference between lending and borrowing rates). The real interest rates are one of the significant positive contributors to profits of banks. The bank's net interest margins have become increasingly sensitive to interest rate

volatility as a result of the increasing reliance of banks on interest sensitive short-term liabilities as well as greater emphasis on loans in bank's asset portfolios.

The interest margin of banks is affected mainly by two factors: lending rate and borrowing rate. The net difference between these two rates is called Net Interest Margin (NIM hereafter). NIM is the measure of the difference between interest income generated by banks by their lending and interest paid on borrowings (for example, deposits). It is expressed as net interest income (interest earned minus interest on borrowing funds) as a percentage of earning assets (any asset, such as a loan, that generates interest income). NIM is similar to net interest spread which expresses the nominal average difference between borrowing and lending rates, without compensating for the fact that the amount of earning assets and borrowed funds may be different. Net interest spread is generally higher than NIM, as banks may need to keep a certain amount of assets in non-interest bearing assets (such as cash balance held at branches for customers or liquid reserves as determined by banking regulators).

The NIM of banks basically depends on the rate charged by the bank on its loan and paid to the depositor. Other things remaining the same, higher the interest rate charged on loan and lower the interest rate paid on deposits, the greater the amount of NIM. As such, banks might try to lower the deposit rate and increase the loan rate. However, in the competitive market, such strategy would be quite harmful to the bank. In the worst case, bank might lose its depositors and it will not be able to mobilize its deposit. Hence, banks have to consider a number of factors in determining such rates.

Figure 2.1 Conceptual Framework



The above figure 2.1 shows the conceptual framework for the study in which Net interest margin (NIM) and the Expanded net interest margin (ENIM) are taken as the dependent variables whereas other are the independent variables.

2.2 Review of Related Studies

The review of major literature review is illustrated in three different sections which are explained in the following tables.

2.2.1 Review of Major Empirical Works During 1990s

Table 2.1

Summary of major studies during 1990s

Study	Major Findings
Cottarelli & Kourelis (1994)	Of interest are the results of the impact multiplier is higher for countries where inflation is higher and where banking systems are not dominated by public banks.
Angbazo (1997)	The net interest margin is a function of default risk, interest rate risk, an interaction between default and interest risk, liquidity risk, leverage, implicit interest payments, opportunity cost of non-interest bearing reserves, management efficiency, and a dummy for states with branch restrictions. The default risk, opportunity cost of non-interest bearing reserves, leverage, and management efficiency are all statistically significant and positively related to bank interest margin.
Wong (1997)	The bank interest margin is positively related to the bank's market power, to the operating costs, the degree of credit risk, and to the degree of interest rate risk. An increase in bank's equity capital has a negative effect on the spread when the bank faces little interest rate risk. The effect of rising interbank market rate on the spread is ambiguous and depends on the net position of the bank in the interbank market.
Hakan Berument (1999)	The key determinant of interest margin is interest rates which increase with expected inflation. The impact of loan loss provisioning has been to reduce bank interest margin rather than to increase it once the tendency of banks to under provision in the case of government loans is accounted for.
Demirguc-Kunt& Huizinga (1999)	The major determinants of NIM include several variables accounting for bank characteristics, macroeconomic conditions, explicit and implicit bank taxation, deposit insurance regulation, overall financial structure, and underlying legal and institutional indicators. Bank interest margin is positively influenced by the ratio of equity to lagged total assets, by the ratio of loans to total assets, by a foreign ownership dummy, by bank size, by the ratio of overhead costs to total assets, by inflation rate, and by the short-term interest rate. The ratio of non-interest earning assets to total assets is negatively related to the bank interest margin.
Barajas et al. (1999)	The major determinants of NIM include several variables accounting for bank characteristics, macroeconomic conditions, explicit and implicit bank taxation, deposit insurance regulation, overall financial structure, and underlying legal and institutional indicators. Bank interest margin is positively influenced by the ratio of equity to lagged total assets, by the ratio of loans to total assets, by a foreign ownership dummy, by bank size, by the ratio of overhead costs to total assets, by inflation rate, and by the short-term interest rate. The ratio of non-interest earning assets to total assets is negatively related to the bank interest margin.

Ho and Saunders (1981), measure bank interest margins for banks that act as risk-averse dealers when providing immediacy of transactions services to bank customers. The banks receive deposit funds at random intervals and, subsequently, utilize these funds to satisfy stochastically received loan request. The pure spread between loan and deposit rates is compensation for bank inventory risk rising from uncertainty about the (random) arrival of loan and deposit transaction requests. Ho and Saunders computed interest margins for financial intermediaries that offer homogeneous loans and deposits, (What they refer to here as single product intermediaries). In their model, the size of the spread was found to be a function of four variables: the degree of managerial risk aversion, average transactions size, competition within the bank's market, and the variability of interest rates. The model implied that liability and asset structures had to be analyzed together since they were directly interrelated thought transactions uncertainty.

Ho and Saunders advocate a two-step procedure to explain the determinants of bank interest spreads in panel data samples. In the first-step, a regression for the bank interest margin is run against a set of bank-specific variables such as non-performing loans, operating costs, the capital asset ratio, etc. Plus time dummies. The time dummy coefficients of such regressions are interpreted as being a measure of the "Pure" component of a country's bank spread. In the second-step, the constant terms are regressed against variables reflecting macroeconomic factors. For this second step, the inclusion of a constant term aims at capturing the influence of factors such as market structure or risk-aversion coefficient, which reflect neither bank-specific observed characteristic nor macroeconomic elements.

Allen (1988), in extension of Ho and Saunders model, demonstrates the proposition that pure interest spreads may be reduced when cross-elasticity of demand between bank products are considered. The resulting diversification benefits emanate from the interdependence of demands across bank services and products – a type of portfolio effect. Control over relative rate spreads across product types, and the resulting ability to manipulate the arrival of transactions demands, enables the financial intermediary to maintain a more active role in managing its inventory risk exposure.

Cottarelli and Kourelis (1994), applied a two-step approach to investigate the reasons for the stickiness of bank lending rates for a sample of countries. In the first step, the impact multipliers of changes in the market interest rate are calculated for each country in the

sample. IN the second step, such impact multipliers are regressed against a large set of explanatory variables controlling for cross-country differences in the competition within the banking system, in the extent of money market development and openness of the economy, in the banking system ownership, and in the degree of development of the financial system. Of interest are the results that the impact multiplier is higher for countries where inflation is higher and where the banking systems are not dominated by public banks.

Angbazo (1997) studied the determinants of bank net interest margins for a sample of US banks using annual data for 1989-1993. The empirical model for the net interest margin is postulated to be a function of the following variables: default risk, interest rate risk, an interaction between default and interest risk, liquidity risk, leverage, implicit interest payments, opportunity cost of non-interest bearing reserves, management efficiency, and a dummy for states with branch restriction. The results for the pooled sample suggest that the proxies for default risk (ratio of net loan charge-offs to total loans), the opportunity cost of non-interest bearing reserves, leverage (ratio of core capital to total assets), and management efficiency (ratio of earning assets to total assets) are all statistically significant and positively related to bank interest margins. The ratio of liquid assets to total liabilities, a proxy for low liquidity risk, is inversely related to the bank interest margin. The other variables were not significant in statistical terms. Some recent contributions have made use of more structural models based on profit maximization assumptions for banks operating in imperfect markets to develop empirical equations to understand the behavior of bank interest rates.

Wong (1997) explored the determinants of optimal bank interest margins based on a simple NIM-theoretical model under multiple sources of uncertainty and risk aversion. The model demonstrates how cost, regulation, credit risk and interest rate risk conditions jointly determine the optimal bank interest margin decision. He found that the bank interest margin is positively related to the bank's market power, to the operating costs, to the degree of credit risk, and to the degree of interest rate risk. An increase in the bank's equity capital has a negative effect on the spread when the bank faces little interest rate risk. The effect of risking interbank market rate on the spread is ambiguous and depends on the net position of the bank in the interbank market.

Berument (1999) analyzed the Turkish Treasury interest rate behavior within the Fisher hypothesis framework for the period from 1988 to 1998. Consistent with the hypothesis,

empirical evidence indicates that the interest rates increase with expected inflation. After the risk is controlled, the paper suggests that interest rates increase less than expected inflation; that is, real interest rates decrease with higher inflation. Moreover, inflation risk increase interest rates and decreases the maturity of government debt. This is evidence that lenders prefer shorter maturity in order to hedge themselves in a setting where the debt burden on the budget is on the rise. This may also indicate that both the interest rates and maturity of the debt are used as policy tools by the Treasury rather than as state variables.

Kunt and Huizinga (1999) investigate the determinants of bank interest margins using bank-level data for 80 countries in the years 1988-1995. The set of regressions include several variables accounting for bank characteristics, macroeconomic conditions, explicit and implicit bank taxation, deposit insurance regulation, overall financial structure, and underlying legal and institutional indicators. The variables accounting for bank characteristics and macroeconomic factors are of special interest since they are close to the ones included in the regression estimated in their paper.

Demirguc-Kunt and Huizinga report that the bank interest margin is positively influenced by the ratio of equity to lagged total assets, by the ratio of loans to total assets, by a foreign ownership dummy, by bank size as measured by total bank assets, by the ratio of overhead costs to total assets, by inflation rate, and by the short-term market interest rate in real terms. The ratio of non-interest earning assets to total assets, on the other hand, is negatively related to the bank interest margin. All the mentioned variables are highly statistically. Output growth, by contrast, does not seem to have any impact on bank spread. Another branch of the literature is concerned with the adjustments of bank interest rates to the market interest rate. These studies show that, in the long run, one cannot reject the hypothesis that bank interest rates follow the market interest rate in a one-to-one basis, i.e. that there is full adjustment to changes in the market interest rate. In the short-run, though, the departures of bank interest rates from the market interest rate are relevant and there is some evidence that adjustments towards the long run equilibrium are asymmetric, i.e. the adjustment varies according to whether one observes positive or negative unbalances. There is some evidence of price rigidity in local deposit markets with decreases in deposit interest rates being more likely than increase in these rates in the face of changes in the market interest rate.

Barajas et al. (1999) documents significant effect of financial liberalization on bank interest spreads for the Colombian case. Although the overall spread has not reduced with the financial liberalization measures undertook in the early 1990s, the relevance of the different factors behind bank spreads was affected by such measures. IN a single equation specification, the bank lending rate is regressed against the ratio of the deposit rate to (one minus) the reserve ratio, a scale variable represented by the volume of total loans, wages, and a measure of loan quality given by the percentage of nonperforming loans. A test for market power is performed with the results showing that the banking sector in Colombia was imperfect before the liberalization but that a competitive industry describes the data well in the post-liberalization period. The authors notice that "this change could signal a heightened awareness on the part of bank managers regarding credit risk, and/or it could reflect an improved reporting of nonperforming loans". A negative sign found for the scale variable indicates that economies of scale are prevalent for both periods.

The regression results are then used to decompose the bank intermediation spread into four factors: financial taxation (reserve requirements and forced investments), operating costs, market power, and loan quality. For the pre-liberalization period, operating costs made up about 38% of bank spread while market power, financial taxation and loan quality accounted for 36%, 22% and 4% of the spread, respectively. For the post-liberalization period, the impact of market power is set equal to zero to be consistent with the regression results. Loan quality now accounts for 29% of the spread while operating costs and financial taxation were responsible for, respectively, 45% and 26% of the spread.

2.2.2 Review of Empirical Works During 2000s

Table 2.2

Summary of major studies during 2000s to 2005s

Study	Major findings
Brock and Rojas-Suarez (2000)	The bank interest spread includes variables controlling for nonperforming loans, capital ratio, operating costs, a measure of liquidity and time dummies. Macro-economic variables reflecting interest rate volatility, inflation rate and GDP growth rate are major determinants of bank spread.
Saunders and Schumacher (2000)	Implicit interest rate, opportunity cost of reserve, and bank capital ratios were significant and positive. Pure spreads are sensitive to market structure and volatility effects.
Tarsila et al. (2000)	Macro-economic variables are the most relevant factors to explain the behavior of bank interest spread in Brazil.
Ben Naceur and Goaied (2001)	The best performing banks are those who have struggled to improve labor and capital productively, those who have maintained a high level of deposit accounts relative to their assets and finally, those who have been able to reinforce their equity.
Naceur, Samy Ben and Goaised, Mohamed (2002)	High net interest margin and profitability tend to be associated with banks that hold a relatively high amount of capital, and with large overheads. Inflation has a positive impact on banks' net interest margin while economic growth has no incidence. Stock market development has a positive effect on bank profitability.
Robinson, John W. (2002)	Macroeconomic policy elements and microeconomic factors are major determinants of NIM. Low inflation is a key element in the minimization of banking spread.
Sophie Claeysyand Rudi Vander Vennet (2004)	Major findings are the concentration, operational efficiency; capital adequacy and risk behavior are important determinants of margins in both West and East.
Joaquin Maudos and Juan Fernandez de Guevara (2004)	Results show that the fall of margins in European banking system is compatible with a relaxation of the competitive conditions (increase in market power and concentration), as this effect has been counteracted by a reduction of interest rate risk, credit risk, and operating costs.

Brock and Rojas-Suarez (2000) apply the two-step procedure for a sample of five Latin American countries (Argentina, Bolivia, Colombia, Chile, and Peru). For each country, the first-stage regressions for the bank interest spread include variables controlling for nonperforming loans, capital ratio, operating costs, a measure of liquidity (the ratio of short term assets to total deposits) and time dummies. The coefficients on the time dummies are estimates of the "pure" spread. Their results show positive coefficients for capital ratio

(statistically significant for Bolivia and Colombia), cost ratio (statistically significant for Argentina and Bolivia), and the liquidity ratio (Statistically significant for Bolivia, Colombia, and Peru). As for the effects of nonperforming loans, the evidence is mixed. Apart from Colombia, where the coefficient for nonperforming loans is positive and statistically significant, for the other countries the coefficient is negative (Statistically significant for Argentina and Peru). The authors explain these findings as "a result of inadequate provisioning for loan losses: higher non-performing loans would reduce banks' income, thereby lowering the spread in the absence of adequate loan loss reserves". The result for Argentina is striking given the opposite findings reported by Catao (1998).

In the second stage, Brock and Rojas-Suarez (2000) run a regression for the measure of "pure" bank spreads on macroeconomic variables reflecting interest rate volatility, inflation rate and GDP growth rate. Their results show that interest rate volatility increases bank spread in Bolivia and Chile; the same happens with inflation in Colombia, Chile and Peru. For the other cases, the coefficients are not statistically significant. On balance, bank spreads in Bolivia are explained by micro variables, while bank spreads in Chile and Colombia are accounted for by both macro and micro factors. As for Argentina and Peru, there is still a large fraction of the spread that cannot be explained by any of the above factors.

