CHAPTER-I

INTODUCTION

1.1 Background of the study

Bank is a resource for economic development which maintains the self-confidence of various segments of the society and extends credit to the people. The objective of commercial bank is to mobilize idle resources into the most profitable sector after collecting them from scattered sources. The role of money in an economy is very important. Proper and well planed management of money directs, determines and enhance the health and productivity of total financial sector and the performance of financial sector affect the growth of economy. Hence, money is the topic to manage, and banks and other financial institutions are the manager.

Banks grant loans and advances to industries, people and companies that result in increase in the productivity of nation. Loans and advances to different people and corporate bodies help to increase their income and profits. The source of finance is the most essential element of the establishment and operation of any profit and non-profit institutions. Profit oriented institution usually obtain these sources through ownership capital, Public capital through the issue of shares and through financial institution such as banks, in the form of credits. Lending is the most fundamental function of a bank and has its different forms. It can be divided into the fund based and non-fund based lending. The fund based lending can be further divide into cash credit, overdrafts, demand and term credits, bills purchased and discounted and export packing credit, project loans etc. similarly, non-fund based credit can be classified into documentary credit, guarantees and bill co-acceptance facility(Chaudhary, 2015).

The most important source of revenue for any banking financial institution is providing credit, an agreement between two parties through which borrower receives something of value now and agree to repay bank the principal, generally with interest, at some future date. Credit, the crucial part of banking operation, is exposed to various types of risks.

One of the major dimensions of credit risk is the credit portfolio risk (measuring and managing risk from credit exposures at the portfolio level). Credit portfolio risk has two components which are systematic risk and concentration risk. Credit concentration risk arises due to inadequate diversification of credit portfolio. Credit concentration is used to donate the total volume of credit over the number or variety of clients or sector to whom/ which the bank has provided credit. Concentration risk in banking sector can be in form of uneven distribution of credit to banks borrower. Besides that, uneven distribution of credit to particular sector, region, industries, different sizes and types of credit is also a major source of concentration risk. Concentration risk in credit portfolios could be come from name concentration (the incomplete diversification of idiosyncratic borrower risk) and sector concentration (the existence of multiple systematic risk factors, generally related to industry effects, also to other sources such as location or explicit macroeconomics factors) (Bundesbank, 2006).

Competition is growing in banking industry and hence the number of commercial banks reduces from 32 in 2012 to 28 in 2018 through merger. Thus, such growing competition between banks has affected bank profitability. Unhealthy competitions among banks are the main cause for not only flow of loans and advances to unproductive sectors but also concentration of similar sectors focusing short term profit than long term high risk (Neupane, 2016).

The importance of credit risk management to commercial banks cannot be overemphasized and it forms an integral part of the loan process. Loan and advances provided to borrowers may be at the risk of default, whereas banks extend the credit on the understanding that borrowers will repay their loans. Some borrowers usually default, and as a result, the bank's income decreases due to the need to increase loan loss provisions for such loans. Where commercial banks do not have an indication of what proportion of their borrowers will default, earnings will vary thus exposing the banks to an additional risk of variability of their profits (Onyiriuba, 2009). Effective management of credit risk can enhance banks‟ goodwill and depositors‟ confidence.

Thus, good credit risk policy is an essential condition for banks' performance and capital adequacy protection.

Commercial banks are exposed to high risk loans. The higher is the accumulation of unpaid loans implying that these loan losses have produced lower returns to many commercial banks. Basel Committee on Banking Supervision (1999) asserts that loans are the largest and most obvious source of credit risk, while other are found on the various activities that the bank involved itself with. The indicators to measure the credit risk management: capital adequacy ratio (CAR) and non-performing loans ratio (NPLR), which are the main indicators used to assess the soundness of the banking system (Bhanumurthy, 2014). However, every bank needs to identify measure, monitor and control credit risk and also determining how credit risks could be lowered. This means that a bank should hold adequate capital, control the non-performing loan and maintain the appropriate cost per loan assets.

For evaluating credit concentration HHI (Herfindahl-Hirschman Index) is used in this research. The HHI is only one element in the analysis of the competitive effect of bank. However, because of the importance attached to market concentration as a indicator of competition and the relatively easy of calculating the HHI, this index serve as an efficient screening device for regulators and as a planning tool for banker. The HHI accounts for the number of firms in a market, as well as concentration, by incorporating the relative size of all firms in the market. It is calculated by squaring the market share and summing the square (Rhoades, 1993).
Heuristic measures such as the HHI, in principle, can provide a ranking of portfolios in the order of their concentration risk. However, they have two limitations: firstly, they do not take into consideration any differences in credit risk dependence between the sector sand, secondly, the HHI does not supply any information on the economic capital needed to cover the risks (Bundesbank, 2006).

Credit risk is accessed through analyzing the financial performance of commercial banks in an attempt to mitigate impacts arising from credit defaults. The financial health of the commercial banks depends on the possession of good credit risk

management dynamics. Commercial banks may have a keen awareness of the need to identify, measure, monitor and control credit risk as well as to determine that they hold adequate capital against these risks and that they are adequately compensated for risks incurred.

Nepalese commercial banks have faced difficulties over the years for a multitude of reasons, the major cause of serious banking problems continues to be directly related to the relaxed credit standards for borrowers and counterparties, poor portfolio risk management whereby they fail to determine the best asset combination to invest in, which should have a negative correlation or lack of attention to changes in economic or other circumstances that can lead to a deterioration in the credit standing of a bank's counterparties thus, making them default in honoring their obligations as regards repayment of the loans.

NRB have some guidelines regarding credit concentration. The banks have to disburse 20 percent of their total credit in the productive sector. Loan to particular sector must not exceed 40 percent of total loan by any commercial banks in Nepal. Guidelines also direct commercial banks to grant loan to deprive sector should be minimum 5 percent of total loan. The other directives are a) loan to housing and real estate should be limited to 50 percent of collateral fair market value, but for loan to residential real estate is extended to 60 percent. b) loan related to real estate, housing, commercial building and plotting in any heading should not exceed to 25 percent of total loan. C) loan to other real estate including land buying and plotting should not exceed 10 percent of total loan(Unified-Directives, 2074)

1.2 Statement of the problem

Lending is the most important source of revenue for any bank and the credit being the crucial part of banking operation needs to be diversified in various sectors or products as specified by the government body to balance the loan portfolio. Bank has to monitor its credit portfolio which is required to protect depositors and even creditors.

In general, bank has to adopt risk management policies and procedure covering identification, acceptance, measurement, monitoring, reporting and control of credit concentration. It is crucial to know what drives bank profitability. Higher profitability

allows banks to generate funds to grant more credit to the economy. It is utmost important to diversify loan portfolio to minimize risk of concentration in one sector thereby increasing bank profitability. The proverb "don't put all eggs in one basket" is very much promising for examination of credit concentration.

In general, researches findings have indicated that loan prices, credit quality, capital and loan supply are significantly affected by bank's credit concentration. Therefore, reexamining is needed to evaluate few more determinants that are affected by credit concentration. The study deals with issues such as:

1. What is the situation of credit concentration and profitability of commercial banks in Nepal?
2. What will be the relation of credit concentration with profitability of commercial banks of Nepal?
3. Is the loan and advances proportionately being distributed to different sectors as guided by NRB guidelines?

1.3 Purpose of the study

The purpose behind this study is to understand the Sector wise and Product wise Loan (Credit) Concentration of Nepalese Commercial Bank and Its relation with Profitability. The specific objects of this research are:

1. To assess the sector wise, product wise credit concentration level and profitability of commercial banks in Nepal.
2. To analyze the relation of various credit concentration with profitability.
3. To examine the loan and advances being proportionately distributed by commercial banks to different sectors as guided by NRB guidelines?

1.4 Hypothesis Development

Following research hypothesis are developed to identify the relationship between sector wise and product wise credit concentration with profitability.

H1: There is a significant relationship between product wise credit concentration of bank credit and profitability.

H2: There is a significant relationship between sector wise credit concentration of bank credit and profitability.

1.5 Significance of the study

In the context of Nepal, most of the financial transactions are carried out through commercial banks. So, any turbulence in it can affect the entire economic system of our country. So, the governing body of Nepal has taken major step such as setting limit for lending in particular sector or product in order to make the banks safer. In a country where the financial sector is dominated by commercial banks, any failure in the sector has an immense implication on the economic growth of the country. Hence, it is the main reason for this study to evaluate the credit concentration as the banks' main sources of the revenue and growth is credit.

This research will provide an insight into the credit concentration pattern within the standards set by NRB.

Furthermore, this research search the link between sector wise credit concentration and its impact on profitability through concentration index (HHI) and profitability ratio (ROA) of commercial banks.

Not only that, this research tally the government rule, regulation and guidelines as on recent NRB guidelines with commercial bank credit concentration.

Similarly, the study will provide a useful basis upon the topic for further researcher and helps to understand risk associated with the Nepalese commercial bank based on the credit concentration.

1.6 Limitation of the study

Any research study may not free from its own limitation. So, there are couples of limitations. Which weaken the generalization and objectives of the study, some of the specified limitations that in the study are listed below:

1. The secondary data have been analyzed to interpret result emerging from decision. So the results depend on the reliability of the secondary data.
2. The study concerns only the latest published data and the conclusion drawn confines only that period.
3. The index used (HHI) only helps to calculate concentration and may not be sufficient to large sample, since the result for large sample number are not in big differences.
4. A major weakness of HHI is that it does not take into account the risk associated with a given portfolio.

5. The relevant macroeconomic variables are not evaluated which have significant impact on profitability of commercial banks.
6. The accuracy of the study depends on the accuracy of the data available, and data related to personal loan is restricted to published.
7. The evaluation is made through financial statement published by the banks and analysis of data published by NRB and through consultation with few manager level employees, lectures, and related personnel.
8. Final fiscal year 2074/75 data is of 10 months only. The last published data are used in analysis and the impact of this limitation is minimized.

1.7 Chapter Plan

The study has been divided into five chapters. They are Introduction, Literature Review, Research Methodology, Results (Data Analysis and Presentation), and Conclusion.

Chapter I: Introduction

This chapter includes the introduction of the entire thesis work, such as overview of the main area of the study i.e. describe the general background of the study, history of the study and its developed rules and regulations. Beside these things it includes the research purpose, statement of the problems, and significance of the study, research hypothesis, and limitation of the study.

Chapter II: Literature Review

This chapter includes review of articles related to the study, review of various related books, journals, research papers and other relevant past studies. It presents a summary of the major findings of previous researchers being studies in separate heading. It explains why each literature was chosen for critical review and how it helps to develop the conceptual framework and identify the problem statement needed for study.

Chapter III: Methodology

It includes the entire topic describing how the data have been collected and designed to carry out the tasks of the thesis report work. This chapter is followed by research design, population, statistical analysis, research strategy, data collection method, sample collection, data analysis and measurement of variables of the study.

Chapter IV: Result

It contains the entire content related to data presentation and analysis. Statistical tools and techniques are used for the purpose of analyzing the reliability and result of the data and information. Simple descriptive analysis of frequency distribution or relevant information supplemented by percentage and compared mean have been used. The test result help in concluding the research and interpreting result of the research.

Chapter V: Conclusion

It includes the latest contents of the entire reports. It comprises of summary, conclusion based on the research on data and the chapter is ended with the recommendation. This chapter is based on the interpretation and finding of the result. The implication and purpose of the research is included in this chapter. The chapter also includes a review of the future importance of the research.

CHAPTER II

REVIEW OF LITERATURE

This chapter consists of literature review and theoretical framework which is a crucial part of all dissertations. For review study, the researcher uses different books and journal, reviews and abstracts, indexes, reports, and dissertation or research studies published by various institutions, encyclopedia etc.

2.1 Conceptual Review

2.1.1 Credit concentration

Basel Committee on Banking Supervision (2006), had defined credit concentration as any single exposure or group of exposure with the potential to produce losses large enough (relative to a bank's capital, total assets, or overall risk level) to threaten a bank's health or ability to maintain its core operations. Lending being the primary activity of most banks, credit risk concentrations are often the most material risk concentrations within a bank. However, risk concentrations can arise in a bank's assets, liabilities, or off-balance sheet items, through the execution or processing of transactions (either product or services), or through a combination of exposures across these broad categories. The obligation is defined as the commitment or outstanding amount, depending on the concentration's characteristics. For example using outstanding amounts may make more sense but commitments might better capture the risk of portfolio.

Banks should have in place effective internal policies, systems and controls to identify, measure, monitor, and control their credit risk concentrations. Banks should explicitly consider the extent of their credit risk concentrations in their assessment of credit risk concentrations to which a bank may be exposed to. Such concentrations include but are not limited to:

- Significant exposures to an individual counterparty or group of related counterparty. Banks might also establish an aggregate limit for the management and control of all of its large exposures as a group;

- Credit exposures to counterparties in the same economic sector or geographic region;
- Credit exposures to counterparties whose financial performance is dependent on the same activities or commodities; and
- Indirect credit exposures arising from a bank's CRM (credit risk management) activities (e.g. exposure to the similar type of collateral or credit protection provided by single counterparty or same collateral in cases of multiple banking - borrower takes loan amount from several banks.)

A bank's framework for managing credit risk concentrations should be clearly documented and should include a definition of credit risk concentration relevant to the bank and how these concentrations and their corresponding limits are calculated. Limits should be defined in relation to the bank's capital, total assets, or where adequate measures exist, its overall risk level. A bank's management should conduct periodic stress tests of its major credit risk concentrations and review the results of those tests to identify and respond to potential changes in market conditions that could adversely impact the bank's performance.

2.1.2 Credit Concentration issues of Nepal Rastra Bank

Credit Risk Management Department of commercial bank has to review sector wise and product wise loan portfolios. Purpose of the review is to assess as well as control sector wise exposure. As per the Unified directives (2074) of NRB from page 117 to 123, bank should identify and maintain monitoring mechanism and information system at least on quarterly basis for those sectors in which the extension of loans, advances, and facilities is above 50% of core capital. Credit Concentration is a banking term that is used to denote the total volume of credit over the number or variety of clients or sectors to whom/which the bank has provided credit. It is uneven distribution of credit to particular sectors, regions, industries, different sizes and types of credit are also major sources of concentration risk.

NRB has allocated 16 sectors and credit concentration is associated with each sector.

Sector-1: Agriculture and Forests: Loan provided to crop and crop services, tea/ coffee, tobacco, jute, animal husbandry, services/slaughter houses, forestry, irrigation, and other agricultural and agro services are included in this sector.

Sector-2: Fishery Related: This sector along with agriculture and forestry related sector has been included in the productive sector by NRB.

Sector 3: Mining Related

Sector 4: Agriculture, Forestry, and Beverage Production Related: This sector covers loan provided to Food Production (Packaging and Processing), Agricultural and Forest Product Related, Sugar, Tobacco Processing, Lumber and Wood Products/Furniture, Beverage (Beer, Liquor, Soda, etc), Alcoholic, and Non Alcoholic products are included in this sector.

Sector 5: Non-food Production Related: This sector covers the sub-sectors like handicraft, textile production and garments, paper and allied products, etc.

Sector-6: Construction: The loan provided for residential, non- residential (commercial) and heavy construction (highway, bridge) comes under this sector.

Sector-7: Electricity, Gas and water: This sector mainly covers energy, hydropower, renewal power, other electricity services, gas and gas pipeline services.

Sector-8: Metal Products, Machinery and Electric equipment and Assemblage: This sector covers fabricated material products, turbines, generators, electronic components, machinery tools, home appliances, etc.

Sector-9: Transportation, Communication and Public Utilities: Loan provided to passenger motor vehicles, truck services and storages, transport related other production, etc are covered in this sector.

Sector-10: Wholesaler and Retailers: This sector includes loan provided to wholesale trade-durable and non-durable commodities, automotive dealer/franchise, other retail trade and import and export trade.

Sector-11: Finance, Insurance and Real Estate: Loan provided to institutions, real estates, saving and credit cooperative institutions, private non-financial institutions, etc are covered under this sector.

Sector-12: Tourism: Loan provided to trekking, travel agency, hotels and entertainment, recreation, cinema companies are included in this sector.

Sector-13: Other services: Loan provided to advertisement services, automotive services, hospitals, clinics, educational services and all other services companies are covered in this sector.

Sector-14: Consumption Loan: This sector includes sub-sectors like gold and silver loan, securities instruments, credit card loan, hire purchase, personal consumption and fixed deposit receipt.

Sector-15: Local Government:

Sector-16: Others: As per NRB directives, loans not covered in above 15 sectors are taken under this sector. Education loan, housing loan, mortgage loan, miscellaneous loan, personal loan and loan against shares are taken under this sector.

Similarly, NRB has allocated 11 product wise loans and advances according to purpose and credit concentration is associated with each sector.

Product 1: Term Loan: The term loans mean the loan extended in the nature of capital expenses for a period of more than one year.

Product 2: Overdraft Loan: The bank allows its customer to overdraw their accounts. The bank, however charges interest only on the amount overdrawn from the account.

Product 3: Trust receipt/ Import Loan: This type of loan is made available for the purpose of importing goods through Letter of Credit.

Product 4: Demand and Working Capital Loan: All loans in the nature of current capital including hypothecation, working capital, short term loans, demand loans, time loans, cash credit is including in this products.

Product 5: Residential Purpose Housing Loans (up to Rs.10 millions): For construction, purchase and maintenance of residential building fixing the installment regard to the income sources.

Product 6: Real estate Loan: Credit extended to any firm, Company or institution established with the objective of developing any land and construction of a building, commercial complex that is over Rs. 10 millions.

Product 7: Margin Nature Loan: The loan Extended having mortgaged as a security the share or debentures of any listed company to any person or institution.

Product 8: Hire Purchase Loan: The loans extended to purchase any transport vehicles or goods for letting them out in commercial manner or using by self.

Product 9: Deprived Sector Loan: The loan extended to the deprived sector subject to the directives of Nepal Rastra Bank.

Product 10: Bills purchase: The outstanding amount of cheques, drafts and export bills purchased by banks.

Product 11: Other Products: If there is any products other than those referred to the above used by the banks comes is exhibited under this head. This may include credit cards, education loan, small and medium industrial loan and others.

2.1.3 Single Borrower Limit (as per the NRB guidelines)

"Exposure"- means credit exposures (funded and non-funded) and refers to all claims, commitments and contingent liabilities arising from on and off-balance sheet transactions, which include, but not limited to, outstanding loans/ financing facilities, advances and receivables. These amounts comprise outstanding balance (i.e. principal amount and accrued interest/profit) which has not yet been repaid as at reporting date:

- "Funded Exposure"- means the exposure for which the bank has provided or shall provide funds to the borrower;
- "Non-Funded Exposure"- means the off-balance sheet exposure which has not yet been funded by the bank and may or may not be converted into funded facilities in future. Examples, letter of credit, guarantee, acceptance, commitment, etc.

"Person"- means a natural person or a legal person i.e. company, corporation, associates, trust, joint venture, partnership or other business enterprises, etc.

"Group"-means two or more persons shall be deemed to be a group if one person has the ability, directly or indirectly, to control the other person(s) or to exercise significant influence over the financial and operating decision of the person(s), or if both persons are subject to common control or common significant influence.

The outstanding amount of exposure, both funded and non-funded to a single person or a group shall not exceed 25% of the core capital at any point of time. Considering aspects like production, employment, the single borrower limit of the loans to be provided to export sector, small and medium industries, pharmaceutical industries, agricultural sector, tourism, cement industries, iron industries and other production oriented industries has been fixed at 30 percent maximum. It is important to note that for measuring credit concentration management needs to consider off-balance

sheet exposures including guarantees, letter of credit and other commitments.

Inter-Related Consumers are to be considered as a Group- For the purpose of the above mentioned exposure limits, group of inter-related borrowers shall be treated as a single group under the following circumstances:-

- Where a company holds 25 percent or more shares in another company, then both of such companies;
- Where a person, firm, directors of a company, shareholders of a private company, partners of partnership firm, proprietor and spouse, son, daughter, adopted son and/or daughter, parents, step mother and brothers and sisters, who have to be supported by such directors, shareholders, partners, proprietor are residing jointly in the same house or separately.
- Those companies in which the persons referred to in second clause above holds 25% or more shares individually or jointly;
- Even if the directors, shareholders or other relatives referred to in second clause hold less than 25 percent shares of another company jointly or individually, even then if the management of that other company is controlled by them in the following ways, then such companies:-
    1. By being the Chief Executive of the Company;
    2. BY appointing more than 25 percent of the Directors;
    3. By being a Chairperson of the Board of Directors;
- Firms, companies stated to be associated as a group, or members of such group, or
- Where one borrower or company referred to in second clause has provided a guarantee to another borrower or company, then such companies;
- If credit is provided to more than one person against the same collateral, all of such persons;
- If a personal guarantee has been given to each other, all of such persons giving/taking the guarantee.

2.1.4 Credit Risk Management Guidelines

The guidelines present fundamental credit risk management policies and practices that are recommended for adoption by the banks. As per this guideline, typical credit risk management framework in a bank has been broadly categorized into following main components;

- Board and Senior Management's Oversight
- Organizational structure
- Systems and procedures for identification, acceptance, measurements
- Monitoring and Control risks.

Board and Senior Management's Oversight

Board of directors has a vital role in granting credit as well as managing the credit risk of the bank based on the overall business strategy. The responsibilities of senior management is to transform strategic directions set by board in the shape of policies and procedures and ensuring that procedures are put in place to manage and control credit risk and the quality of credit portfolio in accordance with these policies.

Organizational Structure

Organizational structure may vary according to size, complexity and diversification of bank's activities. The structure should facilitate effective management oversight and proper execution of credit risk management and control processes. It is necessary to maintain the bank's overall credit risk exposure within the parameters set by the board of directors.

Credit Strategy, Policies, Procedures and Limits

1. Credit Strategy: The primary purpose of bank's credit strategy is to determine the risk appetite. Risk appetite, at the organizational level, is the amount of risk exposure, or potential adverse impact from an event, that the bank is willing to accept. Once it is determined, the bank shall develop a plan to optimize return while keeping credit risk within predetermined limits.

2. Credit Policies: Every bank has to develop Credit Policies Guidelines (CPG) that clearly outlines the bank's view of business development priorities and the terms and conditions that should be adhered to for loans to be approved.
3. Credit procedures: Credit procedures should aim to obtain a deep understanding of bank's client' and their business I order to fully know their customers. Banks should develop procedures that adequately capture salient issues regarding borrower's industry; macro-economic factors; purpose of credit; sources of repayment; track record and repayment history of the borrower; repayment capacity of the borrower; purposed terms and conditions and covenants; adequacy and enforceability of collaterals; and appropriate authorization forth loan.
4. Credit Limits: An important element of credit risk management is to establish exposure limits covering on-balance sheet and off-balance sheet credit exposures for single counter party and group of connected counter parties. The objective of setting credit limits is to prevent banks from relying excessively on a large borrower or group of borrowers.