In addition to the studies concerning Latin American countries, Saunders and Schumachr (2000) apply Ho and Saunders two step method to a sample of banks of seven OECD countries (namely Germany, Spain, France, Great Britain, Italy, United States and Switzerland). The purpose of the authors is to decompose the determinants of bank net interest margins into regulatory, market structure and risk premium components. Among the three control variables used in the first step, the one with the major impact is the implicit interest rate, a fee proxy. That is, for almost all countries, banks have to increase margins to finance implicit interest payments. Besides that, the coefficients for the opportunity cost of reserves were positive and significant in most countries and years. At last, bank capital ratios were also in general significant and positive. The intercepts of these first step regressions can be understood as the common pure spread across all banks in a single country at the same time. The authors then ran a cross-country second step regression, in which the dependent variable was the estimated pure spreads from the first step. This second stage is supposed to measure the sensitivity of the margins with respect to market structure and interest rate volatility. The results showed that, first, the more segmented and restricted the system is, the

higher the spreads are, probably due to the monopoly power, and, second, that the volatility of interest rate has also a significant impact on the margins. These findings suggest that the pure spreads are sensitive to both market structure and volatility effects and also that the effects are quite heterogeneous across countries.

Tarsila et al. (2000) study found that the behavior of bank interest spreads in Brazil reveal two stylized facts. First, a remarkable fall in the average rates since early 1999. Second, a strong and persistent dispersion of rates exist across banks. Such stylized fact suggest that both the time series and the cross section dimensions are important elements to understand the trend of the bank interest spread in the country. They used panel data techniques to uncover the main determinants of the bank interest spreads in Brazil. A question that they aimed to address is whether macro or microeconomic factors are the most relevant ones affecting the behavior of such rates. A two-step approach due to Ho and Saunders (1981) is employed to measure the relative relevance of the micro and the macro elements. The roles played by the inflation rate, interest rate volatility, economic activity (all macroeconomic factors) and CAMEL – type indicators (microeconomic factors) are highlighted. The results suggest that macroeconomic variables are the most relevant factors to explain the behavior of bank interest spread in Brazil.

Robinson (2002) found that the absolute size of banking spreads in Jamaica is an outcome of the factors that have defined the economic environment. Several elements of the macroeconomic environment have improved markedly since 1997 while the banking sector itself has been undergoing extensive restructuring. In this regard, there are macroeconomic policy elements and microeconomic factors. Low inflation is a key element in the minimization of banking spreads. Low and stable inflation puts a floor on deposit rates, limits the mark-up factor on the real return on assets that banks target and raises transaction costs. Inflation has also been an important factor in the behavior of the organized labour force and which has linked the pay scales in the industry to periods of inflated profits in the sector. The continuation of low and predictable inflation will therefore be crucial to the integrity of contracts. Exchange rate stability is consistent with a low inflation milieu and has a similar dampening effect on interest rates and spreads.

The case reserve requirement has been ascribed too large a role in explaining the high interest margins in Jamaica. The analysis shows that even if reserve requirements were abolished, the

direct impact on current loan rates of about 22% would be no more than 2 percentage points. This limits the role of reserve policy in influencing loan rates over the medium term. Despite the wide spreads, however measured, and however justified by perception of risk, much of the margin in Jamaican operations is consumed by the size of the operating expenses. Average staff costs at 3.8% of assets, is almost twice that of US counterparts. Other operating costs which include security, premises, depreciation and advertising are also proportionately higher than the benchmark. Banks have therefore managed to operate profitable on account of the relatively high yield on risk-free investments in Government securities.

Samy Ben and Mohamed (2003) investigated the impact of banks' characteristics, financial structure and macroeconomic indicators on banks' net interest margins and profitability in the Tunisian banking industry for the 1980-2000 period. First, individual bank characteristics explain substantial part of the within-country variation in bank interest margins and net profitability. High net interest margin and profitability tend to be associated with banks that hold a relatively high amount of capital, and with large overheads. Second, the paper finds that the inflation has a positive impact on banks' net interest margin while economic growth has no incidence Third, turning to financial structure and its impact on banks' interest margin and profitability; they find that concentration is less beneficial to the Tunisian commercial banks than competition. Stock market development has a positive effect on bank profitability. This reflects the complementarities between bank and stock market growth. We have found that the disintermediation of the Tunisian financial system is favorable to the banking sector profitability.

Vennet (2004) investigated the determinants of bank interest margins in Central and Eastern European countries (CEEC). They assessed to what extent the relatively high bank margins in transition economies can be attributed to a low degree of efficiency and non-competitive market conditions, or to changes in the regulatory banking environment. They provide a systematic comparative analysis of the determinants of interest margins of CEEC banks versus banks operating in Western European economies. Their main findings are that concentration, operational efficiency, capital adequacy and risk behavior are important determinants of margins in both West and East. Institutional reform first shifts risk behavior and increases margins before competition effects push margins down.

Maudos and Guevara (2004) study analyses the interest margin in the principal European banking sectors (Germany, France, the United Kingdom, Italy and Spain) in the period 1993-2000 using a panel of 15,888 observations, identifying the fundamental elements affecting this margin. Their starting point is the methodology developed in the original study by Ho and Saunders and later extensions, but widened to take banks' operating costs explicitly into account. Also, unlike the usual practice in the literature, a direct measure of the degree of competition (Lerner index) in the different markets is used. The results show that the fall of margins in the European banking system is compatible with a relaxation of the competitive conditions (increase in market power and concentration), as this effect has been counteracted by a reduction of interest rate risk, credit risk, and operating costs.

Table 2.3

Summary of major studies during 2005s to 2010s

Study	Major findings
Estrada Dario et al. (2005)	Interest margins are function of pure spread and bank specific institutional imperfections.
Liebeg, David and Schwaiger, Markus S. (2005)	The main factors driving the reduction of Australian banks' interest rate margin are decreasing operating costs and growing importance of foreign currency lending combined with a rising share of non-interest revenues and competition.
Mahamudu et al. (2005)	The market share variable is very influential in explaining spreads in Ghana and reflects the lack price competition in the banking industry. High operating costs, non-performing loans and the existence of liquidity reserves also contribute to the wide spreads.
Khawaja (2007)	Inelasticity of deposit supply is a major determinant of interest spread whereas industry concentration has no significant influence of interest spread.
Wasiuzzaman, Shaista (2008)	The profitability determinants were divided into two main categories, namely the internal determinants (liquidity, capital adequacy, and expenses management) and the external determinants (ownership, NIM size and external economic conditions). The efficient expense management was one of the most significant in explaining high bank profitability.
Doliente, Jude S. (2009)	Results of first regression (suggested by Ho and Saunder, 1981) indicate that the region's net interest margin are partially explained by bank-specific factors namely operating expenses, capital, loan quality, collateral and liquid assets.

Estrada Dairo et al. (2005), analyzed the determinants of interest margins in the Colombian financial system. Based on the model by Ho and Saunders (1981), interest margins are modeled as a function of the pure spread and bank-specific institutional imperfections using quarterly data for the period 1994: IV – 2005: III. Additionally, the pure spread is estimated as a function of market power and interest rate volatility. Results indicate that interest margins are mainly affected by credit institutions' inefficiency and to a lesser extent by credit risk exposure and market power. This implies that public policies should be oriented towards creating the necessary market conditions for banks to enhance their efficiency.

Liebeg and Markus S. (2005), found that bank interest rate margins have been declining in most EU Member States over the last decade. Drawing on a unique sample of supervisory data for the Australian banking system from 1996 to 2005, they investigated the determinants

of bank interest rate margins. The main factors driving the reduction of Australian banks' interest rate margin are decreasing operating costs, the growing importance of foreign currency lending combined with a rising share of non-interest revenues as well as increasing competition. In contrast to findings in the literature they document a positive effect of relationship banking on margins, with the erosion of relationship banking being another reason for the decline in interest margins.

Mahamudu et al. (2005), examined the determination of interest rate spreads in Ghana using two approaches based on an income statement and balance sheet analysis and an econometric model. It concludes that the existence of major structural impediments, such as the market concentration, and the degree of contestability among banking institutions, among others, prevent the financial system from reaching its full level of efficiency. The market share variable is very influential in explaining spreads in Ghana and reflects the lack price competition in the banking industry. The results also show the effect of cross subsidization between interest and non-interest income. High operating cost, nonperforming loans and the existence of liquidity reserves, also contribute to the wide spreads, even though the influence of the latter is not as large as the operating costs and market share.

Valverde and Fernandez (2005), showed that the relationship between bank margins and market power varies significantly across bank specializations. In this context, European bank are a better laboratory than US banks, since they have generally enjoyed a more flexible regulatory environment in which to provide a wider range of services. Using accounting margins and New Empirical Industrial Organization margins, they find that market power increases as output becomes more diversified towards non-traditional activities in European banking.

Idrees (2007), study examined the determinants of interest spread in Pakistan using panel data of 29 banks. The results show that inelasticity of deposit supply is a major determinant of interest spread whereas industry concentration has no significant influence on interest spread. One reason for inelasticity of deposits supply to the banks is the absence of alternate options for the savers. The on-going merger wave in the banking industry will further limit the options for the savers. Given the adverse implications of banking mergers for a competitive environment, it is argued to maintain a reasonably competitive environment,

merger proposals may be subjected to review by an antitrust authority with the central bank retaining the veto over the merger approval.

Shaista (2008), attempt to identify the determinants of successful deposit banks in order to provide practical guides for improved profitability performance of these institutions. The study is based on a sample of seventeen Malaysian commercial banks over the 1986-1995 periods. The profitability determinants were divided in two main categories, namely the internal determinants (liquidity, capital adequacy and expenses management) and the external determinants (ownership, FNIM size and external economic conditions). The findings of this study revealed that efficient expenses management was one of the most significant in explaining high bank profitability. Among the macro indicators, high interest ratio was associated with low profitability and inflation was found to have a positive effect on bank performance.

Jude (2009), investigated the determinants of net interest margins (NIM) of banks in four Southeast Asian countries. They used the dealer model (Ho and Saunder, 1981) and run a two-step regression. Results of the first regression indicate and the region's NIM are partially explained by bank-specific factors namely operating expenses, capital, loan quality, collateral and liquid assets. Second step regression results show that while NIM manifests sensitivity to changes in short-term interest rates, they are still largely explained by the non-competitive structure of the region's banking systems. Finally, they found evidence that the NIM declined after 1997b thus reflecting the profit squeeze experienced by the region's banks due to extensive loan defaults in the aftermath of the Asian currency and banking crises.

2.2.3 The Related Major Nepalese Literature

Parajuli (2009), had carried out a study on factors affecting interest rate on listed Nepalese banks and finance companies revealed that the factors of interest rate charged and offered by Nepalese Banking and Financial institutions through examination of the relationship between influencing factors and interest rate. The major findings of the study are as under. The correlation between interest rate on deposit and amount of deposit collected of 9 sample organizations are found to be negative. Among them 8 sample organizations are statistically insignificant which means that interest rate on deposit is not affected by amount deposited. Remaining 2 sample organizations i.e. NABIL and Nepal Development Bank Ltd. are found to be positively correlated. The correlation between amounts loaned and interest rate on

lending of Nepal Development Bank Ltd. is found to be highly positively correlated. Correlation coefficient of Nepal Development Bank Ltdis statistically significant which indicates that when amount of loan increases, interest rate on lending also increases. Remaining 9 sample organizations are negatively correlated ranges from -0.9426 to -0.3416. Negative correlation coefficients (rcd) of sample organizations means that more lending amounts are demanded at lower interest rate. In general, there should be positive relationship between interest rate on lending and amount loaned. But the result shows that interest rate on lending of most sample organizations are not affected by amount loan. The correlation between interest rate on deposit and interest rate on lending (rbd) of NABIL and United Finance Co. Ltd. are negatively correlated.

The t-statistics of negative correlation between interest rate on deposit and interest rate on lending is insignificant. It means that they have no relationship with each other. Remaining 9 sample organizations are found to be positively correlated Interest rate on deposit of Nepalese banking and finance companies are positively affected by interest rate on lending. The correlation between interest rate on deposit and risk-free rate (rbf) of all sample organizations are positive. It ranges from 0.5522 to 0.9242. Theoretically, there should be positive correlation between these two variables. From this study, we find that interest rate on deposit of sample organizations are positively affected by risk-free rate. The relationship between interest rate on lending and inflation rate (rde) of sample organizations are found to be negative. Increase/decrease in interest rate on lending does not bring decrease/increase in inflation rate. It causes due to the other factors in the economy. Theoretically, there should be positive relationship between interest rate on lending and inflation rate. But the sample organizations have inverse relationship. The relationship between interest rate on lending with risk-free rate (rdf) of sample organizations are found to be positive An increment in risk-free rate also brings increment in interest rate on lending and vice-versa. That the interest rate charged on lending is not affected by the risk-free rate. Thus, we can say that interest rate on lending in Nepalese banking and finance companies are not affected by risk-free rate of interest. Violence, insecurity, and political instability greatly affects on interest rate charged and offered by Nepalese banking and finance company. At the time of violence, insecurity and political instability people prefer to deposit more. Maturity period of loan also affects the interest rate on lending in listed Nepalese banking and finance companies and higher interest rate charged for longer maturity period. There is no seasonal impact on interest rate in listed Nepalese banking and finance companies. Interest rate charged and provided by listed

Nepalese banking and finance companies are normally affected by risk-free rate i.e. Treasury bill rate. Finance companies being smaller in terms of equity capital affect interest rate to some extent only. The relationship between price of security and interest rate is found to be negative. It means that a rise interest rate implies a decline in price of security and vice-versa. Recently most of the nations are suffering from economic recession. In our country a rumor spread that economic recession does not affect. To clarify this rumor, a question was asked. According to the respondents, global economic crisis not only affects economically advanced countries, it also affects to the developing countries like Nepal. And the impact of economic recession on interest rate charged and offered by listed Nepalese banks and finance companies are found to be negative. Interest rate is positively affected by inflation rate and the adjustment in interest rate is done by increasing the interest rate when inflation rate increases in most of the listed Nepalese banks and finance companies. Other specific factors affecting interest rate on deposit are goodwill of the company, investment opportunity, cash reserve ratio, remittance from foreign employments, liquidity etc. Similarly, the other specific factors affecting interest rate on lending are nature of business, volume of loan, cash flow power, performance of the borrowing company, reputation and goodwill of the borrower, trustworthiness of customers, lending cost, government policy etc.

Pudasaini (2009), had carried out a study on factor determining the interest rate o the commercial banks investigated the negative correlation when supply of the loan able fund (supply of deposit) increases interest rate as such deposit decrease. Interest Rate on Deposit and Lending Rate: The interest rate on deposit and lending rate are positive correlation. The determination variance effects between the factors. Always the lending rate is high then deposit rate; the t-statistics of correlation is significant. Loan and Advances Amount and Lending Rate: The correlation coefficient between two variables tells that more loans are demanded of lower rate i.e. Demand on interest rate. The determination of variance in interest rate on lending and remaining is the effects of other factors. Interest Rate on Deposit and Inflation Rate: Two variables are positively correlated; an increment in inflation brings increment in interest rate on deposit vice versa. The inflation rate is affects to interest rate. The coefficient of determine explain total variance in dependent and independent variables T-value of for testing the significance of correlation coefficient is less than the tabulated T-value for the 5 degree of freedom at 5% level of significance 2.44. Deposit Rate and Risk Free Rate: Deposit rate and risk free rate are positive correlation but coefficient is small. The affecting is risk free rate. The determination explained of total variance in dependent and

independent variables and they are affected. Interest Rates on Lending and Inflation Rate: Interest rate on lending and inflation rate is positive correlation coefficient. The determination of two variables explained. This means that lending rate of sample banks are not significantly correlated with the inflation rate. Interest Rate on Lending and Risk Free Rate: The correlation coefficient between interest rate on lending and risk free rate are correlated. The determination coefficient between two variables defines the variance and explains the effect of the other factors the t-value for testing the significance of the coefficient sample are the calculated T-value which is similar then table value at 5% level of significance for the 5% degree of freedom 2.44 the correlation coefficient is not significance, this means that interest rate on lending of sample bank are not significantly affected by the risk free rate.

Lamichhane (2011), had carried out a study on "*Determinants of Interest Rate in Nepalese Commercial Bank.*" She focuses on interest rate and its determinants in her study. In her study she analyses the factors and environment of subject matter. . The major findings of the study are as under. The trend analysis shows interest rate on deposit and lending decreases every year continuously and inflation rate and risk free rate moves up and down in different year. The reason of the decreases is poor business environment high supply of money and demand of funds is not attractive. The correlation analysis between the deposit rate and deposit amount, lending rate and lending amount show the negative correlation. The main determinants factors which affect the bank interest rate are risk return maturity period, demand and supply, inflation and risk free rate. Environmental factor analysis show that market competition is important factor in interest rate and also political instability and violence affect the interest rate which is bad for economic sector. Interest rate is importance factor in commercial bank. It plays prime role for banking competition. Interest rate affects customers service cost, profit, stock price and price of goods etc. Commercial banks apply the different rate for lending in different sector and most of the commercial banks are used to the simple regular method in lending rate.

2.3 Concluding Remarks

From the review of related empirical studies, it is found that bank's net interest margin is a key factor of bank's profit which depends on various other factors. Those factors can be categorized into two groups namely, macroeconomic factors and bank-specific factors. The

macroeconomic factor includes inflation, gross domestic product etc and bank-specific factors include capital adequacy ratio, credit to deposit ratio, non-performing loan, liquidity ratio, non-interest revenue to gross revenue, total expenses, total income, assets, deposit etc. However, the factors and their effect vary across countries as banking systems around the world differ widely in size and operation. Across countries, commercial banks have to deal with different macroeconomic environments, different explicit and implicit tax policies, deposit insurance regimes, financial market conditions, and legal and institutional realities. In addition to these macroeconomic factors, the bank-specific variables influence in determining the interest margin.

2.4 Research Gap

From the review of previous research and study it has been found that increasing net interest margin is one of the most challenging problems faced by existing commercial banks in the current scenario. Some researchers have studied on implementation aspects of NRB directives by commercial banks while some other studied net interest margin and its impacts on commercial banks. No research has been found on the impact of net interest margin on banks profitability including 20 commercial banks of Nepal. This research is made to fulfill the research gap by taking the reference of 20 commercial banks.

CHAPTER-III
RESEARCH METHODOLOGY

Research methodology refers to the various methods of practices applied by the researcher in the entire aspect of the study. A research methodology helps to solve the research problem in a systemic way. This chapter has been designed and developed as a guideline or a plan for the achievement of objective which is described in the first chapter. The basic objective of this chapter is to guide chapter four for data presentation, descriptive and empirical analysis of determinants of interest margin. So, suitable research methodology as demanded by the study has been followed. It is intended to use simple and lucid research methodology.

3.1Research Plan and Design

Research design is a plan, structure and strategy of investigation. It is a blue print for the collection measurement and analysis of data. Research design is the arrangement of conditions and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure. Research design is more analytical and less descriptive.

This study has employed descriptive and correlation research designs to deal with the fundamental issues associated with determinants of net interest margin of Nepalese commercial banks. The descriptive research design has been adopted for fact-finding and searching adequate information about factors affecting net interest margin of commercial banks. This design has been employed to assess the opinions, perception and views respondents. This portion also deals with occupation, years of banking experience of the selected employees for the sample commercial banks. Besides, an effort has also been made to describe the nature of panel data of the commercial banks consisting of 100 observations during fiscal year 2007/8 through 2011/12 by using descriptive statics with respect to bank specific variables such as capital adequacy ratio, bank size, cost of fund, non-performing assets, inflation, liquidity ratio, ratio of non-interest revenue to gross revenue, expenses, income, bank assets, deposit,total size of bank, deposit, capital adequacy ratio, loan and advances, interbank rate, discount, gross domestic product, inflation and lagged ENIM. This study is also based on correlation research design. This design has been adopted to ascertain and understand the directions, magnitudes and forms of observed relationship between net interest margin and other corresponding variables. Furthermore, comparative research is based on both primary and secondary data. In the descriptive part of the study, various facts

on interest margin are collected and presented whereas in the analytical part, the effect of various variables on interest margin is analyzed. Other methodological issues associated with this study are dealt extensively in the respective section.

3.2 Nature and Sources of Data

Basically this study has used both primary and secondary data for the purpose of determining the variables that affect the net interest margin of commercial banks. Thus, this study is based on both primary and secondary source of data to fulfill aforementioned objectives in chapter one. All the secondary data are compiled processed and tabulated in the time series as per the need to fulfill objectives. In other to judge the reliability of data provided by the banks and other sources, they were complied with the annual reports of auditor. Formal and informal talks of officers and employees of the concerned department of the sample banks were also helpful to obtain the additional information of the related problem. Similarly, various data and information are collected from the economic journal, periodicals, bulletins, magazines other published reports and websites from various sources.

3.2.1 Primary Source of Information

The primary data is generated through the opinions of finance executives through questionnaire. The questionnaire includes both close-end and open-end questions. The respondents are asked to give their ideas on the questions using 5-point liker scale, multiple choice, yes/no question, ranking, open ended question for determining variables. There will be 20 questions in the questionnaire and the respondents will be 100. Questionnaire will be distributed to the employee of the respective bank. Employee of the sample commercial bank will be my respondents. Respondents are all the employee of the bank, they may be any one working for the bank.

3.2.2 Secondary Source of Information

The secondary data consists of financial data of 20 commercial banks during the sample period of mid-July 2008 to mid-July 2012 converging period of 5 years. Data are collected from Bank supervision report, NRB's annual reports- "Banking and Financial Statistics" and annual reports from web sites of concerned commercial banks.

3.3 Population and Sample of Data

There are 30 commercial banks in Nepal, However 20 commercial bank will be chosen in the sample that is divided in the 3 strata - banks having higher deposits, joint venture banks and public sector banks.

3.4 Method of Analysis

Inferential statistics will be the statistical tools for secondary data analysis. The normality is tested to know the data are useful or not. After that reliability and validity will be checked to know the strength of each scale. Many other methods such as regression analysis, analysis of variance, F-test, t-test and general descriptive will be used to analyze the data. The present research will use regression method to analyze determinants of commercial bank net interest margin. The relationship between independent variables and Net Interest Margin (NIM) is analyzed by employing 2 models. NIM will be used as the dependent variable of all four Models. The regression model can be specified as:

Model I

$NIM = CONST + \beta_1 CAR + \beta_2 CD + \beta_3 COF + \beta_4 NPA + \beta_5 LR + \beta_6 INF + \beta_7 NRG + \beta_8 EXP + \beta_9 INC + \beta_{10} ASST + \beta_{11} DEP + e$

The dependent variable, NIM is the net interest margin and independent variables are specified as:

CAR = Capital Adequacy Ratio
CD = Credit to Deposit Ratio
COF =Cost of Fund
NPA = Non- Performing Assets
LR = Liquidity Ratio
INF = Inflation
NRG = Ratio of noninterest revenue to gross revenue
EXP = Expenses
INC = Income
ASST = Assets
DEP = Deposit
e = Error term

Model II

$ENIM = \alpha + \beta_1 SIZE + \beta_2 DEP + \beta_3 CAR + \beta_4 loan + \beta_5 INTERBANK + \beta_6 DISCOUNT + \beta_7 GDPG + \beta_8 INF + \beta_7$ lagged ENIM $+ e$

ENIM	=	Expanded Net interest margin
SIZE	=	Total size of banks
DEP	=	Deposit
CAR	=	Capital Adequacy Ratio
Loan	=	Loan and advances
INTERBANK	=	Interbank rate
DISCOUNT	=	Bank discount rate
GDPG	=	Gross domestic product
INF	=	Inflation
Lagged ENIM	=	Lagged net interest margin

3.5 Reliability and Validity

Reliability means the consistency between measurements in series. A measurement device is reliable when it will consistently produce about the same results when applied to the same samples or to different samples of the same size drawn from the same population. Data are considered to be valid when they measure what they are supposed to measure. Validity generally results from careful planning of questionnaire or interview questions.

The data is collected through questionnaire survey from which the reliability and validity will be tested by Cronbach's Alpha.

Cronbach's Alpha	**No of Items**
.789	31

Cronbach's alpha is a coefficient of internal consistency. It is commonly used as an estimate of the reliability of a psychometric test for a sample of examinees. The theoretical value of alpha varies from zero to 1, since it is the ratio of two variances. However, depending on the estimation procedure used, estimates of alpha can take on any value less than or equal to 1, including negative values, although only positive values make sense. Higher values of alpha are more desirable. Some professionals, as a rule of thumb, require a reliability of 0.70 or

higher (obtained on a substantial sample) before they will use an instrument. The table shows the value of alpha .789 with is according to the rule of thumb. This shows that there is internal consistency in the data.

3.6 Data Analysis Tools

As this study required more statistical tools rather than financial tools to attain above mentioned objectives set, various statistical tools have been used like descriptive statistics, regression analysis, t- test, f- test, ANOVA**,** Correlation and Coefficient of Correlation etc.

CHAPTER-IV

PRESENTATION AND ANALYSIS OF DATA

This section of the study contains the analysis of secondary and primary data. In this first section, the financial data of the commercial banks are presented and analyzed using various statistical tools and technique. In the second section, the primary data are presented and analyzed.

4.1 Trend Analysis of Bank Specific Variables

This section fulfills the first objective of the study. There are many factors that determine the net interest margin. However, in most instances, a few factors can help to determine the net interest margin of Nepalese commercial banks. These factors consists of CAR, CD, NPA, COF, NRG,Assets, Deposits, Expenses, Income, Capital Size, Interbank rate, Bank discount rate, GDP, ENIM.

Capital Adequacy Ratio

It is the amount of capital a bank has to hold as required by Nepal Rastra Bank. These requirements are put into place to ensure that the commercial banks are not participating or holding investments that increase the risk of default and that they have enough capital to sustain operating losses while still honoring withdrawals.

Table 4.1 depicts the capital adequacy ratio of the selected commercial banks in the study. On an average, capital adequacy ratio of all commercial banks are fair expect Nepal Bank Limited and Standard chartered Nepal Bank, which have negative capital adequacy ratio. Lumbini bank and NMB bank rank high in terms of average CAR which is 19% and 14%. These bank ranks first and second respectively. Standard deviation of these banks is 0.070 and 0.004 respectively. Sunrise bank and citizens banks rank on the third position because their average CAR is same i.e. 13%.

Table 4.1

Capital Adequacy Ratio trend of Nepalese Commercial Banks

Banks	Year					Mean	Std. Dev.
	2008	2009	2010	2011	2012		
NIBL	0.11	0.11	0.11	0.11	0.11	0.11	0.002
HBL	0.13	0.11	0.11	0.11	0.11	0.11	0.009
EBL	0.11	0.11	0.11	0.10	0.11	0.11	0.004
SBI	0.11	0.11	0.11	0.10	0.11	0.11	0.004
BNBB	0.12	0.12	0.12	0.12	0.11	0.12	0.004
SCBL	0.18	0.06	0.13	0.10	0.12	0.04	0.116
NMB	0.14	0.15	0.15	0.14	0.14	0.14	0.003
CBL	0.12	0.12	0.11	0.16	0.14	0.13	0.017
GBL	0.12	0.10	0.11	0.11	0.12	0.11	0.005
KBL	0.14	0.12	0.12	0.14	0.12	0.13	0.011
LaBL	0.11	0.11	0.14	0.12	0.11	0.12	0.010
LBL	0.06	0.18	0.25	0.24	0.23	0.19	0.070
MBL	0.12	0.12	0.11	0.10	0.15	0.12	0.017
NIBL	0.11	0.11	0.11	0.11	0.11	0.11	0.003
SBL	0.15	0.13	0.11	0.13	0.12	0.13	0.012
NBL	-0.35	-0.14	-0.12	-0.10	-0.06	-0.15	0.104
NCC	0.11	0.11	0.14	0.13	0.12	0.12	0.012
BOK	0.12	0.12	0.11	0.12	0.11	0.11	0.004
ABL	0.11	0.16	0.19	0.20	0.18	0.78	7.233
PBL	0.13	0.10	0.11	0.15	0.14	0.12	0.017
Mean	0.08	0.10	0.12	0.12	1.02		
Std.	0.12379	0.06214	0.064864	0.062383	4.054969		

Table 4.2

Credit to Deposit Trend of Nepalese Commercial Banks

Bank	Year					Mean	Std. Dev.
	2008	2009	2010	2011	2012		
NABIL	0.68	0.74	0.69	0.78	0.78	0.74	0.047
HBL	0.61	0.71	0.74	0.81	0.75	0.73	0.072
EBL	0.79	0.73	0.75	0.77	0.73	0.75	0.025
SBI	0.88	0.56	0.51	0.51	0.50	0.59	0.164
BNBB	0.87	0.91	0.78	0.89	0.58	0.81	0.135
SCBL	0.47	0.39	0.46	0.49	0.55	0.47	0.059
NMB	1.21	0.77	0.78	0.88	0.78	0.88	0.187
CBL	0.78	0.71	0.77	0.93	0.83	0.80	0.081
GBL	0.78	0.71	0.77	0.93	0.83	0.80	0.081
KBL	0.92	0.94	0.79	0.88	0.82	0.87	0.062
LaBL	0.90	0.84	0.81	0.84	0.73	0.82	0.060
LBL	0.94	0.88	0.95	0.92	0.91	0.92	0.028
MBL	0.81	0.83	0.81	0.92	0.75	0.82	0.064
NIBL	0.80	0.79	0.82	0.84	0.75	0.80	0.031
SBL	0.95	0.75	0.82	0.93	0.79	0.85	0.088
NBL	0.38	0.43	0.60	0.57	0.53	0.50	0.093
NCC	0.72	0.79	0.77	0.84	0.78	0.78	0.043
BOK	0.81	0.83	0.84	0.85	0.77	0.82	0.032
ABL	1.12	1.09	1.22	1.17	0.81	1.08	0.162
PBL	0.97	0.83	0.79	0.90	0.80	0.86	0.075
Mean	0.82	0.76	0.77	0.83	0.74		
Std. Dev	0.19396	0.16155	0.153445	0.156951	0.111046		

Credit to Deposit

Credit to deposit ratio is a commonly used ratio for assessing a bank's liquidity by dividing the banks total loans by its total deposits. If the ratio is too high, it means that banks might not have enough liquidity to cover any unforeseen fund requirements and if the ratio is too low, banks may not be earning as much as they could be.