Credit Orientation

A sound and well-defined criteria for new credits as well as the expansion of existing credits is necessary for credit risk management. Before allowing credit facilities, the bank should make an assessment of risk profile of the customer/transaction.

Approving New Credits and Extension of Existing Credits

In case of new relationships consideration should be given to the integrity and reputation of the borrowers or counter party as well as its legal capacity to assume the liability. Prior to entering into any new credit relationship the banks must become familiar with the borrower or counter party and be confident that they are dealing with individual or organization of sound reputation and credit worthiness.

Credit Administration

The credit administration function is a back office activity that supports and controls extension and maintenance of credit. A typical credit administration unit should perform the functions of credit documentation, disbursement and monitoring; loan repayment; and maintenance of credit files, collateral and security documents. It is the responsibilities of credit administration to ensure completeness of documentation in accordance with approved terms and conditions.

Internal Credit Risk Rating System

The risk rating should categorize all credits into various classes on the basis of underlying credit quality. Risk rating is a key measurement of a bank's assets quality, and as such, it is essential that rating is a robust process.

Credit risk Monitoring and Control

Banks need to develop and implement comprehensive procedures and information systems to monitor the condition of individual credits and single borrowers across the bank's various portfolios.

Credit Risk Review and Stress Testing

The bank must establish a mechanism of independent, ongoing assessment of credit risk management process. All facilities except those managed on a portfolio basis should be subjected to individual risk review at least once in a year.

Managing Problem Credits

Bank should establish a system that helps identify problem loan ahead of time when there may be more options available for remedial measures.

Management Information System (MIS)

Bank's quality of risk management is based on the accuracy, validity, reliability and timeliness of information available. Bank's credit risk measurement process is highly dependent on the quality of management information systems.

2.2 Reviews of Previous Works

Credit Concentration in Banking Industry

Atul & Nur (2012) has discussed credit concentration in Bangladesh covering areas such as i) Economic purpose-wise concentration, ii) Division-wise concentration iii) Concentration in Medium and Large Industries iv) Concentration in Urban Advances, v) Concentration in High Interest rate advances vi) Concentration in Real Estate as Security Against Credit and vii) Concentration in Large Size Loan Account among Bank Groups. The study is based on secondary data (includes various publications of Bangladesh Bank, Bank annual reports, Economic trend, Bank bulletin, Statistic and Circulars). Bank groups considered in the study are state-owned commercial banks (SCBs), Private commercial banks (PCBs), specialized banks (SBs) and foreign commercial banks (FCBs).

The findings were concentration risk can be managed by formation of well diversified bank credit portfolio, and for bank's safety and soundness as well as for balanced and sustainable economic development of a country. If not addressed carefully banks have to maintain additional capital under BASEL-II. To prevent from disparity equitable distribution of advances is felt necessary to flow in each sector or as per the requirement of the sector.

Concentration refers to the degree of control of economic activity by large firms- (Sathye, 2013). According to Athanasoglou, Brissimis, & Delis (2005) increase in concentration levels could be due to considerable size enlargement of a dominant firms and/or considerable size reduction of non-dominant firms. Conversely, reduction concentration levels could be due to considerable size reduction of the dominant firms and/or considerable size enlargement of the non-dominant firms. Rose (1999) states "the degree of concentration in a market is measured by the proportion of assets or deposits controlled by the largest banks serving the market", but Demirguc Kunt & Levine (2000) measure banking system concentration via the fraction of bank loans controlled by the three largest banks. The failure of large borrowers like Enron, Worldcom and Parmalat were also the source of sizeable losses in a number of banks. The agricultural loan in the US min-west, oil loans in Texas,

East Asian Crisis and US mortgage crisis are examples of incidents of correlated defaults that jeopardized the health of many financial institutions (Bandyopadhyay, 2010).

Cerqueiro (2008) has highlighted the effect of bank market concentration on the supply of credit to firms. This paper finds that high bank concentration increases loan rates by 70 basis points, on average, when account is taken of the borrower pool selection process. The conventional view is that concentration of market power in banking translates into credit availability and higher loan prices.

Petersen & Rajan (1994) demonstrated that banks in highly concentrated markets are more likely to extend credit to lower quality firms at discounted rates. This paper uses data on the financing experiences of small firms to estimate the net effect of bank concentration on contracted loan rates. The empirical modal encompasses the three sequential stages; the firm's decision to apply for credit, the bank's decision about granting the loan and the contracted loan rate.

The Herfindahl-Hirschman Index (HHI) is a best-known and widely used measure among accumulative indicators of concentration. A well-diversified portfolio with a great number of small loans has an HHI value close to zero or 0% and a high concentrated portfolio can represent a very high HHI value. As a last resort, if one sector gets all loans, the HHI is equal to one or 100% Bundesbank, Deutsche (2006). However, two restrictions arise while applying this coefficient: firstly, the dependence of credit risk among sectors is not taken into consideration and the HHI does not provide any information of the economic capital necessary to cover the risk.

The deterioration in the average credit quality of the borrower pool in highly concentrated banking market occurs through two separate channels. Highly concentration attracts loan applications from observationally riskier firms. And given a pool of applicants, banks in concentrated markets grant loans to observationally riskier applicants. The incidence of collateral doesn't seem to depend on level of bank concentration. High bank concentration has (on average) positive effects on loan rates and negative effect on the supply of credit. This paper also adds to the effect of bank concentration on the stability of the financial system.

In concentrated markets firms pay substantially higher loans rates, which imply higher bankruptcy rates for borrowers. The pool of borrowers is observationally riskier in concentrated markets (Doyd, De Nicolo and Jalal, 2006). This study brings together two important stands and these strands focus on the preserve effects of bank concentration on financial sectors and on the real sector in the economy. This paper studies in greater detail of the economic costs associated with high bank concentration.

If banks in more concentrated markets charge higher loan rates, then this should discourage some firms from borrowings. If the firm has other source of financing available, these sources become more attractive. The firm undertakes the investment only if the cost of financing does not exceed the maximum it can afford. Black & Scholes (1997) shows that fewer enterprises are created in more concentrated banking markets. The bank decision on whether or not to accept the loan application depends on this particular investment.

In Petersern & Rajan (1994) model, for instance, the return from lending to lower quality firms is higher in concentrated markets as bank with market power can recoup the cost of lending. Several theories argue that the level of bank concentration may have an effect on the quality of the borrower pool. For instance, Boyd & Nicolo (2006) show the risks of banks' loan portfolio increases with the level of concentration. The risk-shifting mechanism is based on the idea that banks, as concentration increases, charge higher loan rates to their customers. The higher loan rates exacerbate the agency problems since they induce firms to take more risk. In Peterson & Rajan (1994) the average credit quality of borrowers is also decreasing in the level of bank concentration.

Office of the Comptroller of the Currency (2011) identifies the primary source of revenue for most commercial banks are the extension of credit, an activity that concurrently poses a risk to earnings and capital. Flawed or shortsighted credit risk management practices are a leading cause of bank failure which results in investment losses, business disruption and reduced service to the community. Conclusion about

concentration risk management is considered by assigning capital, assets quality and management component examination ratings.

The management of concentration or pool of exposures whose collective performance has the potential to affect a bank negatively even, if each individual transactions with a pool is soundly underwritten. When exposure in a pool are sensitive to the same economic, financial or business development that sensitivity, if triggered may cause the same of the transactions to perform as if it were a single large exposure. This booklet emphasized the need for board of directors to ensure that management effectively implements internal processes designed to identify, measure, monitor and control concentrations of credit. Concentrations and associated risks include elevated interest rate risk due to maturity concentrations; liquidity risk due to funding concentrations or operational risks associated with concentrations of certain lines of business (Office of the Comptroller of the Currency, 2011).

Lamanda (2011) presents how banks identified their credit, operational and market risk and how they were handling these risks. In this thesis he states that the risk is such unmapped area both for theoretical and practical aspect that it does not have established elaborated methodology for its management or for the determination of capital requirements and credit lending capacity. Therefore mentioned documents, supplementary materials and majority of publications in the literature concentrate on already known techniques and mechanisms, while they rarely touch upon the new, patent and plastic elements of regulation. Advantages and disadvantages of this topic derive from this dissonance. Choosing operational, credit and market risk as one’s area of research is a possibility which contrary to other fields due to low literature coverage allows for the use of individuals ideas, on the other hand, due to the lack of reference points and strong economic foundations the researchers may easily get on the wrong path or receive criticism.

The research may be carried on in the future in several directions. First of all it would be interesting to examine the risk management practices of smaller institutions, because it may be seen already that for them this new regulatory element is rather problematic than advantageous. Secondly, in possession of internal data for which do

not see much chance due to the confidential nature of information, the problem of the validity of indicators, the formulation of a possible solution may also be an interesting and challenging field of research.

The absence of sufficiently robust set of data elements hindered an institution's ability to identify and monitor concentration risk regardless of the data's accuracy and timeliness. Similarly, a comprehensive data set is of little use if inaccurate, untimely or unexamined. The OCC expects that each bank's concentration risk management systems and MIS will be accurate and timely and that the scope of the data elements collected and analyzed will be proportional to the size and complexity of the bank's portfolio. Examiners note pools that pose a challenge to management or that present usually or significant risk to the bank in the ROE. When concentration risk management is weak, banks should require management to take corrective action (Office of the Comptroller of the Currency, 2011).

Dhakal (2011) has some practical implication because she has attempted to compare private sector banks and government sector banks and their performance. Standard Chartered Bank has been able to manage its credit risk and is the number one bank in Nepal. Non-performing loans of almost 0% has shown its mastery in managing credit risk. The other counterparts, Rastriya Banijya Bank Ltd, on the other hand, has 9.81% of non-performing loans to total loans; this indicate that the government sector bank is not doing well in minimizing credit risk. The basic findings of this study is, SCBNL being one of the most prudently and well managed commercial banks in Nepal, this bank has adopted and complied each and every policies and guidelines issued by the central bank. It has its own lending policies and practices which keep it far better than other commercial bank in Nepal.

Shrestha (2006) study is based on the capital funds of the banks which are supposed to be adequate as per the NRB directives no. 1, which is related with the capital adequacy norms for commercial banks. The norms basically emphasize on the basic requirement of the capital fund that a commercial bank should possess. The fundamental objective of the norms is to safeguard the interest of the depositors. The major objectives are to formulate and maintain appropriate monetary and foreign

exchange policies for stable price and balance of payments situation required for sustainable economic development, to manage the required liquidity and stability of banking and financial sectors, to develop secure, healthy, and efficient payment system to monitor, supervise and evaluate banking and financial system, to enhance trust of citizens in overall banking and financial system within the country.

Finally, from the thesis, it is concluded that the capital fund of both banks were in increasing trend during the consecutive fiscal year both banks are quite successful in maintaining capital adequacy as prescribed by NRB. But, BOK had a capital adequacy ratio of 6.63% in FY 1998/99, which seems inadequate as NRB prescription that should be at least 8%. In following fiscal year years both banks met the requirement. The capital to deposit ratios of BOK and HBL has been found unsatisfactory. The capital to deposit ratio of BOK is at around 6% to 9% till the end of FY 2000/01, which has been increased to 12.79% in FY 2001/02. The capital to deposit ratios of HBL is in between 5% to 8%. BOK has maintained CD ratio around 66% to 85% whereas HBL has constant CD ratios between 51% and 55%.