Table 4.2 shows the credit to deposit ratio of all selected commercial bank under the study. In terms of credit to deposit ratio, Agriculture development banks, Lumbini bank and NMB

bank has the highest credit to deposit ratio on an average is108%, 92% and 88%respectively. This shows that these banks do not have enough liquidity to cove unforeseen fund requirement. Whereas, Nabil bank, Himalayan Bank and Everest bank have the good credit to deposit ratio i.e. 74%, 73% and 75% respectively.

Table 4.3

Non-Performing Assets of Nepalese Commercial Banks

Bank	Year					Mean	Std. Dev.
	2008	2009	2010	2011	2012		
NABIL	0.01	0.01	0.01	0.02	0.02	0.01	0.007
HBL	0.02	0.02	0.04	0.04	0.02	0.03	0.010
EBL	0.01	0.00	0.00	0.00	0.01	0.01	0.003
SBI	0.04	0.02	0.01	0.01	0.01	0.02	0.013
BNBB	0.32	0.20	0.06	0.18	0.04	0.16	0.111
SCBL	0.01	0.01	0.01	0.01	0.01	0.01	0.001
NMB	0.02	0.01	0.01	0.00	0.02	0.01	0.009
CBL	0.00	0.00	0.00	0.01	0.02	0.01	0.009
GBL	0.00	0.00	0.01	0.03	0.02	0.01	0.011
KBL	0.01	0.00	0.01	0.01	0.02	0.01	0.007
LaBL	0.00	0.00	0.00	0.01	0.01	0.00	0.004
LBL	0.15	0.09	0.05	0.01	0.00	0.06	0.061
MBL	0.01	0.02	0.02	0.04	0.03	0.03	0.012
NIBL	0.01	0.01	0.01	0.01	0.03	0.01	0.011
SBL	0.00	0.07	0.01	0.04	0.04	0.03	0.027
NBL	0.21	0.16	0.10	0.11	0.07	0.13	0.056
NCC	0.16	0.09	0.03	0.04	0.03	0.07	0.058
BOK	0.02	0.01	0.02	0.02	0.02	0.02	0.004
ABL	0.12	0.10	0.08	0.09	0.06	0.09	0.019
PBL	0.00	0.00	0.00	0.01	0.01	0.00	0.004
Mean	0.06	0.04	0.02	0.03	0.02		
Std. Dev.	0.08894	0.05731	0.028333	0.044556	0.018379		

Source: Bank supervision report

Non-Performing Assets Ratio

It is a sum of borrowed money up on which the debtor has not made his or her scheduled payments for atleast 90 days. A non-performing loan is either in default or close to being in default. Higher the non-performing loan higher would be the credit risk and ultimately lower would be the profitability of commercial banks.

Table 4.3 reveals the non-performing assets of all selected commercial banks under the study. In terms of non-performing assets Nepal Bangladesh bank and Nepal bank limited have the highest on an average non-performing asset i.e. 16% and 13% respectively. Agricultural development bank and Lumbini rank on the third and fourth position with the average non-performing loan 9% and 6% respectively.

Table 4.4

Cost of Fund Trend of Nepalese Commercial Banks

Banks	Year					Mean	Std. Dev.
	2008	2009	2010	2011	2012		
NIBL	6.01	6.10	5.28	5.35	6.10	5.77	0.630
HBL	6.63	5.08	6.40	4.80	6.36	5.85	0.968
EBL	7.66	5.67	5.30	4.75	6.76	6.03	1.232
SBI	4.76	4.08	3.80	4.16	4.67	4.29	1.067
BNBB	6.48	6.03	5.76	4.76	6.84	5.97	1.711
SCBL	3.43	3.02	3.12	2.12	3.06	2.95	2.990
NMB	8.76	8.02	8.88	7.88	9.18	8.54	0.575
CBL	8.92	8.20	9.81	8.91	8.80	8.93	0.970
GBL	7.48	7.66	6.48	7.48	8.67	7.55	0.813
KBL	7.52	8.02	6.73	7.51	9.22	7.80	0.842
LaBL	7.26	7.25	6.21	7.20	8.33	7.25	0.984
LBL	6.41	7.38	5.41	6.35	8.65	6.84	1.038
MBL	6.46	7.05	6.28	7.20	8.64	7.13	0.685
NIBL	6.70	7.02	6.50	7.00	7.60	6.96	0.599
SBL	6.88	7.13	7.23	7.31	8.66	7.44	2.252
NBL	3.23	3.72	4.80	2.70	2.63	3.42	2.189
NCC	8.02	7.13	6.28	6.25	8.40	7.22	1.311
BOK	6.44	5.38	4.05	5.08	6.33	5.46	0.722
ABL	5.12	5.32	6.20	5.78	5.21	5.53	1.512
PBL	6.20	5.04	7.03	8.12	9.67	7.21	1.298
Mean	6.52	6.22	6.08	6.04	7.19		
Std. Dev.	1.50064	1.5128	1.563891	1.80512	2.044067		

Source: Bank supervision report

Cost of Fund

It is the interest rate paid by financial institutions for the funds that they deploy in their business. The cost of funds is one of the most important input costs for a financial institution, since a lower cost will generate better returns when the funds are deployed in the form of short-term and long-term loans to borrowers. The spread between the cost of funds and the interest rate charged to borrowers represents one of the main sources of profit for most financial institutions.

Table 4.4 shows the cost of fund of all selected commercial banks under the study. In terms of cost of fund Citizen bank and NMB bank rank in the highest this has average value 8.93 and 8.54respectively. Other banks have similar value of cost of fund.

Non -Interest Revenue to Gross Revenue

It is the banks and creditor income derived primarily from fees. Examples of non-interest income include deposit and transaction fees, insufficient funds (NSF) fees, annual fees, monthly account service charges; inactivity fees, check and deposit slip fees, etc. Institutions charge fees that provide non-interest income as a way of generating revenue and ensuring liquidity in the event of increased default rates.

Table 4.5 reveals the non-interest revenue to gross revenue of all selected commercial banks. In terms of non-interest revenue to gross revenue Nepal bank and standard chartered bank stands on the first and second position according to the average value i. e. 1.15% and 1.03% respectively. Himalayan bank is in the third position which has 0.85%. Other banks have the similar NRG.

Table 4.5

Non-Interest Revenue to Gross Revenue Trend of Nepalese Commercial Banks

Banks	Year					Mean	Std. Dev.
	2008	2009	2010	2011	2012		
NIBL	0.84	0.79	0.68	0.58	0.65	0.71	0.107
HBL	0.85	0.95	0.88	0.71	0.84	0.85	0.087
EBL	0.78	0.71	0.62	0.51	0.53	0.63	0.117
SBI	0.66	0.57	0.49	0.46	0.40	0.51	0.101
BNBB	0.99	0.94	0.80	0.67	0.53	0.79	0.189
SCBL	1.11	1.11	1.13	0.91	0.92	1.03	0.112
NMB	0.72	0.57	0.52	0.38	0.35	0.51	0.149
CBL	0.47	0.42	0.40	0.37	0.36	0.40	0.044
GBL	0.54	0.49	0.46	0.44	0.41	0.47	0.051
KBL	0.59	0.52	0.46	0.39	0.42	0.48	0.082
LaBL	0.54	0.49	0.45	0.42	0.42	0.46	0.051
LBL	0.66	0.81	0.63	0.50	0.45	0.61	0.142
MBL	0.63	0.59	0.41	0.33	0.31	0.45	0.148
NIBL	0.75	0.65	0.59	0.49	0.49	0.59	0.112
SBL	0.60	0.47	0.46	0.43	0.38	0.47	0.081
NBL	1.61	1.07	0.85	0.96	1.27	1.15	0.298
NCC	0.74	0.74	0.57	0.43	0.40	0.58	0.161
BOK	0.83	0.83	0.72	0.64	0.59	0.72	0.110
ABL	0.70	0.84	0.80	0.75	0.68	0.75	0.070
PBL	0.66	0.45	0.42	0.35	0.33	0.44	0.131
Mean	0.76	0.70	0.62	0.54	0.54		
Std. Dev.	0.25236	0.21096	0.195412	0.182364	0.239176		

Source: Bank supervision report

Table 4.6

Liquidity ratio trend of Nepalese Commercial Banks

Banks	Year					Mean	Std. Dev.
	2008	2009	2010	2011	2012		
NIBL	0.25	0.17	0.24	0.23	0.21	0.22	0.031
HBL	0.26	0.21	0.20	0.22	0.29	0.24	0.037
EBL	0.29	0.31	0.29	0.29	0.29	0.29	0.008
SBI	0.27	0.17	0.20	0.23	0.18	0.21	0.042
BNBB	0.34	0.36	0.31	0.33	0.43	0.35	0.047
SCBL	0.40	0.37	0.30	0.39	0.39	0.37	0.041
NMB	0.71	0.60	0.30	0.23	0.31	0.43	0.211
CBL	0.19	0.22	0.24	0.17	0.25	0.22	0.037
GBL	0.30	0.22	0.26	0.22	0.29	0.25	0.037
KBL	0.16	0.11	0.22	0.22	0.26	0.19	0.060
LABL	0.17	0.17	0.20	0.22	0.27	0.21	0.043
LBL	0.23	0.29	0.26	0.27	0.27	0.26	0.019
MBL	0.20	0.19	0.24	0.19	0.28	0.22	0.043
NIBL	0.18	0.20	0.19	0.22	0.28	0.21	0.039
SBL	0.13	0.38	0.19	0.19	0.28	0.23	0.099
NBL	0.43	0.42	0.33	0.32	0.34	0.37	0.053
NCC	0.41	0.26	0.32	0.28	0.29	0.31	0.058
BOK	0.20	0.20	0.24	0.25	0.31	0.24	0.043
ABL	0.08	0.21	0.17	0.18	0.23	0.18	0.057
PBL	0.15	0.16	0.26	0.21	0.29	0.21	0.061
Mean	0.27	0.26	0.25	0.24	0.29		
Std. Dev.	0.14083	0.11688	0.04778	0.056142	0.056491		

Source: Bank supervision report

Liquidity Ratio

Liquidity ratio, expresses a company's ability to repay short-term creditors out of its total cash. The liquidity ratio is the result of dividing the total cash by short-term borrowings. It shows the number of times short-term liabilities are covered by cash. If the value is greater than 1.00, it means fully covered.

Table 4.6 explains the liquidity ratio of all selected banks. Liquidity ratio of Nepal bank, standard chartered bank and Nepal Bangladesh bank rank on first and second with the average value 37% and 35% respectively. Agricultural development bank and Kumari bank has the lowest liquidity ratio i.e. 18% and 19% respectively.

Table 4.7

Net Interest Margin trend of Nepalese Commercial Banks

Bank	Year					Mean	Std. Dev.
	2008	2009	2010	2011	2012		
NIBL	3.63	4.22	4.24	4.30	5.32	4.34	0.608
HBL	3.39	4.03	4.26	4.55	4.09	4.06	0.425
EBL	3.74	3.88	4.54	4.58	4.71	4.29	0.448
SBI	3.13	2.12	2.34	2.33	1.89	2.36	0.467
BNBB	6.01	10.11	6.82	6.17	3.38	6.50	2.410
SCBL	3.71	3.65	3.85	4.22	5.23	4.13	0.651
NMB	1.37	1.02	2.54	3.04	3.04	2.20	0.949
CBL	2.23	2.23	3.22	3.71	3.56	2.99	0.716
GBL	2.04	2.06	3.31	4.30	2.40	2.82	0.973
KBL	3.36	3.44	3.86	3.66	3.87	3.64	0.236
LaBL	2.53	2.33	3.43	3.87	3.05	3.04	0.633
LBL	5.04	5.01	5.89	5.63	5.44	5.40	0.377
MBL	3.78	3.29	3.13	3.26	-7.13	1.27	4.697
NIBL	3.50	3.49	4.12	4.27	4.04	3.88	0.366
SBL	1.46	2.20	3.96	5.06	3.53	3.24	1.429
NBL	4.29	5.85	6.91	6.57	5.14	5.75	1.064
NCC	4.52	4.68	4.51	4.19	2.94	4.17	0.707
BOK	3.84	4.37	4.50	5.14	4.50	4.47	0.461
ABL	6.39	7.53	9.64	9.54	8.20	8.26	1.376
PBL	1.73	2.15	3.25	3.64	3.34	2.82	0.829
Mean	3.49	3.88	4.42	4.60	3.53		
Std. Dev.	1.37044	2.11005	1.73041	1.547549	2.86078		

Source: Bank Supervision Report

Net Interest Margin

It is a measure of the difference between the interest income generated by banks or other financial institutions and the amount of interest paid out to their lenders (for example, deposits), relative to the amount of their (interest-earning) assets. It is similar to the gross margin of non-financial companies.

Table 4.7 reveals the net interest margin of all selected bank. Net interest margins of Agricultural bank rank on the first position with 8.26 net interest margins whereas Nepal Bangladesh bank stands on the second with 6.50 net interest margins. However, Nepal bank and Lumbini bank rank on the third and fourth position on average net interest margin i.e. 5.75 and 5.40 respectively.

Table 4.8

Deposit trend of Nepalese Commercial Banks

Banks	Year					Mean	Std. Dev.
	2008	2009	2010	2011	2012		
NIBL	319.15	373.48	463.41	496.96	550.24	440.65	93.504
HBL	318.43	346.81	376.11	409.21	477.31	385.57	61.389
EBL	239.76	333.23	369.32	411.28	500.06	370.73	96.088
SBI	137.15	279.57	348.96	424.15	533.37	344.64	149.370
BNBB	108.84	99.98	100.52	115.12	169.53	118.80	29.045
SCBL	297.44	358.72	351.83	379.99	359.66	349.53	30.958
NMB	16.62	68.78	101.11	128.66	159.83	95.00	55.237
CBL	61.40	115.24	142.14	134.78	173.55	125.42	41.491
GBL	73.20	109.33	150.32	150.66	269.14	150.53	73.732
KBL	127.74	157.11	174.32	169.86	219.85	169.78	33.375
LaBL	109.17	160.51	180.83	183.00	228.32	172.37	43.154
LBL	57.04	64.45	57.68	67.73	76.69	64.72	8.076
MBL	111.02	155.97	185.36	164.11	215.46	166.39	38.560
NIBL	344.52	466.98	500.95	501.38	570.11	476.79	82.898
SBL	42.26	120.13	147.67	133.92	187.59	126.31	53.319
NBL	418.29	451.94	421.30	468.04	560.52	464.02	57.860
NCC	73.20	91.28	108.25	109.51	164.85	109.42	34.333
BOK	158.34	180.84	203.16	210.18	249.91	200.49	34.303
ABL	325.54	351.60	324.73	343.95	432.39	355.64	44.456
PBL	52.76	117.80	178.84	189.39	239.91	155.74	72.103
Mean	169.59	220.19	244.34	259.59	316.91		
Std. Dev.	124.072	134.198	135.4704	149.2673	162.8612		

Source: Bank Supervision Report

Deposit

It refers to an amount of money in cash or cheques form or sent via a wire transfer that is placed in to a bank account. The target bank account for the bank deposit can be any kind of account that accepts deposit. It is the total cash available in the bank.

Table 4.9 reveals the total deposit of selected commercial bank. Nepal investment bank, Nepal bank and agricultural development bank has the highest average deposit i.e. 476.79, 464.02 and 355.64 million respectively. Lumbini bank and NMB bank have the lowest average deposit i.e. 64.72 and 95 million respectively.

Table 4.9

Expenses Trend of Nepalese Commercial Banks

(Rs. in millions)

Banks	Year					Mean	Std. Dev.
	2008	2009	2010	2011	2012		
NIBL	12.42	17.58	26.62	38.06	40.85	27.11	12.404
HBL	14.60	16.94	24.40	35.15	41.65	26.55	11.637
EBL	10.24	14.92	21.52	32.12	36.93	23.15	11.262
SBI	6.82	11.71	19.18	27.97	35.16	20.17	11.579
BNBB	6.61	6.72	7.52	10.67	14.05	9.11	3.214
SCBL	9.28	10.73	11.84	16.74	17.43	13.20	3.668
NMB	1.91	3.72	7.24	12.65	15.08	8.12	5.651
CBL	3.33	6.41	11.46	14.97	17.27	10.69	5.806
GBL	3.21	6.59	12.72	16.80	20.49	11.96	7.109
KBL	20.49	7.36	11.19	15.50	19.48	14.80	5.547
LaBL	20.29	5.70	9.12	14.00	18.31	13.48	6.116
LBL	20.19	3.91	4.20	4.82	7.17	8.06	6.900
MBL	8.20	6.04	8.54	15.20	19.83	11.56	5.758
NIBL	19.75	14.92	23.27	32.67	44.03	26.93	11.560
SBL	46.23	1.84	7.07	12.86	16.03	16.81	17.326
NBL	18.85	23.79	27.29	35.86	38.74	28.91	8.289
NCC	45.01	4.51	5.42	7.97	11.04	14.79	17.085
BOK	13.53	6.79	9.43	13.66	17.01	12.08	3.998
ABL	20.41	37.78	39.44	45.18	47.02	37.97	10.541
PBL	57.32	1.73	6.67	13.61	20.14	19.89	22.050
Mean	17.94	10.48	14.71	20.82	24.88		
Std. Dev.	15.115	8.71662	9.472699	11.63487	12.45638		

Source: Bank Supervision Report

Expenses

It is a non-operating expense shown on the income statement. It represents interest payable on any type of borrowings – bonds, loans, convertible debt or lines of credit. It is basically calculated as the interest rate times the outstanding principal amount of the debt. Interest expense on the income statement represents interest accrued during the period covered by the financial statements, and not the amount of interest actually paid over that period. While interest expense is tax-deductible for companies, in an individual's case, it depends on his or her jurisdiction and also on the loan's purpose.

Table 4.9 shows the expenses of the selected commercial bank. Agricultural development bank, Nepal bank and Nabil bank has the highest average of expenses i.e. 37.89, 28.91 and

27.11 million respectively. Whereas Lumbini bank and NMB bank has the lowest expenses i.e. 8.06 and 8.11 million respectively.

Table 4.10

Income Trend of Nepalese Commercial Banks

Banks	Year					Mean	Std. Dev.
	2008	2009	2010	2011	2012		
NIBL	12.44	17.60	26.64	38.08	40.87	23.69	12.404
HBL	35.61	43.30	53.07	69.13	76.36	50.28	17.111
EBL	27.59	37.32	50.30	65.24	75.70	45.11	19.675
SBI	16.09	22.89	33.77	45.25	52.66	29.50	15.160
BNBB	16.45	25.92	21.05	24.00	23.36	21.85	3.635
SCBL	33.65	39.79	43.40	51.80	55.09	42.16	8.750
NMB	4.32	6.30	13.12	20.66	22.97	11.10	8.325
CBL	5.84	10.75	19.55	24.65	26.90	15.20	9.017
GBL	5.52	10.18	21.33	28.23	31.42	16.32	11.221
KBL	15.24	20.91	27.33	31.27	34.65	23.69	7.841
LaBL	10.93	16.37	25.94	31.63	32.47	21.22	9.505
LBL	8.87	10.50	11.62	14.10	15.05	11.27	2.545
MBL	12.97	16.58	23.86	27.71	25.16	20.28	6.210
NIBL	38.44	53.85	73.88	86.37	88.92	63.13	21.701
SBL	2.79	11.36	22.65	27.47		16.07	11.131
NBL	27.71	18.29	24.17	23.45	26.73	23.41	3.680
NCC	23.46	10.03	13.17	16.35	19.21	15.75	5.215
BOK	21.28	18.97	24.63	32.14	39.25	24.25	8.350
ABL	41.56	37.80	39.46	45.20	47.04	41.01	3.862
PBL	57.34	3.72	11.95	24.84	33.41	24.46	20.806
Mean	20.90	21.62	29.04	36.38	40.38		
Std. Dev.	14.62	13.81	15.93	18.95	20.84		

Source: Bank supervision report

Income

It is the difference between revenues generated by interest-bearing assets and the cost of servicing (interest-burdened) liabilities. For banks, the assets typically include commercial and personal loans, mortgages, construction loans and investment securities.

Table 4.10 shows the income of the selected commercial bank. Nepal investment bank and Himalayan bank has the highest average income i.e. 63.13 and 50.28 million respectively. However, NMB bank and Lumbini bank has the lowest average income i.e. 11.10 and 11.27 million respectively.

Table 4.11

Capital Size trend of Nepalese Commercial Banks

Banks	Year					Mean	Std. Dev.
	2008	2009	2010	2011	2012		
NIBL	0.04	0.09	0.08	0.08	0.08	0.07	0.021
HBL	0.07	0.06	0.06	0.06	0.05	0.06	0.008
EBL	0.06	0.06	0.06	0.06	0.06	0.06	0.001
SBI	0.04	0.05	0.05	0.06	0.06	0.05	0.009
BNBB	0.02	0.02	0.02	0.02	0.02	0.02	0.001
SCBL	0.07	0.06	0.05	0.05	0.04	0.06	0.010
NMB	0.02	0.02	0.02	0.02	0.02	0.02	0.003
CBL	0.02	0.02	0.02	0.02	0.02	0.02	0.003
GBL	0.02	0.02	0.02	0.02	0.03	0.02	0.005
KBL	0.03	0.03	0.03	0.02	0.02	0.03	0.003
LaBL	0.03	0.03	0.03	0.03	0.03	0.03	0.001
LBL	0.01	0.01	0.01	0.01	0.01	0.01	0.001
MBL	0.03	0.03	0.03	0.02	0.02	0.03	0.001
NIBL	0.08	0.08	0.08	0.07	0.06	0.07	0.007
SBL	0.01	0.03	0.02	0.02	0.02	0.02	0.005
NBL	0.09	0.07	0.06	0.06	0.01	0.06	0.030
NCC	0.02	0.02	0.02	0.02	0.02	0.02	0.002
BOK	0.04	0.04	0.03	0.04	0.04	0.04	0.005
ABL	0.11	0.08	0.08	0.09	0.01	0.07	0.039
PBL	0.03	0.03	0.03	0.03	0.03	0.03	0.002
Mean	0.04	0.04	0.04	0.04	0.03		
Std. Dev.	0.03	0.02	0.02	0.02	0.02		

Source: Bank Supervision Report

Table 4.11 reveals the size of selected commercial bank. Nabil bank, Nepal investment bank and Agricultural development bank has highest average size i.e. 0.07, 0.07 and 0.07 respectively. However, Lumbini bank has the lowest average size i.e. 0.01 respectively.

Table 4.12

ENIM trend of Nepalese Commercial Banks

Banks	Year					Mean	Std. Dev.
	2008	2009	2010	2011	2012		
NIBL	3.226	3.708	3.431	3.629	4.206	3.64	0.367
HBL	2.885	2.984	1.946	2.913	2.811	2.71	0.430
EBL	2.669	2.656	3.158	3.167	3.071	2.94	0.260
SBI	2.227	1.576	1.556	1.560	1.301	1.64	0.345
BNBB	8.925	21.932	10.583	0.407	5.120	9.39	8.029
SCBL	3.938	3.976	4.203	4.013	4.422	4.11	0.202
NMB	1.332	0.616	1.879	2.313	0.469	1.32	0.794
CBL	1.091	1.162	1.847	1.858	1.771	1.55	0.385
GBL	0.910	0.513	0.955	1.634	1.367	1.08	0.435
KBL	1.885	2.178	2.452	1.924	1.722	2.03	0.286
LaBL	2.231	2.196	2.402	1.829	1.662	2.06	0.307
LBL	6.828	6.786	6.882	5.826	3.094	5.88	1.619
MBL	1.401	1.109	0.552	0.064	0.039	0.63	0.612
NIBL	2.886	2.695	3.471	3.163	2.490	2.94	0.386
SBL	-0.737	0.790	1.845	0.544	0.815	0.65	0.923
NBL	0.823	2.196	1.000	0.968	2.109	1.42	0.674
NCC	5.963	4.428	4.314	1.882	1.484	3.61	1.885
BOK	2.833	3.109	3.252	3.295	2.207	2.94	0.447
ABL	1.563	3.184	3.268	2.988	41.582	10.52	17.380
PBL	0.334	1.102	2.328	2.096	1.565	1.49	0.800
Mean	2.661	3.445	3.066	2.304	4.165		
Std. Dev.	2.306	4.610	2.278	1.370	8.903		

Source: Bank Supervision Report

The expanded net interest margin represents the interest margin generated by banks on all their activities. This indicator is calculated as the ratio of net operating profit to total assets. This indicator includes, in addition to the other income and miscellaneous expenses, extraordinary income and expenses such as capital gain and loss on tangible and intangible assets.

Table 4.12 shows the expanded net interest margin of the sampled commercial bank of Nepal. The table above shows that total Agricultural development bank has the highest whereas sunrise bank has the lowest.

4.2 Analysis of Secondary Data

This section attempts to analyze the secondary data associated with bank specific variables and macro-economic variables to observe the relationships between the variables. The methods used for this purpose are descriptive statistics, correlation analysis and regression analysis.

4.2.1Descriptive Analysis

This study has employed descriptive research design, among others; descriptive statistics have been used to describe the characteristics of net interest margin, capital adequacy ratio, credit to deposit ratio, cost of fund, non-performing assets, liquidity ratio, inflation, non-interest revenue to gross revenue, expenses, income, deposits, size, interbank rate, discount rate, lagged ENIM, Gross domestic product and total loan and advances during the study period. The descriptive statistics used in this study consists of mean, standard deviation, minimum and maximum value associated with variables under consideration.

This table shows descriptive statistics- mean and standard deviation of bank specific variables and macroeconomic variables associated with 20 sample commercial banks from 2008 to 2012. Here NIM is the dependent variables where as capital adequacy ratio, credit to deposit ratio, cost of fund, non-performing loan, liquidity ratio, inflation, non-interest revenue to gross revenue, total expenses, total income, total assets and total deposit.

Table 4.13

Descriptive Statistics

Banks	N	Mean	Std. Dev.
NIM	100	3.982315	2.0071592
CAR	100	29.163	1.815859
CD	100	78.2111	.1528557
COF	100	6.4071	1.71794
NPA	100	3.5754	.0537571
LR	100	26.1132	.0913114
INF	100	10.998	4.1332
NRG	100	63.0072	.2316946
EXP	100	14.1310	.77032
IN	100	14.7015	.67990
ASST	100	16.9622	.64294
DEPO	100	16.7897	.70077
ENIM	100	3.128110	4.6996621
SIZE	100	3.8867	.0236517
IBR	100	6.38000	2.0767107
DIST	100	6.5000	.27524
Lagg ENIM	100	2.476253	3.0264610
GDP	100	2.476253	.23107
LOAN	100	16.4849	.63687

Source: Panel Data in Appendix

The table 4.13above shows the descriptive Statistics of Dependent variable NIM and independent variables such as capital adequacy ratio, credit to deposit ratio, cost of fund, non-performing loan, liquidity ratio, non- interest revenue to gross revenue, total expenses, total income, total assets, total deposit and inflation. The average value of NIM is 3.982315% which is the average net interest income earned by the commercial banks of Nepal. Similarly standard deviation is 2.0071592%. Similarly the mean value of independent variable is 29.163%, 78.2111%, 6.4071%, 3.5754%, 26.1132%, 63.0072%, 14.1310, 14.7015, 16.9622, 16.7897 and 10.998 respectively. Here the standard deviation of inflation is highest i.e. 4.1332% and the lowest standard deviation is of non-performing loan i.e. .0537571%.