Maharjan (2010) identifies credit as the major sources in developing economies and has substantial risk, thus need to be controlled in time. The major objectives of this thesis are to evaluate the better policy to manage the credit and operational risk of the banks. The study made on BOK and NIC Bank found that the credit has the major use of total fund in both banks and conclude that the credit risk of BOK seems higher than that of NIC, as a result of BOK keeping credit loans loss provision higher than NIC in respect to total credit. BOK has more depended in single borrower than NIC. The average exposure to single borrower to total credit of BOK is 2.85% and that of NIC is 2.33%. The non-performing credit in total credit amount is in decreasing trend in both the banks. The non-performing credit has occupied 2.67% of the total credit in BOK and 1.85% in NIC on an average.

Sapkota (2009) in his study on fund mobilizing policy of Standard Chartered Bank Nepal Ltd (SCBNL), has found that liquidity position of SCBNL was not satisfactory. Loans and advances, cash and bank balance ratio seemed too weak than that of NBBL and HBL. Investment on share and debenture and interest earning power on total

working fund also seemed in weak condition than that of NBBL and HBL. Growth ratio of deposits, loans and advances, investments, net profits seemed too weak in comparison to NBBL and HBL. The relation of investment and loans and advances with deposits seems positive and the relation of net profit with outside assets (investments, loans and advances) seemed positive. At last, Sapkota concluded that in overall condition SCBNL seemed in satisfactory position in comparison to NBBL and HBL. Since, SCBNL used to provide less loan and advances in comparison to its total deposits. Sapkota has strongly recommended following a liberal lending policies so that more percentage of deposits can be invested to different profitable sectors as well as towards loans and advances. Because, analysis showed investment and loans and advances as a significant factors that affects the net profit of the bank. Subsequently, a skillful administration is the most for these assets because negligence may become a reason for liquidity crisis and bankruptcy.

Shiwakoti (2006) in his study of capital and assets structure of Nepal Industrial Development Corporation (NIDC), has concluded that the financial soundness of a company as well as its strength depends largely on the capital and assets structure. The capital structure presents its resource capacity and viability whereas the assets structure presents its worthiness. The composition of the capital and assets holds the utmost importance so far the successful and thriving operations of NIDC. Shiwakoti stated that NIDC prefers the long-term borrowing in form of capital and uses it in long-term loan as assets. The fixed assets, investment in shares and debentures, current assets and liabilities, share capital, reserve and surplus are other components associated with capital and assets structure of NIDC. Shiwakoti found that the contribution of different components of capital and assets structure in EBIT of NIDC to be less satisfactory. The relation is positive which showed EBIT was increasing with other variables correlated but the low degree of correlation between them meant the relationship between these EBIT and other variables lacks closeness in its increasing trend.

2.3 Theoretical Framework

The study mainly gives the clear picture of credit concentration level and profitability ratio of all commercial banks based on the Unified directives of NRB, capital adequacy framework and risk management guidelines.

Figure 2.1 shows the factors determining the credit concentration in Nepalese Commercial Banks. The study conducted by Atul & Nur (2012), Cerqueiro (2008) and Office of the Comptroller of the Currency (2011) found that bank specific factors significantly affected by credit concentration.

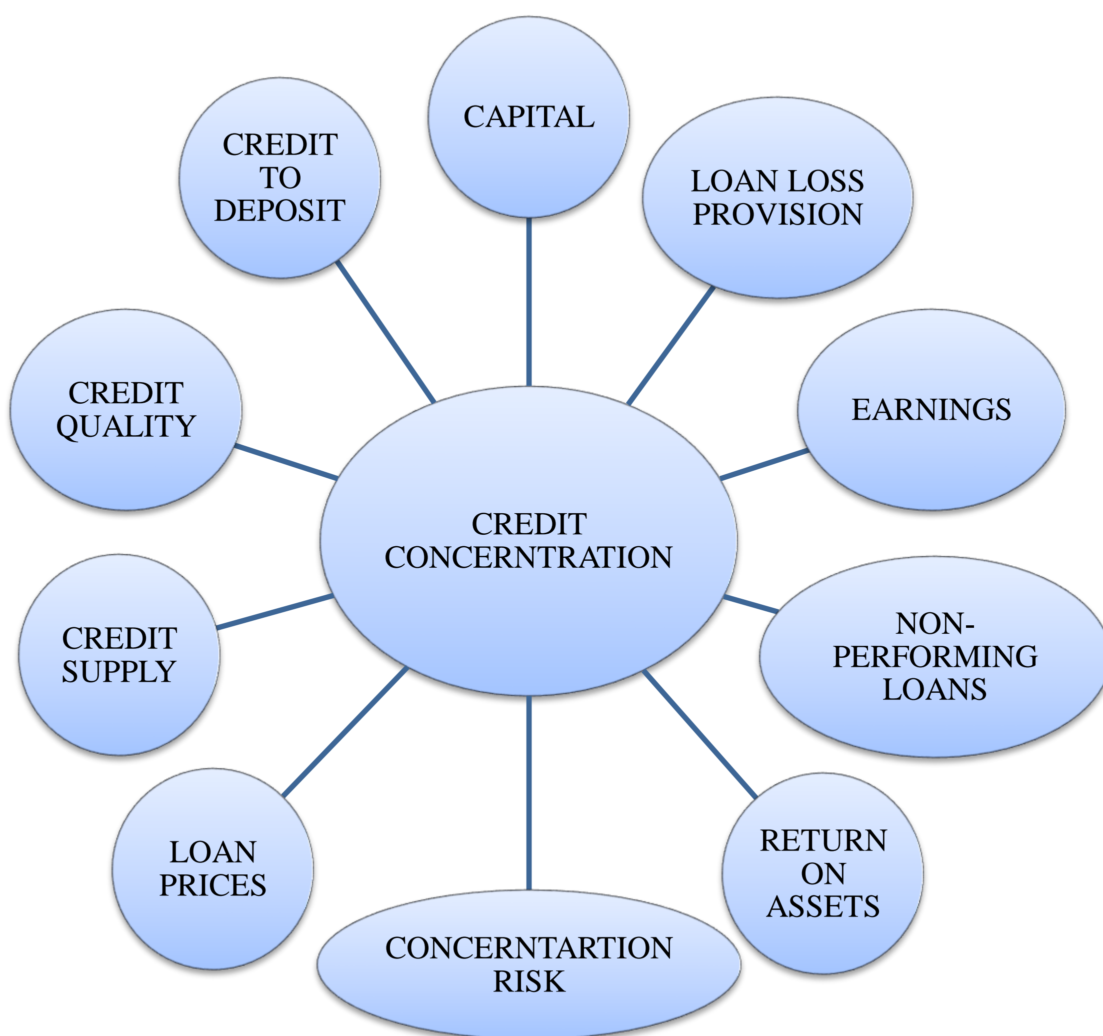

Figure 2.1: Schematic Diagram of Study Framework

Variables in the theoretical framework

Concentration Risk: Credit concentration is a banking term that is used to denote the total volume of credit over the number or variety of clients or sectors to whom/which the bank has provided credit. Concentration risk in banking arena can be classified mainly into two types. Firstly, uneven distribution of credit to bank's borrower can generate concentration risk, which is called credit concentration risk. Besides that uneven distribution of credit to particular sectors, regions, industries as well as different sizes and types of credit to particular sectors, regions, industries. Different sizes and types of credit is also major source of concentration risk, known as sectoral concentration risk.

Loan Prices/Interest Rates: Concentration in banking translates into reduced credit availability and higher loan prices. Credit concentration is closely tied to the potential return of an investment. The higher the perceived credit concentration risk, the higher the rate of interest that investors will demand for lending their capital. There is always the risk the borrower will become bankrupt, abscond or otherwise default on the loan.

Credit Supply/Loans: Credit concentration restricts loan flow in the market or banks try to balance the supply of loans as per credit concentration. The commercial banking industry may reduce the amount of credit supply to small as well as large businesses houses. Banks suffering from credit concentration risk have significantly lower funded and non-funded limit that other.

Capital: Capital is the amount of own fund available to support the bank's business and act as a buffer in case of adverse situation. Capital adequacy is the level of capital required by the banks to enable them withstand the risks such as credit, market and operational risks they are exposed to in order to absorb the potential loses and protect the bank's debtors. The main purpose of measuring capital adequacy is to give protection to the depositors and creditors by maintaining a higher balance of risk free assets and by increasing their capital base. Banks having adequate capital enjoys more public confidence and share values of such banks are higher.

Earnings: Interest is a fee paid by a borrower of assets to the owner as a form of compensation for use of the assets. It is commonly the price paid for the use of borrowed money or money earned by deposited funds. A bank deposit will earn interest because the bank is paying for the use of the deposited funds. Net profit is the residual income of a bank after adding total revenue and gains and subtracting all expenses and losses for the review period.

Credit Quality: The bank's asset is another bank specific variable that affects the profitability of a bank. The bank asset includes among others current assets, credit portfolio, and fixed assets and others investments. Loan is the major asset of commercial banks from which they generate income. The quality of loan portfolio determines the profitability of banks. The loan portfolio quality has direct bearings on bank profitability. Credit quality informs investors' credit worthiness or risk of default.

Loan Loss Provision: Loan loss provision is the fund, allocated for the purpose of safeguarding possible losses from various loans. Loan classified into five categories i.e. pass, watch list, substandard, doubtful and bad and loan loss provision in these categories are 1%, 5%, 25%, 50%, 100% respectively.

Pass Loans: Loans and advances whose principal amount is not past due for a period of one month. The loans in this category are defined as performing loan.

Watch List: Loans and advances expired by one month, revolving loan not renewed, loans to firm/company having negative net worth and cash flow from last two years. The loan in these categories is also defined as performing loan.

Substandard: All loans expired by 3 months but which has not crossed 6 months.

Doubtful: All loans expired by 6 months but which has not crossed 1 year.

Loss: All loans expired by one year.

The loans which fall in the category of substandard, doubtful and loss are defined as non-performing loan.

Non-Performing Assets: Non-performing assets (NPA) of a bank refers to assets that is not utilized for productive use and constitutes from accumulated figures of five basic components namely non-banking assets (NBA), non-performing loans (NPL), remaining non-performing loans (RNPL) interest suspense (IS) and unutilized assets (UA). Mathematically;

Non-banking assets are the properties taken over by a bank when no one participates in the auctioning process or if the bid amount is not up to the satisfaction of the banker. Also after the auctioning the property, if the realized amount is not sufficient to settle the entire loans and some proportion of the debt remains outstanding; such debt is also categorized as non-banking assets. Interest suspense is the receivable interest which is transferred to interest suspense account due to non-payment on the maturity or due date. Remaining non-performing loans are the capital investments made by banks on various institutions which do not provide any return. Unutilized assets are all moveable and immoveable assets that a bank fails to utilize for any value addition in the courses of its business.

Returns on Asset (ROA): ROA measures the ability of the bank management to generate income by utilizing company assets at their disposal. The number will vary widely across different industries. ROA over 5% are generally considered good. Higher ROA indicates efficiency of the management.

Credit to Deposit: The loan to deposit ratio is used to calculate a lending institution's ability to cover withdrawals made by its customers. A lending institution that accepts deposits must have a certain measure of liquidity to maintain its normal daily operations. Although a bank will keep a percentage of their non-lending investing in short term securities to ensure that any money needed can be accessed in the short term.