The Table 4.13 above shows the descriptive Statistics of Dependent variable ENIM and independent variables such as size, deposit, CAP, Loan, interbank lending, discount, GDP, Inflation and lagged NIM. The average value of NIM is 3.128110% which is the average net interest income earned by the commercial banks of Nepal. Similarly standard deviation is 4.6996621%. Similarly the mean value of independent variable is 3.8867%, 2.421259%, 9.2045%, 6.380000%, 6.5000%, 10.9980%, 2.476253%, 2.476253%, and 16.4849%

respectively. Here the standard deviation of deposit is highest i.e. 147.1461594% and the lowest standard deviation is of discount i.e. .0236517%.

4.2.2. Correlation Analysis

To understand the validity of the models, the study has considered the correlations between net interest margin and each of the explanatory variables table4.14 reports the correlations between the variables under study.

Table 4.14

Bivariate Pearson Correlation Coefficients variables of Model I observed for 20 Sample Banks during the Period 2007/08 through 2012/13

	NIM	CAR	CD ratio	COF	NPL	LR	INF	NRG	EXP	IN	ASST
NIM	1.000										
CAR	.204**	1.0									
CD ratio	.251*	.037	1.000								
COF	-.332*	-.052	.479*	1.000							
NPL	.480*	.025	.049	-.222**	1.000						
LR	-.025	-.037	-.414*	-.097	.259*	1.00					
INF	.179*	-.008	.080	-.087	-.141***	-.098	1.00				
NRG	.406*	-.004	-.397*	-.670*	.486*	.337*	-.265*	1.00			
EXP	.314*	.176**	-.143***	-.278*	.028	-.175**	.387	.060	1.00		
INF	.304*	.124	-.175**	-.303*	-.059	-.137***	.372	.075	.875*	1.000	
ASST	.296*	.251*	-.298*	-.483*	.003	-.048	.146*	.338*	.851*	.774*	1.000

Source: Panel Data in Appendix

This table reveals the bivariate Pearson correlation coefficients between different variables as defined in the table 4.7. The correlation coefficients are based on the data from 20 sample banks with 100 observations for the period 2007/008 through 2012/013. '*' sign indicates that correlation is significant at 1 percent level and '**' indicates that correlation is significant at 5 percent level. And '***' indicates that correlation is significant at 10 percent level.

Table 4.14 shows the Pearson correlation where it shows the relationship between the variables. Cost of fund and liquidity ratio, are negatively correlated with NIM whereas Capital adequacy ratio credit to deposit non- performing loan inflation, NRG, expenses,

income, assets, and deposit are positively correlated with NIM. Cost of fund, liquidity ratio, inflation, NRG are negatively correlated with capital adequacy ratio whereas positively correlated with credit to deposit, non- performing loan, expenses, income, assets, and deposit. Liquidity ratio, NRG, expenses, income, assets, and deposit are negatively correlated with credit to deposit, whereas positively correlated with capital adequacy ratio, non- performing loan, and inflation. NIM, Capital adequacy ratio, non- performing loan, `liquidity ratio, inflation, NRG, expenses, income, assets, and deposit are positively correlated with cost of fund whereas positively correlated with cost of fund. Cost of fund inflation income and deposit are negatively correlated with on performing loan whereas NIM, capital adequacy ratio credit to deposit, non-performing loan, liquidity, NRG, income and deposit are positively correlated with Non -performing loan. Liquidity ratio is negatively correlated with all the variables. Capital adequacy ratio, cost of fund, liquidity ratio, NRG is negatively related with inflation where as other variables are positively related. Credit to deposit ratio, cost of fund and inflation are negatively correlated with NRG where as other variables are positively correlated. Credit to deposit, cost of fund and liquidity are negatively correlated with expenses where as other variables are positively correlated. Credit to deposit, cost of fund, non -performing loan and liquidity ratio are negatively correlated where as other variables are positively correlated. Costs of fund, non -performing loan and liquidity ratio is negatively correlated with assets of banks where as other variables are positively correlated. Cost of fund, non -performing loan and liquidity ratios are negatively correlated with deposit where as other variables are positively correlated.

Table 4.15

Bivariate Pearson Correlation Coefficients variables of Model II observed for 20 Sample Banks during the Period 2008/09 through 2012/13

	ENIM	Size	Deposit	Cap	IBR	discount	INF	Lagged ENIM	GDP	LOAN
ENIM	1.000									
Size	-.138***	1.000***								
Deposit	.074	.760*	1.000							
Cap	.823*	-.269*	-.023	1.000						
IBR	.092	-.119	.303*	.159***	1.000					
discount	.087	-.137***	.304*	.193**	.910*	1.000				
INF	-.048	-.027	.136***	.003	.457*	.339*	1.000			
LgdENIM	.382	-.008	.003	.063	.112	.041	.040	1.000		
GDP	.052	-.106	.321*	.143***	.868*	.874*	.584*	.114	1.000	
LOAN	.056*	.717*	.884*	.021	.367*	.343*	.233*	.000*	.413*	1.000

Source: Panel Data Appendix

This table reveals the Pearson correlation coefficients between different pairs of bank specific variables and macroeconomic variables. ENIM is the dependent variables whereas size, deposit, capital adequacy ratio, interbank rate, bank discount rate, inflation, lagged ENIM, GDP, Loan and advances are the independent variables. Table 4.5. The correlation coefficients are based on the data on ENIM, size, deposit, Cap, IBR, discount, INF, lagged ENIM, GDP, loan and advance from 20 sample commercial banks with 100 observations for the period 2008 through 2012. '*' sign indicates that correlation is significant at 1 percent level, '**' indicates that correlation is significant at 5 percent level.'***' indicates that correlation is significant at 10 percent level

Table 4.15 also indicates that correlations among different pairs of explanatory variables are statically significant at 1%, 5% and 10% level of significant. Among banks specific variables size is negatively related and significant at 10% level of significance i.e. when size of bank increase then NIM decreases whereas capital adequacy ratio is positive and significant at 1 % level of significance i.e. when capital adequacy ratio increases then the NIM also increases. Loan and advances is positively significant at 1% level of significant i.e. when loan and advances increases then NIM also increases. Whereas other variables are insignificant this shows that they do not have any relation with the NIM.

4.2.3 Regression Analysis

The regression analysis for joint venture banks, private banks and public banks for model one has been presented below:

Table 4.16

Estimated Regression Results of Net Interest Margin and its Determinants

Model	B	t	Sig.
(Constant)	-19.026	-2.822	.006
CAR	.158	1.630	.107
CD	6.345	3.818	.000
COF	-.186	-1.386	.169
NPA	8.386	2.366	.020
LR	.513	.248	.805
INF	.075	1.740	.085
NRG	3.871	3.538	.001
EXP	.399	.697	.488
INC	.708	1.658	.101
ASST	.035	.029	.977
DEPO	-3.366	-3.542	.001
Adjusted R-Square		.553	
F-ratio		12.132	
Sig. (p- value)		.000(a)	
Durbin Watson		1.645	

Source: Panel data in appendix

This table shows regression results of net interest margin on bank specific variables and macroeconomic variables based on pooled cross-sectional data of 20 commercial banks of Nepal with 100 observations from the year 2008 to 2012. The regression results consist of various specifications of the model 1 in the form of simple and multiple regressions. The reported values are intercepts and slope coefficients of respective explanatory variables with t-statistics in the parentheses. The reported results also include the values of F-statistics (F), adjusted coefficient of determination (Adj. R^2), Darwin Watson test.

NIM = -19.026 + 0.158 CAR+ 6.345 CD - 0.186COF+ 8.386 NPL+ 0.513 LR + 0.075 INF+ 3.871NRG + 0.399 Ln EXP+ 0.708Ln INC+ 0.035 Ln Asst - 3.366LN Depo

Table 4.16 shows the coefficient of variables for Model I here in the above equation CAR is positively related with dependent variable NIM which indicates that when the capital adequacy ratio of the bank increases net interest margin of the bank also increases but there will be no effect of size on net interest margin. Credit to deposit is positively related with dependent variable NIM which indicates that when the credit to deposit of the bank increases net interest margin also increases and is significant at 1% which shows that credit to deposit has strong effect on NIM. Cost of fund is negatively related with the NIM i.e. when cost of fund increases then NIM decreases and is also insignificant which shows that it does not affect NIM. Non-performing loan is positively related with NIM i.e. when non-performing loan increases then NIM also increases and is significant at 5% level of significance which shows it has strong relation with NIM. Liquidity ratio is positively related with NIM i.e. when liquidity ratio increases then NIM also increases and is insignificant which shows that it has no relation with NIM. Inflation is positively related with NIM i.e. when inflation increases then NIM also increases and is significant at 10% level of significance which shows it is strongly related with NIM. Non –interest revenue to gross revenue is positively related with NIM i.e. when non- interest revenue to gross revenue increases then NIM also increases and is significant at 1% level of significance which shows that it is strongly related with NIM. An expense, income and assets is positively related with NIM i.e. when expenses increases then net interest margin also increases and are insignificant which shows that they have no relation with NIM. Deposit is negatively related with NIM i.e. when deposit increases then NIM also increases and is significant at 1% level of significance which shows that it is strongly related with NIM.

The table 4.16 explains some aspect of the highlighted parameters such as R square, adjusted R square, standard error of the estimated and Durbin- Watson static. Adjusted R square is preferred to simple R square because Adjusted R square considers the effect of added more variables. It can be seen that the value of adjusted R squared is 0.553 which means that 55.3% variation in the dependent variable (NIM) is explained by the independent variable.

The Durbin-Watson statistic is the statistic which is used to detect whether there is any serial or autocorrelation between the residual terms. The tolerable value of Durbin- Watson statistic is between 1.5 to 2.4. In the estimated equation the value of Durbin- Watson statistic is 1.645 which indicates that there is serial autocorrelations between the residual terms. F value is 12.132, which

is significant at level of 5%. Generally higher the F-statistic the better is the goodness of fit of the regression equation.

Table 4.17

Estimated Regression Results of Net Interest Margin and its Determinants

Model	B	t	Sig.
(Constant)	65.622		.025
Size	-24.485	2.278	.234
Deposit	.010	-1.199	.007
Cap	25.605	2.770	.000
IBR	.115	16.040	.673
discount	-.873	.423	.713
INF	.014	-.369	.845
Lagged. ENIM	.540	.196	.000
GDP	-3.935	7.460	.142
LOAN	-.477	-1.481	.570
Adjusted R-Square		.804	
F-ratio		46.106	
Sig. (p- value)		.000(a)	
Durbin Watson		1.542	

ENIM = 65.622 - 24.485SIZE+ 0.010DEP+ 25.605CAR+ 0.115loan -0.873INTERBANK + .014 DISCOUNT+ .540GDP - 3.935INF -0.477 lagged NIM

Table 4.17 shows the coefficient of variables for Model II here in the above equation size is negatively related with dependent variable ENIM which indicates that when the size of the bank increases net interest margin of the bank decreases but there will be no effect of size on net interest margin. Deposit is positively related with dependent variable ENIM which indicates that when the deposit of the bank increases net interest margin also increases and is significant at 1% which shows that deposit has strong effect on ENIM. Capital adequacy ratio is positively related with dependent variables ENIM which indicates that when the capital adequacy ratio increases then net interest margin also increases and is also significant at 1% level of significant which shows that this has strong relation with EMIN. Interbank rate is positively related with depended variables which indicate that when interbank rate increases then net interest margin also increases and is insignificant i.e. there is no effect of interbank rate on ENIM. Discount is negatively related with depended variable ENIM i.e. when discount increases then EMIN decreases, and is insignificant i.e. discount do not have any effect on ENIM. Gross domestic product is positively related with ENIM i.e. when gross

domestic product increases then ENIM also increases and is insignificant which show that GDP do not have any relation with ENIM. Inflation is negatively related with ENIM i.e. when inflation increase then ENIM decreases and is insignificant which shows that it has no relation with ENIM. Lagged ENIM is positively related with dependent variable ENIM this shows that when lagged ENIM increases then ENIM also increases and is also significant at 1% level of significant which shows that this has strong relation with ENIM.

The table 4.17 explains some aspect of the highlighted parameters such as R square, adjusted R square, standard error of the estimated and Durbin- Watson static. Adjusted R square is preferred to simple R square because Adjusted R square considers the effect of added more variables. It can be seen that the value of adjusted R squared is 0.804 which means that 80.4% variation in the dependent variable (NIM) is explained by the independent variable.

The Durbin-Watson statistic is the statistic which is used to detect whether there is any serial or autocorrelation between the residual terms. The tolerable value of Durbin- Watson statistic is between 1.5 to 2.4. In the estimated equation the value of Durbin- Watson statistic is 1.542 which indicates that there is serial autocorrelations between the residual terms. F value is 46.106, which is significant at level of 5%. Generally higher the F-statistic the better is the goodness of fit of the regression equation.

4.3Analysis of Primary Data

This section of the study is based primary data that is the questionnaire survey, which mainly deals with qualitative aspect of the net interest margin in Nepalese commercial banks. For which, 100 questionnaires were distributed to respondents of various categories such as manager, assistant manager, department head etc. Out of total 100 questionnaires 32 usable questionnaires were collected with a response rate of 66%. This section of reports the results of questionnaire survey conducted among executive level employee, general managers, branch managers and some assistant level employee. Questionnaire survey was designed to understand the views of the respondents in relation to net interest margin of commercial banks in Nepal. A set of questionnaire including personal detail, yes/no, multiple choice, ranking and Likert scale type of questions are provided. The respondent profile along with their characteristics and the result of the survey are presented in table below.

Table 4.18

Respondent's profile

Respondents' Character	Number	Percentage
Gender :		
Male	45	45.0
Female	55	55.0
Total	100	
Position:		
Top level	63	63
Middle level	27	27
Lower level	10	10
Total	100	
Academic Qualification:		
Above Master	6	6.0
Master	66	66.0
Bachelor	28	28.0
Total	100	100
Years associated with bank:		
Below 1Year	15	15
1-3 Year	35	35
Above 3 years	50	50
Total	100	100.0

Source: Field Survey, 2013

The table 4.18 reveals the personal characteristics of the respondents combined on the basis of gender, designation at the office, academic qualification and years of professional experience. Among the total 100 respondents 45 were male and 55 were female, 63 were top level executive, 27 were middle level employee and 10 were lower level employee. Majority of the respondent's i.e, 66 completed master's degree have more than 3 and above experience with the organization.

There are very few employees who have above masters qualification but about half no of employees have more than 3 years of experience which reveals that the bank must have long experience in the field of banking industry. Less no. of employee have bachelor level of qualification having experience in the organization with in 1 year this shows that organization has good and qualified employees.

Table 4.19

Responses Associated with factors affecting Net Interest Margin

Statements	Yes	No	Don't Know
Composition of deposit affects the net interest margin.	84	2	14
Maturity of deposit has impact on net interest margin.	77	6	17
Market interest rate influences the net interest margin.	58	13	29
Portfolio diversification affects the net interest margin.	74	10	16
Management decision influences the net interest margin.	75	6	19
Credit Policy Guidelines affects the net interest margin.	49	17	34
Corporate Governance affects the net interest margin.	45	29	25

Source: Field Survey, 2013

In the table 4.19 the respondents were asked the factors affecting the net interest margin of commercial banks. The responses of the respondents are shown in the above table. As is evident from above table question to the composition of deposit affects the net interest margin 84% answered yes where as 2% answered no and 14% answered don't know, this shows that most of the respondents agree with the statement. In question to the maturity of deposit has impact on net interest margin 77% of the respondents answered yes where as 6% answered no and 17% answered don't know. In question asked to the market interest rate influences the net interest margin, 58% answered yes where as 13% responses no and 29% answered no idea. In question to the portfolio diversification affects the net interest margin 74% answered yes where as 10% answered no and 16% answered don't know. In responses to the question management decision influences the net interest margin 75% answered yes where as 6% answered no and19% answered don't know. In response to the question Credit Policy Guidelines affects the net interest margin 49% answered yes where as 17% answered no and 34% answered don't know. In response to the question Corporate Governance affects the net interest margin 45% answered yes where as 29% answered no and 25% answered don't know. In all of the above data shows that most of the respondents agree with the statement.

Table 4.20

Responses Associated with factors affecting Net Interest Margin

Statements	Frequency	Percentage
Cost to income ratio	15	15
Cost of fund	2	2
Liquidity	75	75
Non-performing assets	8	8

Source: Field Survey, 2013

The responses of the respondents based on the factors affecting net interest margin i.e. cost to income ration, cost of fund, liquidity and non-performing loan are presented in table 4.20. Based on the responses first priority is given to the liquidity ratio, the second priority is given to the cost to income ratio, the third priority is given to non-performing loan and the last priority is given to cost of fund.

Table 4.21

Responses Associated with factors helps to increase the net interest margin.

Statements	Frequency	Percentage
Higher deposit rate	10	10
Higher lending rate	52	52
Market interest rate	15	15
Low inflation rate	23	23

Source: Field Survey, 2013

In the table 4.21the responses of the respondents based on the factors that help to increase the net interest margin i.e. higher deposit ratio, higher lending rate, market interest rate and low inflation rate are presented in above table. Based on the responses first priority is given to the higher lending rate, the second priority is given to the low inflation rate, the third priority is given to market interest rate and the last priority is given to higher deposit rate.

Table 4.22

Responses Associated with factors that leads to bank profitability

Statements	Frequency	Percentage
Diversification of portfolio.	78	78
Composition of deposit	9	9
Management decision	5	5
Credit policy guidelines	8	8

Source: Field Survey, 2013

In the table 4.22the responses of the respondents based on the factors that factors that leads to bank profitability i.e. diversification of portfolio, composition of deposit, management decision and credit policy guidelines are presented in above table. Based on the responses first priority is given to the diversification of portfolio, the second priority is given to the composition of deposit, the third priority is given to credit policy guidelines and the last priority is given to management decision.

Table 4.23

Responses Associated with the Suggestion Regarding net Interest Margin

Statements	Frequency	Percentage
Increase cost to income ratio	5	5
Decrease cost of fund	10	10
Increase liquidity	70	70
Decrease non-performing assets	15	15

Source: Field Survey, 2013

In the table 4.23 the responses of the respondents based on the factors that the suggestion regarding net interest margin i.e. increase cost to income ratio, decrease cost of fund, increase liquidity and decrease non-performing loan are presented in above table. Based on the responses first priority is given to the increase liquidity, the second priority is given to the decrease non-performing assets, the third priority is given to decrease cost of fund and the last priority is given to increase cost to income ratio.

Table 4.24

Responses Associated with the relation between inflation and net interest margin

Statements	Frequency	Percentage
Positive	15	15
Negative	20	20
No relation	10	10
No idea	55	55

Source: Field Survey, 2013

In the table 4.24 the responses of the respondents based on the factors that the relation between inflation and net interest margin i.e. positive, negative, no relation and no idea are presented in above table. Based on the responses first priority is given to no

idea, the second priority is given to the negative, the third priority is given to positive and the last priority is given to no relation.

Table 4.25

Rank Scores on Determinants of Net Interest Margin

Factors Affecting net Interest Margin	Rank					Mean	Overall rank
	1	2	3	4	5		
Cost to Income Ratio	8	44	38	10	0	4.4	4th
Total Capital Ratio.	4	4	26	42	24	3	8th
The ratio of non-interest revenue to gross revenue	4	4	30	48	14	3.3	6th
Ratio of Loans to Customer deposits	2	6	26	48	18	3.2	7th
Cost of Fund.	4	8	30	32	26	3.5	5th
Non- Performing Assets.	2	6	22	48	22	6	3rd
Liquidity Position of the Bank	4	30	46	20	0	6.7	1st
Inflation.	2	6	36	44	12	6.3	2nd

Source: Field survey, 2013

There are many factors that affect the net interest margin of commercial bank. The factor considered to be important to determine net interest margin may not be important to other. In addition, degree to which every executive respond to such factors affecting the net interest margin also differs. The table above conforms that's respondents feel liquidity position of the bank as the most important factors influencing the net interest margin of commercial bank of Nepal, which is followed by inflation. Inflation is considered to be the second most important factor determinants of net interest margin by respondents. Non-performing assets is another curial aspect that affects the net interest margin which is followed by cost to income ratio. Cost to income ratio is the fourth important factor that determines net interest margin. Cost of fund is the fifth important factor which is followed by ratio of non-interest revenue to gross revenue. Ratios of noninterest revenue to gross revenue stand on the sixth position affecting the net interest margin. Ratio of loan to customer deposits and total capitalization is the least influencing factor determining net interest margin.

Table 4.26

Statement on Level of Agree and Disagree Net Interest Margin

Statements	S.A			S.D		Agree%	Disagree%
	1	2	3	4	5		
Cost to Income Ratio influences the Net interest margin.	8	44	38	10	0	52%	10%

Total Capital Ratio affects Net interest margin.	4	4	26	42	24	8%	66%
The ratio of non-interest revenue to gross revenue has impact on Net interest margin.	4	4	30	48	14	8%	62%
Ratio of Loans to Customer deposits affects the Net interest margin	2	6	26	48	18	8%	66%
Cost of Fund has impact on the Net interest margin.	4	8	30	32	26	12%	58%
Non- Performing Assets affects Net interest margin.	2	6	22	48	22	8%	70%
Liquidity Position of the Bank influences the Net interest margin.	4	30	46	20	0	34%	20%
Inflation affects the net interest margin of the banks.	2	6	36	44	12	8%	56%

Source: Field Survey, 2013

The above table revels that the majority of the respondents are neutral about the statement where as other are disagree with the statement however only few respondents have agreed with the statements. 52% of the people have agreed that cost to Income Ratio influences the Net interest margin where as 10% have disagreed with it and other are neutral about the statement. 8% of the respondents agreed with the statement that total Capital Ratio affects Net interest margin where as 66% disagreed with it and other are neutral about the statements.88% of the people have agreed that ratio of non-interest revenue to gross revenue has impact on Net interest margin where as 62% have disagreed with it and other are neutral about the statement. 8% of the people have agreed that ratio of Loans to Customer deposits affects the Net interest margin where as 66% have disagreed with it and other are neutral about the statement. 12% of the people have agreed that cost of Fund has impact on the Net interest margin where as 58% have disagreed with it and other are neutral about the statement. 8 % of the people have agreed that non- Performing Assets affects Net interest margin where as 70% have disagreed with it and other are neutral about the statement. 34 % of the people have agreed that liquidity Position of the Bank influences the Net interest margin where as 20% have disagreed with it and other are neutral about the statement. 8 % of the people have agreed that inflation affects the net interest margin of the bankswhere as 56 % have disagreed with it and other are neutral about the statement.

Table 4.27

The Impact of Net Interest Margin on Banks' Profitability and Other Performance Variables

Statements	Strongly Agree			Strongly Disagree		Agree%	Disagree%
	1	2	3	4	5		
Management decision affects the bank's profitability.	4	30	46	20	0	34%	20%
Net interest margin affects the profitability of the banks.	22	24	36	18	0	46%	18%
Depositors and borrowers affect the bank's profitability.	2	8	36	40	41	10%	81%

Source: Field Survey, 2013

The above table revels that the majority of the respondents are neutral about the statement where as other are disagree with the statement however only few respondents have agreed with the statements. 34% of the people have agreed that management decision affects the bank's profitability where as 20% have disagreed with it and other are neutral about the statement. 46% of the people have agreed that net interest margin affects the profitability of the banks where as 18% have disagreed with it and other are neutral about the statement.46% of the people have agreed that depositors and borrowers affect the bank's profitability where as 18% have disagreed with it and other are neutral about the statement.

4.4 Major Findings

- CAR displayed positive relation with dependent variable NIM which indicated that when the capital adequacy ratio of the bank increases net interest margin of the bank also increases but there will be no effect of size on net interest margin.
- Cost to deposit had positive relation with dependent variable NIM which indicated that when the cost to deposit of the bank is increased net interest margin also increased and is significant at 1% which showed that cost to deposit has strong effect on NIM.
- Cost of fund had negative relation with the NIM i.e. when cost of fund increased then NIM decreased and is also insignificant which showed that it does not affect NIM.
- Non-performing loan have positive relation with NIM i.e. when non-performing loan increases then NIM also increases and is significant at 5% level of significance which shows it has strong relation with NIM.

- Liquidity ratio had positive relation with NIM i.e. when liquidity ratio increases then NIM also increases and is insignificant which shows that it has no relation with NIM.
- Inflation have positive relation with NIM i.e. when inflation increases then NIM also increases and is significant at 10% level of significance which shows it is strongly related with NIM.
- Non –interest revenue to gross revenue have positive relation with NIM i.e. when non-interest revenue to gross revenue increases then NIM also increases and is significant at 1% level of significance which shows that it is strongly related with NIM.
- An expense, income and assets had positive related with NIM i.e. when expenses increases then net interest margin also increases and are insignificant which shows that they have no relation with NIM.
- Deposit had negative relation with NIM i.e. when deposit increases then NIM also increases and is significant at 1% level of significance which shows that it is strongly related with NIM.
- Size have negative relation with dependent variable ENIM which indicates that when the size of the bank increases net interest margin of the bank decreases but there will be no effect of size on net interest margin.
- Deposit have positive relation with dependent variable ENIM which indicates that when the deposit of the bank increases net interest margin also increases and is significant at 1% which shows that deposit has strong effect on ENIM.
- Capital adequacy ratio have positive relation with dependent variables ENIM which indicates that when the capital adequacy ratio increases then net interest margin also increases and is also significant at 1% level of significant which shows that this has strong relation with EMIN.
- Interbank rate have positive relation with depended variables which indicate that when interbank rate increases then net interest margin also increases and is insignificant i.e. there is no effect of interbank rate on ENIM.
- Discount had negative relation with depended variable ENIM i.e. when discount increases then EMIN decreases, and is insignificant i.e. discount do not have any effect on ENIM.
- Gross domestic product have positive relation with ENIM i.e. when gross domestic product increases then ENIM also increases and is insignificant which show that GDP do not have any relation with ENIM.

- Inflation have negative relation with ENIM i.e. when inflation increase then ENIM decreases and is insignificant which shows that it has no relation with ENIM.
- Lagged ENIM had positive relation with dependent variable ENIM this shows that when lagged ENIM increases then ENIM also increases and is also significant at 1% level of significant which shows that this has strong relation with ENIM.
- With respect to the question asked composition of deposit affects the net interest margin most of the answer was yes, this shows that most of the respondents agree with the statement.
- About question asked the maturity of deposit has impact on net interest margin most of the answer was yes, this shows that most of the respondents agree with the statement.
- With reference to the question asked to the market interest rate influences the net interest margin, most of the answer was yes, this shows that most of the respondents agree with the statement.
- In question to the portfolio diversification affects the net interest margin most of the answer was yes, this shows that most of the respondents agree with the statement.
- In responses to the question management decision influences the net interest margin most of the answer was yes, this shows that most of the respondents agree with the statement.
- In response to the question Credit Policy Guidelines affects the net interest margin most of the answer was yes, this shows that most of the respondents agree with the statement.
- In response to the question Corporate Governance affects the net interest margin most of the answer was yes, this shows that most of the respondents agree with the statement.
- Regarding the factors affecting the net interest margin in Nepal the survey result shows that the many respondents gave the first priority to liquidity position of the bank.
- Majority of the responses felt that higher lending rate helps to increase the net interest margin.
- With respect to the responses associated with factors that lead to bank profitability majority suggested to diversify the bank's portfolio.
- Similarly, regarding the respondents agree and disagree statements on net interest margin most of the respondents cost to income influences the net interest margin where as non-performing assets acts and the less influencing factor for net interest margin.

- Likewise, regarding respondents agree and disagree statements on net interest margin affects the bank's profitability majority of the responses agreed this statement. This implies that net interest margin affects the bank's profitability.

CHAPTER-V
SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter includes the summary of the previous chapters, the conclusions drawn from the analysis of the research. Based on the summary and conclusions, the recommendations are suggested with a hope of improving the existing situations of the determinant of interest margin of the commercial bank of Nepal.

5.1 Summary

The area of interest margins is relatively new area relative to the importance of bank interest income as a component of total bank income. In Nepalese context, there have been very few studies that tried to focus on the interest margins. This study extends the existing literature relating to the net interest margins across a number of dimensions. This study basically follows the methodology adopted by Barry Williams (2007) study.

This study mainly aims at finding the factors that determines net interest margin of commercial banks. Banks are mainly a risk-averse dealer which accept public deposits and lends it to the individuals and businesses. The benefit of such financial intermediation is the excess of interest income over interest expenses, called net interest margin (NIM). Higher the difference, higher will be the net return to the bank. However, the net interest margin of banks depends heavily on various factors. Based on the theoretical model of Maudos and Fernandez (2004) which has later been extended by Barry Williams (2007), various 13 variables are identified. Those basic explanatory variables include cost to income ratio, non-performing loan, total capital ratio, cost of fund, operating costs, capital adequacy ratio, liquidity position, inflation, deposits, loan and advances, bank discount rate, gross domestic product and inflation.