2.4 Research Gap

This research is not new but the statistical tools used to calculate credit concentration is new in context of Nepal. Some researcher of Nepal researched in the field of loan and deposit using HHI to know the market structure and competition through loan and deposit concentration, and found that the commercial banks are operating in monopolistic competition.

The HHI, better known as the Herfindahl index, is a statistical measure of concentration. It has achieved an unusual degree of visibility for a statistical index because of its use by the Department of Justice and the Federal Reserve of USA in the analysis of the competitive effects of mergers. Now, HHI is widely used statistical tool to measure concentration but it is new in context of Nepal.

Different research in different countries like USA, Bangladesh, and Zambia shows the positive relation between sector wise credit concentration and profitability of banks. But in Nepal no research has been carried out by any agency and scholar. Research shows that the relationship is more positive in case of develop economy due to the relatively stable macro-economic variables. This research work acts as a light in the field of credit concentration and its impact on banking risk and profitability.

CHAPTER III

METHODOLOGY

This chapter consists of the research design, nature and sources of data, data collection procedure, sampling, sample characteristics, instruments development and tools and technique of analysis.

3.1 Research Design:

Based on the literature, researcher built the survey instrument that describes the variables and methods under investigation. This research attempts to assess the level of credit concentration associated with bank's credit portfolio and to determine whether the banks have adopted effective policies that are consists with safe and sound banking practices and appropriate to the size, nature, and scope of the bank as well as NRB. In other words, it attempts to analyze the relationship of credit concentration with profitability as well as fit the classified loan with NRB guidelines requirement. So, lots of secondary data published should be analyzed. Therefore, appropriate research design is descriptive and analytical research design.

3.2 Population and Sample:

3.2.1 Population:

The population for this study comprises all commercial bank operating in Nepal. The number of commercial bank in 2018, May is 28. So, all 28 commercial banks are the population for this study.

3.2.2 Sampling:

This is a census study. So, this research work is done on population. All 28 commercial banks (A-Class) are chosen for their credit concentration and profitability ratio. The overall analysis of all 28 commercial banks is compared with results of ROA and net interest income of respective bank using correlation analysis.

3.3 Sources of Data

Data are collected from relevant bank websites, NRB statistical report and NRB guidelines are further calculated to get information in the desire format. The statistical tools used are described below:

3.4 Data Processing Procedure

Before analyzing the data, the data and information have to be presented systematically in the formats of Tables, Graphs and Charts which explain a lot about the data and information collected. Most of the time, table presentation is used to show the large data into comparable format. Line diagram presents the data by means of trend line.

3.5 Data Analysis Tools and Techniques

The relationship between two or more variables can be measured by using statistical tools. In this study the following statistical tools will be used.

a) Mean

Sum of all observations divided by the number of observations is called Mean. In such cases all items are equally important.

$$\text{Mean (X)} = \frac{\sum X}{N}$$

Where,

$\sum X$ = the sum of observations

N = No. of observations

b) Standard Deviation (S.D.):

Standard deviation is defined as the positive root of the mean of the square deviations from their mean of a set of values. It is also known as Root Mean Square Deviation. It is usually devoted by the Greek letter "**σ**" (Small Sigma).

$$\sigma = \sqrt{\frac{\sum X^2}{N} - \left(\frac{\sum X}{N}\right)^2}$$

c) Variation:

Variance is defined as the average of the squared differences from mean. In other words, the variance of a data set measures the mathematical dispersion of the data relative to the mean.

$$\text{Variance} = \sigma^2$$

Where, σ = Standard deviation

d) Herfindahl-Hirschman Index (HHI):

It is a widely used indicator of concentration risk which is defined as the sum of the squares of the relative portfolio shares of all group elements. Here, for the purpose of credit concentration risk, group elements may be referred a sector, products, region etc.

It is measured as:

$$\text{HHI} = \frac{\sum_{n=1}^{N} S_n^2}{(\sum S)^2} * 100\%$$

$$\text{Or, HHI} = \frac{(S1)2 + (S2)2 + (S3)2 + \ldots\ldots + (Sn)2}{(\sum S)^2} * 100\%$$

Where, Sn= Share of each element across the total portfolio.

N = Number of classification

$S_1, S_2, \ldots, S_n$= Individual Loans

$(\sum S)^2$= Total Loan

Well-diversified portfolios with a very large number of small borrowers have an HHI value close to zero or 0%, whereas heavily concentrated portfolios can have a considerably higher HHI value. In the extreme case of a single borrower or single sector loans, the HHI takes the value of 1or 100% (Md. Shah Alam, 2016).

Measurement:

a. HHI≤ 1 indicates homogeneous concentration risk.

b. 10 >HHI> 1 indicates satisfactory concentration risk.

c. 18 >HHI> 10 indicates moderate concentration risk.

d. HHI> 18 indicates high concentration risk.

e) Correlation analysis:

Pearson's correlation coefficient is the covariance of the two variables divided by the product of their standard deviations. The correlation coefficient ranges from −1 to 1. A value of 1 implies that a linear equation describes the relationship between X and Y perfectly, with all data points lying on a line for which Y increases as X increases. A value of −1 implies that all data points lie on a line for which Y decreases as X increases. A value of 0 implies that there is no linear correlation between the variables.

$$r = r_{xy} = \frac{n\sum X_i Y_i - \sum X_i \sum Y_i}{\sqrt{n\sum X_i^2 - (\sum X_i)^2}\sqrt{n\sum Y_i^2 - (\sum Y_i)^2}}$$

Where, r_{xy} = correlation between X and Y

X, Y = Two variables under study

CHAPTER IV

RESULTS

This chapter contains the analysis, discussion and interpretation of the result from data collected. This analysis is based on secondary data which were collected through the NRB and commercial banks websites. The data is analyzed with the help of excel and SPSS. The data were presented with table and diagram to make it convenient to interpret. Mean, standard deviation, minimum, maximum, coefficient of variance, Karl Pearson correlation coefficient, HHI index and ratios related to bank profitability and risk are used to examine the significant relationship between different variables and to interpret the result with NRB guidelines. Tables and figures are extensively used to analyze the data.

4.1 Descriptive Analysis of Credit Concentration of Commercial banks of Nepal

The table and figure summarize the descriptive analysis of credit concentration of all 28 commercial banks of Nepal from 2070/71 to 2074/75. Here, all analysis of fiscal year 2074/75 is of ten months only.

The data below are the analysis of the sector wise and product wise credit concentration of five year period from fiscal year 2070/71 to 2074/75. HHI index shows the level of concentration, which is calculated in zero (0) to hundred (100) scale. According to the BIBM (Bangladesh Institute of Bank Management) the scale of measurement for credit concentration on the basis of HHI is,

- HHI≤ 1 indicates homogeneous concentration risk.
- 10 >HHI> 1 indicates satisfactory concentration risk.
- 18 >HHI> 10 indicates moderate concentration risk.
- HHI> 18 indicates high concentration risk

4.1.1 Descriptive Analysis of Sector wise Credit Concentration

Table no.4.1.1 Descriptive analysis of sector wise HHI index

S.N.	Bank	2070/71	2071/72	2072/73	2073/74	2074/75*	Average
1	NBL	17.51	16.58	16.03	14.88	15.28	16.06
2	RBB	15.47	15.71	16.20	16.27	15.70	15.87
3	NABIL	17.55	18.08	20.39	20.86	20.90	19.55
4	NIBL	20.00	18.61	16.30	14.55	16.38	17.17
5	SCBNL	21.79	22.88	20.12	18.73	18.93	20.49
6	HBL	18.75	18.50	18.08	16.30	18.67	18.06
7	NSBI	20.01	20.77	20.33	20.05	19.74	20.18
8	NBB	17.90	17.45	16.01	13.59	13.48	15.69
9	EBL	15.11	16.24	15.19	14.50	13.68	14.94
10	BOK	19.46	17.66	14.35	14.89	14.55	16.18
11	NCC	15.05	14.68	14.08	12.72	12.93	13.89
12	NIC	16.25	15.59	16.30	16.65	15.22	16.00
13	MBL	15.06	13.93	14.09	13.29	13.94	14.06
14	Kumari	14.62	17.02	16.75	13.54	14.57	15.30
15	LAXMI	16.19	14.43	13.72	13.58	12.94	14.17
16	SBL	14.31	15.08	15.54	14.25	14.11	14.66
17	ADBNL	15.39	15.70	16.78	18.91	20.17	17.39
18	GLOBAL	16.44	15.29	16.25	14.47	14.10	15.31
19	CITIZENS	15.76	15.45	15.36	14.19	14.18	14.99
20	PRIME	14.32	13.86	14.61	15.82	12.92	14.31
21	SUNRISE	16.17	15.97	14.68	13.51	13.07	14.68
22	NMB	16.49	17.17	13.41	14.60	16.17	15.57
23	PRABHU	14.38	12.85	12.80	12.42	11.93	12.87
24	JANATA	18.15	17.40	18.39	14.38	14.65	16.59
25	MEGA	22.51	20.07	17.95	17.14	14.73	18.48
26	CIVIL	15.11	15.80	16.48	14.04	14.63	15.21
27	CENTURY	16.47	16.07	15.20	12.69	13.46	14.78
28	SANIMA	13.74	13.54	14.27	15.02	15.43	14.40
	Average HHI	16.78	16.51	16.06	15.21	15.23	
	Minimum HHI	13.74	12.85	12.80	12.42	11.93	
	Maximum HHI	22.50	22.88	20.39	20.86	20.90	
	Standard Deviation	2.30	2.56	2.03	2.20	2.37	

* 10 months data only

Table 4.1.1 reveals the concentration of sector wise loans related description of 28 commercial banks in last five years (2070/71 to 2074/75). The table shows the sector wise credit concentration index (HHI) and descriptive data related to profitability during five years. Minimum, Maximum, Mean, Standard Deviation and Variance are calculated to analyze the data of those banks.

The average credit concentration of commercial banks in 2074/75 of 10 months period is 15.23 where Prabhu bank has lowest concentration with 11.93 HHI and Nabil bank has the highest credit concentration (20.897) in the same period. The standard deviation and variance of 28 commercial banks are 2.37 and 5.62 respectively. Horizontal analysis of fiscal year 2074/75 show that the 22.92% of total loan provided by all commercial banks is to wholesaler and retailer loan followed by 18.70% on manufacturing or production related loan, 12.24% on others loan (education loan, housing loan, mortgage loan, miscellaneous loan, personal loan and loan against shares), and 10.01% on construction loan etc.

Similarly, sector wise credit concentration of 2073/74 was minimum 12.42 (Prabhu) and maximum 20.856 (Nabil) where average HHI was 15.21 and standard deviation of HHI index of banks was 2.20 making variance 4.85. Horizontal analysis of fiscal year 2073/74 shows that the 22.92% of total loan provided by all commercial banks is to wholesaler and retailer loan followed by 18.20% on manufacturing or production related loan, 12.00% on others loan (education loan, housing loan, mortgage loan, miscellaneous loan, personal loan and loan against shares), and 10.30% on construction loan etc.

Likewise, the average sector wise credit concentration of fiscal year 2072/73 was (16.06). Sector wise credit concentration was minimum 12.798 (Prabhu) and maximum 20.39 (Nabil). Horizontal analysis of fiscal year 2072/73 show that the 23.76% of total loan provided by all commercial banks is to wholesaler and retailer loan followed by 19.99% on manufacturing or production related loan, 11.20% on others loan (education loan, housing loan, mortgage loan, miscellaneous loan, personal loan and loan against shares), and 10.22% on construction loan etc.

In fiscal year 2071/72 the maximum HHI was 22.88 (SCBNL) and minimum HHI was 12.85 (Prabhu). The average HHI was 16.51 and standard deviation was 5.089. Horizontal analysis of fiscal year 2071/72 show that the 23.47% of total loan provided by all commercial banks is to wholesaler and retailer loan followed by 21.95% on manufacturing or production related loan, 10.52% on construction loan, and 9.90% on others loan (education loan, housing loan, mortgage loan, miscellaneous loan, personal loan and loan against shares) etc.

In fiscal year 2070/71 the maximum HHI was 22.51 (Mega) and minimum HHI was 13.74 (Sanima). In that period, Prabhu (Kist Bank Ltd) HHI index was 14.38, and , Nabil had the HHI, 17.55 which were below than average. The average HHI was 16.78, which was the highest among five year analysis .Standard deviation was 2.30 with variance 5.31.

Overall, Data shows that the banks are more diverting in their sector wise loan distribution over time. In five year period, the loan distribution of total sector wise loan is on wholesaler and retailer loan first, which are followed by manufacturing or production related loan, others loan (education loan, housing loan, mortgage loan, miscellaneous loan, personal loan and loan against shares), and construction loan respectively. Most of the time Nabil has the highest credit concentration and Prabhu has the lowest HHI after merge with Kist bank. NCC cares about the loan diversification and has the low constant HHI (near to 14.5). The average of sector wise HHI is in decreasing order with constant standard deviation over time meaning that banks are now diversifying sector wise loan and creating loan portfolio.

4.1.2 Descriptive Analysis of Product wise Credit Concentration

Table No.4.1.2 Descriptive analysis of product wise HHI index

S.N.	Bank	2070/71	2071/72	2072/73	2073/74	2074/75*	Average
1	NBL	21.60	17.14	15.90	15.46	15.55	17.13
2	RBB	19.76	20.27	20.69	19.88	19.43	20.00
3	NABIL	13.92	14.12	14.48	15.49	15.37	14.68
4	NIBL	16.78	17.78	18.91	17.87	18.73	18.01
5	SCBNL	13.90	14.11	15.12	15.05	15.15	14.66
6	HBL	13.68	14.59	15.96	14.45	16.84	15.11
7	NSBI	29.88	30.49	30.30	27.44	25.07	28.64
8	NBB	14.99	12.06	12.61	12.47	12.97	13.02
9	EBL	15.07	14.66	14.30	13.92	13.45	14.28
10	BOK	17.51	19.02	15.43	19.42	17.16	17.71
11	NCC	17.30	17.04	17.03	15.93	15.33	16.53
12	NIC	14.24	13.66	13.59	14.55	14.51	14.11
13	MBL	14.06	14.88	14.28	14.07	13.52	14.16
14	Kumari	16.92	17.38	17.69	16.70	17.84	17.31
15	LAXMI	16.15	17.04	14.52	14.18	15.00	15.38
16	SBL	16.86	16.61	15.58	15.98	15.77	16.16
17	ADBNL	29.66	30.25	32.49	45.27	49.02	37.34
18	GLOBAL	22.22	19.03	17.49	16.00	16.00	18.15
19	CITIZENS	14.85	14.69	13.82	13.39	12.87	13.92
20	PRIME	16.39	14.56	14.69	15.38	13.88	14.98
21	SUNRISE	16.58	16.92	13.82	13.01	13.29	14.72
22	NMB	15.07	15.49	14.18	14.33	15.89	14.99
23	PRABHU	21.13	15.80	13.95	13.67	14.45	15.80
24	JANATA	17.16	15.69	15.29	15.27	15.48	15.77
25	MEGA	21.16	17.28	16.62	18.98	15.81	17.97
26	CIVIL	17.00	20.18	19.52	16.99	15.46	17.83
27	CENTURY	16.60	18.78	17.36	15.61	16.95	17.06
28	SANIMA	14.99	13.79	13.65	14.16	14.80	14.28
	Average HHI	17.69	17.26	16.76	16.96	16.99	
	Minimum HHI	13.68	12.06	12.61	12.47	12.87	
	Maximum HHI	29.88	30.49	32.49	45.27	49.02	
	Standard Deviation	4.18	4.23	4.57	6.27	6.73	

* 10 months data only

Table 4.1.2 shows the descriptive analysis of the concentration of product wise loans of 28 commercial banks in last five years (2070/71 to 2074/75). The table shows the product wise credit concentration index (HHI) and descriptive data related to profitability during five years. Minimum, Maximum, Mean, Standard Deviation and Variance are calculated to analyze the data of those banks.

The average credit concentration of 28 commercial banks in 2074/75 is 16.99 where Citizen bank has lowest concentration with 12.87 HHI and ADBNL has the highest credit concentration (49.02) in the same period. The standard deviation and variance of 28 commercial banks are 6.73 and 45.293 respectively. Horizontal analysis of fiscal year 2074/75 10 months period show that the 22.9% of total loan provided by all commercial banks is to demand and other working capital loans, followed by 17.2% on overdraft loan and 16.7% on term loan.

Similarly, product wise credit concentration of 2073/74 was minimum 12.465 (NBB) and maximum 45.27 (ADBNL) where average HHI was 16.96 and standard deviation of HHI index of banks was 6.26. Horizontal analysis of fiscal year shows that the 22.2% of total loan provided by all commercial banks was to demand and other working capital loans, followed by 17.9% on overdraft loan and 16.2% on term loan.

Likewise, the average credit concentration of fiscal year 2072/73 was the lowest (16.76) than other 5 years. Product wise credit concentration of 2072/73 was minimum 12.607 (NBB) and maximum 32.49 (ADBNL). Horizontal analysis shows that the 24.0% of total loan provided by all commercial banks was to demand and other working capital loans, followed by 17.2% on overdraft loan and 16.3% on term loan. The concentration index was minimum 12.61 (NBB) and maximum 32.49 (ADBNL).

In fiscal year 2071/72 the maximum HHI was 30.49 (NSBI) and minimum HHI was 12.061 (NBB). In that period, ADBL had the second highest HHI, 30.251. The average HHI was 17.26 and standard deviation was 4.23.

In fiscal year 2070/71 the maximum HHI was 29.88 (NSBI) and minimum HHI was 13.68 (HBL). In that period, NBB HHI index was 14.99 which were below than

average, and ADBL had the second highest HHI, 29.66. The average HHI was 17.69, which was the highest among five year analysis .Standard deviation was 4.18 with variance 17.454.

Overall, Data shows that the banks are more diverting in their product wise loan distribution over time. In five year period, the loan distribution of total product wise loan, is on demand and other working capital loans first which are followed by overdraft loan and term loan respectively. Most of the time ADBNL has the highest credit concentration and NBB care about the loan diversification and has the minimum credit concentration. The standard deviation is in increasing order as well as range also increasing over time meaning that banks are now divided into both diversify product wise loan and concentrated product wise loan. Different analyses shows that both are different method of managing deposits and have own merits and demerits.

4.2 Descriptive Analysis of Profitability of Commercial Bank of Nepal

4.2.1 Return on Assets (ROA):

This part summarize the ROA of all commercial banks of Nepal in the between the period of 2070/71 to 2074/75. The ROA reflects the ability of the banks management to generate profit from the bank's assets. It shows the management ability to make the out of the available resources, thus higher values of ROA shows that business is more profitable. This ratio should be only used to compare companies in the same industry. An increasing trend of ROA indicates that the profitability of the company is improving. Conversely, a decreasing trend means that profitability is deteriorating.

Table No.4.2.1 Descriptive analysis of Return on Assets

S.N.	Bank	2070/71	2071/72	2072/73	2073/74	2074/75*	Average
1	NBL	1.25	0.58	2.69	2.75	2.08	1.87
2	RBB	1.50	3.10	1.44	1.47	1.78	1.86
3	NABIL	2.56	1.75	2.21	2.35	1.94	2.16
4	NIBL	2.10	1.77	1.85	2.01	1.82	1.91
5	SCBNL	2.51	1.97	1.90	1.76	1.84	2.00
6	HBL	1.46	1.32	1.88	2.00	1.58	1.65
7	NSBI	1.47	1.75	1.63	1.49	1.16	1.50
8	NBB	2.28	2.70	3.44	2.92	1.46	2.56
9	EBL	1.56	1.56	1.50	1.69	1.65	1.59
10	BOK	1.29	0.76	0.91	1.49	1.17	1.13
11	NCC	1.37	1.25	1.89	1.00	0.73	1.25
12	NIC	1.52	1.18	1.30	1.45	0.44	1.18
13	MBL	1.08	1.21	1.42	1.73	0.76	1.24
14	Kumari	0.96	0.88	1.65	1.02	0.94	1.09
15	LAXMI	1.26	0.81	1.16	1.18	1.00	1.08
16	SBL	1.79	1.38	1.54	1.25	1.20	1.43
17	ADBNL	1.39	2.06	1.95	1.86	1.48	1.75
18	GLOBAL	1.58	1.41	1.53	1.69	1.31	1.51
19	CITIZENS	1.62	1.70	1.91	1.80	1.04	1.61
20	PRIME	1.64	1.67	1.98	1.83	1.17	1.66
21	SUNRISE	1.25	1.20	1.57	1.52	1.06	1.32
22	NMB	2.08	1.86	2.33	2.63	1.16	2.01
23	PRABHU	-0.96	2.00	1.52	1.72	0.63	0.98
24	JANATA	0.41	0.50	1.16	0.98	0.66	0.74
25	MEGA	1.44	1.27	1.33	1.65	0.97	1.33
26	CIVIL	1.40	0.83	1.04	0.99	0.69	0.99
27	CENTURY	0.63	0.91	1.14	0.93	0.67	0.86
28	SANIMA	1.52	1.47	1.82	1.81	1.33	1.59
	Average ROA	1.43	1.46	1.70	1.68	1.20	
	Minimum %	-0.96	0.50	0.91	0.93	0.44	
	Maximum %	2.56	3.10	3.44	2.92	2.08	
	Std. Deviation	0.67	0.60	0.53	0.52	0.45	

* 10 months data only

According to the table 4.2.1, in 2074/75 10 months period the assets utilization ratio (ROA) is highest with 2.08 percent (NBL) among other 28 commercial banks, and NIC has the lowest profit with 0.44 percent. The average ROA of 28 banks in 2074/75 is 1.20 percent. That means, on average bank earn Rs.1.20 net profit on an investment of Rs.100 in ten months period.

Similarly, ROA of 2073/74 was minimum 0.931 percent (Centuary) and maximum 2.916 percent (NBB) where average ROA was 1.677 percent and standard deviation of ROA of banks was 0.523 percent.

Likewise, ROA of 2072/73 was minimum 0.912 percent (BOK) and maximum 3.436 percent (NBB) where average ROA was 1.703percent, which was the highest among five years analysis. Standard deviation of ROA of banks was 0.528 percent with variance 0.279.

In fiscal year 2071/72, the maximum ROA was 3.095 percent (RBB) and minimum ROA was 0.497 percent (Janata). The average ROA was 1.46 percent and standard deviation was 0.597 percent.

In fiscal year 2070/71, the maximum ROA was 2.557 percent (Nabil) and minimum ROA was -0.957 percent (Prabhu). The average ROA was 1.427 percent, which was the lowest among five year analysis .Standard deviation was 0.671 with variance 0.45.

Overall, NBB had the highest assets utilization (3.436 percent) in 2072/73 among five years ROA. On the other hand Kist bank ltd, now Prabhu, had loss in 2070/71 with 0.09570 percent negative ROA.