The study is based on 20 commercial banks with the five years financial data covering period of mid-July 2008 to mid-July 2012. The data are generated by the pooled cross-sectional observation of these 20 selected banks.

5.2 Conclusions

The major conclusion of the study is that net interest margin of commercial banks is a positive function of capital adequacy ratio, cost to income ratio, non-performing loan, liquidity ratio, expenses, income, total capital ratio, noninterest revenue to gross revenue,

whereas it is a negative function of cost of fund and total loan and advances. Similarly, Expanded Net Interest Margin is positive function if capital adequacy ratio, load and advances, discount, gross domestic product and inflation where as negative function of bank size, interbank rate and lagged net interest. The analysis of secondary data shows that bank's profitability depends on the ability of banks to generate the net interest margin. However, the lower coefficient of NIM shows that the degree of effect the net interest margin can make on profitability is weaker. On the other hand, the net interest margin of the banks depends on many factors. Some of these factors include capital adequacy ratio, cost to income ratio, non-performing loan, liquidity ratio, expenses, income, total capital ratio, noninterest revenue to gross revenue. Among these factors, the net interest margin is a positive function of market power, operating costs, managerial risk aversion, capital reserve, and non-performing loan. However, the relationship between net interest margin and cost of fund and total loan and advances is negative.

From the analysis of primary data, it was found that results vary among the respondents. The most influencing variables include liquidity ratio, inflation, non- interest revenue to gross revenue, as they are ranked first, second, and third. Variables like non-performing assets, loan to customer deposits have less influence on net interest margin of the bank.

5.3 Recommendations

Based on the findings of this study, the following recommendations have been forwarded:

- Since factors like Expenses, size, GDP, inflation are the important determinants and have strong negative relationship, changes in these factors adversely affect the banks' net interest margin. As there is an inverse relation between these factors and net interest margin so these factors should be properly addressed.
- Since net interest margin of banks is the primary factor that affects banks earning, banks should try to improve their interest margin. It can be improved either by increasing interest earning on loan or decreasing interest expenses on deposit.
- Factors like capital adequacy ratio and expenses have almost no effect on the determination of net interest margin. As such, banks should give less importance to them.

- The non-performing loan status of Nepalese bank is not encouraging. Most banks have NPL beyond the tolerable limit. Hence, banks should give more emphasis on loan management to increase good debts and reduce bad debts.

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ANNEXES

Annex A

Model Summary[b]

		NIM	CAR	CD	COF	NPA	LR	INF	NRG	EXP	IN	ASST	DEPO
Pearson Correlation	NIM	1.000	.204	.251	-.332	.480	-.025	.179	.406	.314	.304	.223	.203
	CAR	.204	1.000	.037	-.052	.025	-.037	-.008	-.004	.176	.124	.165	.098
	CD	.251	.037	1.000	.479	.049	-.414	.080	-.397	-.143	-.175	.129	.125
	COF	-.332	-.052	.479	1.000	-.222	-.097	-.087	-.670	-.278	-.303	-.460	-.478
	NPA	.480	.025	.049	-.222	1.000	.259	-.141	.486	.028	-.059	-.070	-.042
	LR	-.025	-.037	-.414	-.097	.259	1.000	-.098	.337	-.175	-.137	-.043	-.161
	INF	.179	-.008	.080	-.087	-.141	-.098	1.000	-.265	.387	.372	.178	.175
	NRG	.406	-.004	-.397	-.670	.486	.337	-.265	1.000	.060	.075	.289	.283
	EXP	.314	.176	-.143	-.278	.028	-.175	.387	.060	1.000	.875	.898	.892
	IN	.304	.124	-.175	-.303	-.059	-.137	.372	.075	.875	1.000	.842	.846
	ASST	.296	.251	-.298	-.483	.003	-.048	.146	.338	.851	.774	1.000	.962
	DEPO	.211	.115	-.429	-.509	-.012	-.044	.136	.357	.831	.756	.962	1.000
Sig. (1-tailed)	NIM	.	.021	.006	.000	.000	.401	.037	.000	.001	.001	.013	.021
	CAR	.021	.	.358	.302	.404	.357	.467	.486	.040	.110	.050	.166
	CD	.006	.358	.	.000	.315	.000	.213	.000	.078	.041	.100	.108
	COF	.000	.302	.000	.	.013	.168	.195	.000	.003	.001	.000	.000
	NPA	.000	.404	.315	.013	.	.005	.080	.000	.392	.281	.245	.340
	LR	.401	.357	.000	.168	.005	.	.165	.000	.041	.087	.337	.055
	INF	.037	.467	.213	.195	.080	.165	.	.004	.000	.000	.038	.041
	NRG	.000	.486	.000	.000	.000	.000	.004	.	.276	.230	.002	.002

	EXP	.001	.040	.078	.003	.392	.041	.000	.276	.	.000	.000	.000
	IN	.001	.110	.041	.001	.281	.087	.000	.230	.000	.	.000	.000
	ASST	.001	.006	.001	.000	.487	.319	.074	.000	.000	.000	.	.000
	DEPO	.017	.126	.000	.000	.453	.333	.088	.000	.000	.000	.000	.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	**.776[a]**	**.603**	**.553**	**1.3420158**	**.603**	**12.132**	**11**	**88**	**.000**	**1.645**

a. Predictors: (Constant), Non performing loan, capital adequacy ratio, inflation, liquidity ratio, cost of fund, credit to deposit, Lneincome, NRG, Lnexpenses, lnasst, lndepo

b. b. Dependent Variable: NIM

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	240.352	11	21.850	12.132	.000[a]
Residual	158.489	88	1.801		
Total	398.840	99			

a. Predictors: (Constant), lndepo, Non performing loan, capital adequacy ratio, inflation, liquidity ratio, cost of fund, credit to deposit, Lneincome, NRG, Lnexpenses, , lnasst,

b. Dependent Variable: NIM

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-19.026	6.742		-2.822	.006
	CAR	.158	.097	.143	1.630	.107
	CD	6.345	1.662	.483	3.818	.000
	COF	-.186	.135	-.160	-1.386	.169
	NPA	8.386	3.545	.225	2.366	.020
	LR	.513	2.065	.023	.248	.805
	INF	.075	.043	.154	1.740	.085
	NRG	3.871	1.094	.447	3.538	.001
	EXP	.399	.572	.153	.697	.488
	IN	.708	.427	.240	1.658	.101
	ASST	.035	1.202	.011	.029	.977
	DEPO	-3.366	.950	-1.175	-3.542	.001
a. Dependent Variable: NIM			DEPO			

Correlations

		ENIM	Size	Deposit	CAR	IBR	DIS	INF	Lagg ENIM	GDP	LOAN
Pearson Correlation	ENIM	1.000	-.138	.074	.823	.092	.087	-.048	.382	.052	.056
	SIZE	-.138	1.000	.760	-.269	-.119	-.137	-.027	-.008	-.106	.717
	DEPO	.074	.760	1.000	-.023	.303	.304	.136	.003	.321	.884
	CAR	.823	-.269	-.023	1.000	.159	.193	.003	.063	.143	.021
	IBR	.092	-.119	.303	.159	1.000	.910	.457	.112	.868	.367
	DIS	.087	-.137	.304	.193	.910	1.000	.339	.041	.874	.343
	INF	-.048	-.027	.136	.003	.457	.339	1.000	.040	.584	.233
	LaggENIM	.382	-.008	.003	.063	.112	.041	.040	1.000	.114	.000
	GDP	.052	-.106	.321	.143	.868	.874	.584	.114	1.000	.413
	LOAN	.056	.717	.884	.021	.367	.343	.233	.000	.413	1.000
Sig. (1-tailed)	ENIM	.	.086	.232	.000	.182	.195	.316	.000	.303	.291
	Size	.086	.	.000	.003	.119	.087	.395	.470	.146	.000
	Deposit	.232	.000	.	.409	.001	.001	.088	.489	.001	.000
	Cap	.000	.003	.409	.	.057	.027	.487	.267	.077	.419
	Interbankrate	.182	.119	.001	.057	.	.000	.000	.133	.000	.000
	discount	.195	.087	.001	.027	.000	.	.000	.344	.000	.000
	INF	.316	.395	.088	.487	.000	.000	.	.345	.000	.010
	LaggENIM	.000	.470	.489	.267	.133	.344	.345	.	.129	.499
	lnGDP	.303	.146	.001	.077	.000	.000	.000	.129	.	.000
	Lnloan	.291	.000	.000	.419	.000	.000	.010	.499	.000	.
N		100	100	100	100	100	100	100	100	100	100

ANOVA

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.776[a]	.603	.553	1.3420158	.603	12.132	11	88	.000	1.645

a. Predictors: (Constant), lndepo, Non performing loan, capital adequacy ratio, inflation, liquidity ratio, cost of fund, credit to deposit, Lneincome, NRG, Lnexpenses, , lnasst,

b. Dependent Variable: NIM

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-19.026	6.742		-2.822	.006
	CAR	.158	.097	.143	1.630	.107
	CD	6.345	1.662	.483	3.818	.000
	COF	-.186	.135	-.160	-1.386	.169
	NPA	8.386	3.545	.225	2.366	.020
	LR	.513	2.065	.023	.248	.805
	INF	.075	.043	.154	1.740	.085
	NRG	3.871	1.094	.447	3.538	.001
	EXP	.399	.572	.153	.697	.488
	IN	.708	.427	.240	1.658	.101
	ASST	.035	1.202	.011	.029	.977
	DEPO	-3.366	.950	-1.175	-3.542	.001
a. Dependent Variable: NIM			DEPO			

ANNEX- B

Dear sir/ma'am

I am student of Shankar Dev Campus (affiliated to Tribhuvan University). I am doing a research on **"**Determinants of Net Interest Margin in Nepalese Commercial Banks**"**. I request you to kindly fill up the questionnaire below and also assure you that the data generated will be kept confidential. If you have any queries about questions and want the result of this finding then, please feel free to contact me at 9841794458. Thanking you.

Yours sincerely

_____

Roja Shrestha

Section I. Respondents Profile

Name (optional) :	
Gender:	Male ☐ Female ☐
Name of the organization :	
Designation:	
Education:	Bachelor ☐ Masters ☐ Above bachelor ☐
Experiences:	Below 1year ☐ 1- 3 year ☐ Above 3 year ☐
Address:	

Section II. Please tick (√) the appropriate boxes which comes closest to your opinion with reference to your organization

1. Composition of deposit affects the net interest margin.
    a. Yes b. No c. Don't know
2. Maturity of deposit has impact on net interest margin.

a. Yes b. No c. Don't know

3. Market interest rate influences the net interest margin.

a. Yes b. No c. Don't know

4. Portfolio diversification affects the net interest margin.

a. Yes b. No c. Don't know

5. Management decision influences the net interest margin.

a. Yes b. No c. Don't know

6. Credit Policy Guidelines affects the net interest margin.

a. Yes b. No c. Don't know

7. Corporate Governance affects the net interest margin.

a. Yes b. No c. Don't know

Section III. Please tick (√) the appropriate boxes which comes closest to your opinion with reference to our organization

1. Which of the following factors, do you think mainly affects net interest margin?

a. Cost to income ratio

b. Cost of fund

c. Liquidity

d. Non-performing assets

2. …….. helps to increase the net interest margin.

a. Higher deposit rate

b. Higher lending rate

c. Market interest rate

d. Low inflation rate

3. …….leads to bank profitability.

a. Diversification of portfolio.

b. Composition of deposit

c. Management decision

d. Credit policy guidelines

4. What do you suggest regarding net interest margin?

a. Increase cost to income ratio

b. Decrease cost of fund

c. Increase liquidity

d. Decrease non-performing assets

5. What is the relation between inflation and net interest margin.

a. Positive

b. Negative

c. No relation

d. No idea

Section IV. Please rank the factors influencing Net Interest Margin with reference to their relative importance. Here, 1 indicates the most important factor and 8 indicate the least important.

e. Cost to income ratio ☐
f. Total capital ratio ☐
g. Non-interest revenue to gross revenue ☐
h. Loan to customer deposit ☐
i. Cost of Fund ☐
j. Non-performing assets ☐
k. Liquidity of banks Inflation ☐

S. No.	Statements	1.	2.	3.	4.	5.
1.	Cost to Income Ratio influences the Net interest margin.					
2.	Total Capital Ratio affects Net interest margin.					
3.	The ratio of non interest revenue to gross revenue has impact on Net interest margin.					
4.	Ratio of Loans to Customer deposits affects the Net interest margin					
5.	Cost of Fund has impact on the Net interest margin.					
6.	Non- Performing Assets affects Net interest margin.					
7.	Liquidity Position of the Bank influences the Net interest margin.					
8.	Inflation affects the net interest margin of the banks.					

Section V. Please rate the following statements regarding the determinants of Net Interest Margin of commercial banks in a 5 point scale (1 for Strongly Agree, 2 for Agree, 3 for Neutral, 4 for Disagree and 5 for Strongly Disagree).
Determinants of Banks' Net Interest Margin

The Impact of Net Interest Margin on Banks' Profitability and Other Performance Variables.

S.N o.	Questions	1.	2.	3.	4.	5.
1.	Management decision affects the bank's profitability.					
2.	Net interest margin affects the profitability of the banks.					
3.	Depositors and borrowers affect the bank's profitability.					

Section VI. Please express you view regarding the determinants of net interest margin and its impact on profitability of commercial banks of Nepal.

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……
……
……..

_____

Date:

Signature of Respondent

ANNEX C

List of Sample Commercial Banks

SN	Commercial Banks
1.	Nepal Bank Ltd.
2.	Agriculture Development Bank Ltd.
3.	NABIL Bank Ltd.
4.	Himalayan Bank Ltd.
5.	Nepal SBI Bank Ltd.
6.	Everest Bank Ltd.
7.	Nepal Bangladesh Bank Ltd.
8.	Nepal Investment Bank Ltd.
9.	Standard Chartered Bank Ltd.
10.	Bank of Kathmandu Ltd.
11.	Lumbini Bank Ltd.
12.	Laxmi Bank Ltd.
13.	Global IME Bank Ltd.
14.	Citizen Bank Ltd.
15.	Kumari Bank Ltd.

16.	Prime Bank Ltd.
17.	Sunrise Bank Ltd.
18.	NMB Bank Ltd.
19.	Machhapuchre Bank Ltd.
20.	Nepal Credit and Commerce Bank Ltd.