4.2.2 Net Interest Income

Net interest income is the difference between revenues generated by interest bearing assets and the cost of servicing liabilities.

Table No 4.2.2Descriptive analysis of Interest Spread (Net interest income)

S.N.	Bank	2070/71	2071/72	2072/73	2073/74	2074/75*
1	NBL	2828.6	3316.4	4691.3	5833.9	4609.6
2	RBB	3913.1	4669.0	5552.3	6979.5	7398.3
3	NABIL	3795.4	3638.4	4435.7	5459.5	5042.5
4	NIBL	2963.7	2967.0	3921.1	4781.9	4744.6
5	SCBNL	2007.7	1915.6	1858.6	2178.3	2352.6
6	HBL	2495.8	2674.2	3409.5	3764.0	3304.9
7	NSBI	1745.1	2051.8	2421.3	2916.9	2686.2
8	NBB	856.3	1090.2	1462.4	1524.6	1118.5
9	EBL	2918.9	2879.4	3228.5	3739.0	3914.4
10	BOK	1218.9	1381.4	1543.4	2566.1	2361.2
11	NCC	779.9	795.5	1182.9	1906.2	739.5
12	NIC	1798.5	1578.3	1977.0	2538.2	2482.2
13	MBL	1101.2	1337.2	1852.9	2297.6	1593.4
14	Kumari	821.1	898.0	1169.1	1271.3	1508.8
15	LAXMI	822.3	959.6	1307.2	1623.5	1357.0
16	SBL	1326.2	1394.1	2063.1	2339.4	2603.7
17	ADBNL	4592.3	4807.4	6230.6	7104.1	4826.9
18	GLOBAL	1751.2	2280.7	2889.6	3566.8	2985.1
19	CITIZENS	1072.8	1268.7	1620.3	1750.4	1213.4
20	PRIME	1059.9	1397.0	1588.5	1904.4	1393.5
21	SUNRISE	1086.0	1099.3	1513.4	2110.7	1799.3
22	NMB	789.2	967.3	2013.3	2568.2	1834.9
23	PRABHU	730.9	1548.9	1973.0	2494.8	1758.9
24	JANATA	537.9	604.6	747.6	1072.9	1440.5
25	MEGA	821.2	866.7	1127.8	1721.5	1634.9
26	CIVIL	593.9	869.7	965.1	1105.0	739.8
27	CENTURY	422.0	656.5	878.4	1131.5	1005.6
28	SANIMA	818.7	1139.4	1722.3	2242.1	1929.1
	Average Interest Spread	1631.0	1823.3	2333.8	2874.7	2513.5
	Minimum (Rs.) Million	422.0	604.6	747.6	1072.9	739.5
	Maximum (Rs.) Million	4592.3	4807.4	6230.6	7104.1	7398.3
	Std. Deviation	1141.1	1167.1	1445.3	1702.0	1590.9

* 10 months data only

According to the table 4.2.2, In 2074/75 10 months period the net interest earning is highest with Rs.7398.33 Million (RBB) among other 28 commercial banks, and NCC and Civil have the lowest profit with Rs.739.5 Million and Rs.739.79 Million respectively. The average net interest income of 28 banks in 2074/75 is Rs.2513.55 Million. That means, total interest spread of 28 commercial banks is twenty eighth times of Rs.2513.55 Million in ten months period. Standard deviation of that period is 1141.0.

Similarly, net interest earnings of 2073/74 was minimum Rs.1072.86 Million (Janata) and maximum Rs.7104.05 Million (ADBNL) and RBB has the second highest income with Rs. 6979.5 Million .Average net interest earning was Rs. 2874.72 Million, which was the highest among five years analysis and standard deviation of net interest earning of banks was 1702.02.

Likewise, net interest earnings of 2072/73 was minimum Rs.747.62 Million (Janata) and maximum Rs.6230.64 Million (ADBNL) where average net interest earning was Rs.2333.79 Million. Standard deviation of net interest earning of banks was 1445.26.

In fiscal year 2071/72, the maximum net interest earning was Rs.4807.40 Million (ADBNL) and minimum net interest earning was Rs.604.60 Million (Janata). The average net interest earning was Rs.1823.30 Million and standard deviation was 1167.08.

In fiscal year 2070/71, the maximum net interest earning was Rs.4592.30 Million (ADBNL) and minimum net interest earning was Rs.422.00 Million (Century). The average net interest earning was Rs.1631.02 Million, which was the lowest among five year analysis. Standard deviation was 1141.08.

Overall, ADBNL had the highest net interest earning Rs.7104.05 Million in 2073/74 among five years net interest earning. On the other hand, Janata had the lowest net interest income Rs.422.00 Million in 2070/71. The mean and standard deviation shows that the banks have different earning capacity over five year period, since data shows high standard deviation and average is smaller than mid value of minimum and maximum.

4.3 Descriptive analysis of Credit Concentration and Profitability

Table no. 4.3.1 Descriptive analysis of Credit concentration and profitability

Bank Wise Analysis	Minimum	Maximum	Mean	Std. Deviation
2074/75				
Sector wise HHI	11.93	20.90	15.23	2.37
Product wise HHI	12.87	49.02	16.99	6.73
ROA (%)	0.44	2.08	1.20	0.45
Interest Spread (Rs. Millions)	739.50	7398.33	2513.54	1590.9
Loan/ Deposit (%)	71.50	103.53	89.75	7.05
No. of sample = 28				

Table 4.3.1 shows descriptive analysis of 28 commercial banks of ten months of new fiscal year 2074/75 based on concentration of sector wise loans and product wise loan, ROA, Interest spread and loan to deposit ratio over the same period of times. Here, HHI is used as tools to measure concentration and ROA and Interest Spread is used to evaluate profit. Loan to deposit ratio directly affect the profitability of banks.

The average sector wise credit concentration of all commercial banks is 15.23 where Prabhu bank has lowest concentration with 11.93 HHI and Nabil bank has the highest credit concentration with 20.90 HHI in the same period. The index standard deviation of 28 commercial banks is 2.5, represents low spread out of data from mean.

Likewise, the average product wise credit concentration of all commercial banks is 16.99 where Citizens bank has the lowest concentration with 12.87 HHI and ADBNL bank has the highest credit concentration with 49.20 HHI in the same period. The index standard deviation of 28 commercial banks is 6.76, represents the medium spread out of data from mean.

ROA and net interest income (interest spread) indicate the profitability of commercial banks and credit to deposit ratio is one factor which directly affect the profitability. The data shows that average ROA is 1.20%, which means on an average all commercial banks earn Rs. 1.20 from Rs. 100 investment after deducting all expenses. The maximum profit generating bank is NBL with 2.08% ROA and the lowest profit earning bank is NIC with 0.44% ROA. The standard deviation in earning is 0.45, which shows the high difference in earning capacity of banks.

Interest spread or Net interest income represents the difference in interest earning and interest expenses. Banks earn interest from loan and pay interest to depositor and the gap in the process show the net interest income or spread. The Average interest spread is Rs. 2513.54 Millions. The highest spread earning bank is RBB with Rs. 7398.33 Million and the lowest spread earning bank are NCC and Civil with Rs. 739.50 Million and Rs. 739.79 Million respectively. The deviation from average net interest earning is 1590.9, which represents high differences in earning potentiality of banks.

The loan to deposit ratio helps assess a banks liquidity and by extension the aggressiveness of the bank's management. If ratio is too high, the bank could be vulnerable to any sudden adverse changes in its deposit base. Conversely, if the ratio is too low, the bank is holding on to unproductive capital and earning less than it should. Therefore, credit to deposit ratio directly affect the profitability of banks, and it should be consider while determining the profitability of banks.

In ten months of new fiscal year 2074/75 ADBNL has 103.53% loans to deposit ratio that means ADBNL provides loan from borrowing too and has less money in stock for immediate liabilities. The lowest ratio is 71.50% of SCBNL. The average ratio is 89.75% with standard deviation of 7.05. The loan to deposit ratio of 80% is supposed to good in banking.

4.4 Correlation between Concentration and Profitability

Correlation measures the degree of dependency of dependent variables in independent variables. Here, concentration indexes (HHI) are dependent variables and profitability indicator ROA and interest spread are independent variables.

Table No.4.4.1, 4.4.2 Correlation between Sector wise HHI and ROA

Table No.4.4.1 Panel A

Pearson Correlation	ROA (Feb-2018)
2018	
Sector wise HHI (Feb)	0.520**
Sig. (2-tailed)	0.005
No. of sample = 28	

Table No. 4.4.2 Panel B

Pearson Correlation	ROA (May-2018)
2018	
Sector wise HHI (May)	0.534**
Sig. (2-tailed)	0.003
No. of sample = 28	

**. Correlation is significant at the 0.01 level (2-tailed).

The bank monthly statistics of February, 2018 shows that the Pearson correlation coefficient, r, between ROA and sector wise HHI is 0.520, and it is statistically significant ($p = 0.005$), which mean the confidence level of correlation is 99.5 percent.

Again, The bank monthly statistics of May, 2018 shows the same relationship that the Pearson correlation coefficient, r, between ROA and sector wise HHI is 0.534, and it is statistically significant ($p = 0.003$), which mean the confidence level of correlation calculation is 99.7 percent.

Both the data support the correlation and shows that the positive linear relationship between variables, and the magnitude, or strength, of the association is approximately moderate (nearly $r=0.5$) meaning that ROA and sector wise HHI tend to increase or decrease together in the same direction. In other words, change in 1 percent of sector wise HHI or credit concentration makes change in nearly 0.5 percent of ROA and vice versa.

Table no.4.4.3 , 4.4.4 Correlation between Sector wise HHI and Net Interest Income

Table no.4.4.3 Panel A

Pearson Correlation	Net Interest Income (Feb-2018)
2018	
Sector wise HHI (Feb)	0.494**
Sig. (2-tailed)	0.007
No. of sample = 28	

Table no.4.4.4 Panel B

Pearson Correlation	Net Interest Income (May-2018)
2018	
Sector wise HHI (May)	0.529**
Sig. (2-tailed)	0.004
No. of sample = 28	

**. Correlation is significant at the 0.01 level (2-tailed).

The bank monthly statistics of February, 2018 shows that the Pearson correlation coefficient, r, between Net Interest Income and Sector wise HHI is 0.494, and it is statistically significant (p = 0.007), which mean the confidence level of correlation is 99.3%.

Again, The bank monthly statistics of May, 2018 shows the same relationship that the Pearson correlation coefficient, r, between Net Interest Income and Sector wise HHI is 0.529, and it is statistically significant (p = 0.004), which mean the confidence level of correlation calculation is 99.6%.

Both the data support the correlation and shows that the positive linear relationship between variables, and the magnitude, or strength, of the association is approximately moderate (nearly r=0.5) meaning that ROA and sector wise HHI tend to increase or decrease together in the same direction. In other words, change in 1% of sector wise HHI or credit concentration makes change in nearly 0.5% of ROA and vice versa.

Table no.4.4.5 , 4.4.6 Correlation between Product wise HHI and ROA

Table no.4.4.5 Panel A

Pearson Correlation	ROA (Feb-2018)
2018	
Product wise HHI (Feb)	0.08
Sig. (2-tailed)	0.686
No. of sample = 28	

Table no.4.4.6 Panel B

Pearson Correlation	ROA (May-2018)
2018	
Product wise HHI (May)	0.166
Sig. (2-tailed)	0.397
No. of sample = 28	

Both the data from February, 2018 and May, 2018 show the very low degree of correlation between Product wise concentration index (HHI) and ROA, and their confidence level are also low which is supposed to be below than 5% or 0.05. So, it can be concluded that there is no relationship between ROA and Product wise HHI or the interdependence cannot be define accurately.

Table no. 4.4.7, 4.4.8 Correlation between product wise HHI and Net interest income

Table no. 4.4.7 Panel A

Pearson Correlation	Net Interest Income (Feb-2018)
2018	
Product wise HHI (Feb)	0.369**
Sig. (2-tailed)	0.050
No. of sample = 28	

Table no. 4.4.8 Panel B

Pearson Correlation	Net Interest Income (May-2018)
2018	
Product wise HHI (May)	0.391**
Sig. (2-tailed)	0.040
No. of sample = 28	

**. Correlation is significant at the 0.05 level (2-tailed).

The bank monthly statistics of February, 2018 shows that the Pearson correlation coefficient, r, between Net Interest Income and Product wise HHI is 0.369, and it is statistically significant (p = 0.05), which mean the confidence level of correlation is 95.0%.

Again, The bank monthly statistics of May, 2018 shows the same relationship that the Pearson correlation coefficient, r, between Net Interest Income and Product wise HHI is 0.391, and it is statistically significant (p = 0.040), which mean the confidence level of correlation calculation is 96.0 percent.

Both data support the correlation and shows that the positive linear relationship between variables, and the magnitude, or strength, of the association is weakly moderate (r=0.35) meaning that Net Interest Income and Product wise HHI tend to increase or decrease together in the same direction. In other words, change in 1% of Product wise HHI or credit concentration makes change in nearly 0.35% of Net Interest Income and vice versa.

4.5 Trend Analysis of Concentration

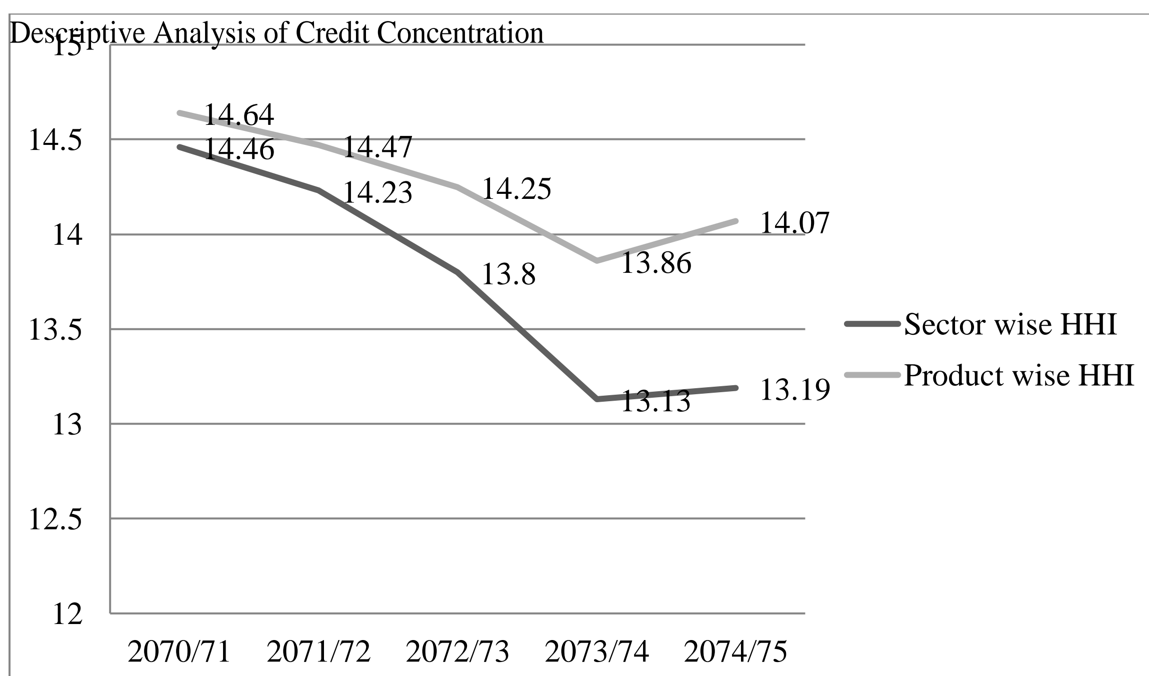

Figure 4.5.1 Overall bank credit concentration index (Horizontal analysis)

Figure 4.5.1 shows the five years collective analysis of bank credit (loan) concentration in fifteen sectors wise and eleven product wise distributions as defined by NRB. Concentration index (HHI) is used to define concentration and result is converted in percentage. Therefore, the scale of measurement is from zero (0) to

hundred (100). In case of bank, BIBM defines that HHI from 10 percent to 18 percent indicates moderate concentration.

The product wise and sector wise concentration index which was 14.64 and 14.46 in fiscal year 2070/71 decline to 14.07 and 13.19 in ten months period of fiscal year 2074/75. Overall, Nepalese commercial banks are focus on same type of products. In sector wise analysis banks primary focus is on wholesaler and retailer loan which cover one fifth of total loan followed by manufacturing (producing) related and construction from 2070/71 to 2074/75. As well as, in product wise analysis banks primary focus is on demand and other working capital loan covering slightly more than one fifth of total loan followed by overdraft loan and term loan in five year period. The first three sector cover more than fifty percent of total loan over five year analysis.

The figure 4.5.1 also illustrates that the credit concentration to particular sector is decreasing. It means that the banks are now gradually focusing on other sector too for granting loans.

4.6 NRB Guidelines and Directives to Credit Concentration

NRB, the central bank of Nepal issued directive (Unified Directives, 2074) that has made provision of penalty for failing to provide loans in the productive sectors such as agriculture, manufacturing and hydropower sectors as per the target given by the NRB. In fiscal year 2074/75, the banks have to disburse 20 percent of their total credit in the productive sector. Such credit of commercial banks is about 23.3 percent in mid-May 2018. The central bank considers lending in the areas of real estate, vehicles and credit and shares as unproductive lending.

Guidelines also direct loan to a particular sector, which must not exceed 40 percent of total loan by commercial banks in Nepal. On this aspect, the total bank analysis shows the highest loan to particular sector in 10 months of 2074/75 is on wholesaler and retailer loan which is 22.92 percent of total loan. The bank with the highest HHI, Nabil also allocate only 30.35 percent loan to manufacturing and producing related loan.

Guidelines also direct commercial banks to grant loan to deprive sector should be minimum 5 percent of total loan. The overall analysis of shows 5.2 percent loan is granted to this product. Most of the banks are near to the limit and have two months period.

The other directives are a) loan to housing and real estate should be limited to 50 percent of collateral fair market value, but for loan to residential real estate is extended to 60 percent. b) loan related to real estate, housing, commercial building and plotting in any heading should not exceed to 25 percent of total loan. C) loan to other real estate including land buying and plotting should not exceed 10 percent of total loan. Till mid-May 2018 loan to finance, insurance and real estate is 8.49 and loan to real estate product is 5.6 percent in total analysis.

4.7 Discussion

Credit concentration plays vital role on the stability of financial system. The direction of loans to different sector determines the economic direction and growth. Anywhere commercial banks have large share of total loan in the economy. Therefore, Banks should explicitly consider the extent of credit concentration in their assessment. Concentration is the most dominant variable that affects the banks' performance. This study takes into account various factors that are affected by credit concentration and relates concentration (sector wise and product wise) with profitability of respective banks, and further analyzes the trend of credit concentration both bank wise and collectively with the help of HHI index.

Single obligor limit has prevented banks for excessive lending in particular sector. As a single obligor limits, the outstanding of exposure both funded and non-funded to a single person or a group shall not exceed 25 percent of the core capital. Considering aspects like production and employment, the single borrower limit of the loans to be provided to export sector, small and medium industries, pharmaceutical industries, agriculture, tourists, cement industries, iron industries and other production oriented industries has been fixed at 30 percent in the maximum. Due to the unavailability of data related single obligatory could not possible to analyze.

There are fundamental credit concentration management policies and practices recommended for adoption to all banks. Credit concentration helps to improve profit as well as put the depositor money to risk. That mean, more diverse loan portfolio minimizes the risk but it increases the cost related to allocation and supervision. Bank has to determine the risk appetite and plan to optimize return while keeping credit risk within predetermined limits. Every bank has to develop credit policies guidelines, product papers, internal rating systems and stress testing that will outline bank's view of business development priorities required for loans to be approved.

Two researches have been done yet by NRB using HHI to know the loan and deposit concentration helps to determine the completion for loan and deposit. Research on competition in Nepalese commercial bank done by Neupane (2016) in NRB website is one use of HHI. That research concludes that the Nepalese commercial banks are

operating in monopolistic competition. This research is also try to view the scenario of loan allocation, and comes to the conclusion that most of the loans both sector wise and product wise are provided to three sector covering nearly 60% of total loan. These sectors are wholesaler and retailer, manufacturing or producing related, and construction. As the research concludes that the sector wise concentration has the considerable positive impact in profitability, the banks with high concentration index also have high profitability and vice versa. One of the intervening variables (loan to deposit ratio) is analyzes to relate the relation.

Similarly, Government owned banks' ROA (NBL 2.08, ADBNL 1.48, RBB 1.78) is better than private sector banks, except Nabil 1.94, NIBL 1.82, SCBNL 1.84 and some joint venture bank like NBB 1.46, HBL 1.58 and EBL 1.65.The reason behind the highest ROA of NBL is the non operating profit which it gain from sale of other company shares like Gramin Development Bank, Deprose Development Bank and collection of bad debts. According to NRB monthly statistics of mid-May, 2018, the non operating of NBL is Rs. 508.21 Million which is 20 percent of net profit. Nabil and NIBL also have higher non operating income.

Prabhu bank, the only bank which had negative ROA in fiscal year 2070/71 is improving its performance over time. Janata bank is weak in generating profit and has low deposit too. Horizontal analysis or total commercial bank analysis shows that banks are gradually diverging to their loan products both sector wise and product wise. Lending to sector like construction and real estate is still found to be high. It is the third prioritized sector covering 10.01% of total loan of ten months of fiscal year 2074/75. Considering the lucrative return from these sectors banks are still focusing in these sector thus limiting their fund flow to unproductive sectors. However, in recent days entrepreneurs are focusing on service sector thus the lending to wholesaler and retailer is on the highest side.

In productive sector, commercial bank lending to agriculture sector and tourism sector have increased over time, but that to hydropower sector is still on the lower side. Various government policies and NRB directives has made it mandatory for the banks to lend to productive sector.

Net interest earnings and ROA differ with credit concentration and also the sector wise concentration has countable impact on profitability. Increase in credit concentration also leads to increased loan loss provision, higher NPA, and higher concentration risk. Also banks with higher credit concentration (HHI) have to maintain their CD ratio to protect their depositors. However, CD ratio is seen tight among these banks like ADBNL which grant loan from borrowing too and has CD ratio 103.53 percent.

The literature also indicated that high credit concentration leads to deteriorating of loan quality and limits supply of loans whereas highly concentrated banks need to maintain higher capital and also there is chance of high non performing loans.

CHAPTER V

SUMMARY AND CONCLUSION

In the previous chapter, the data analysis, descriptive statistics, correlation testing and comparison with NRB guidelines was done according to the objective of the study. This chapter deals with the summary of the study and highlights the major findings. It also draws inference from the findings which lead to generalization. In addition, it also includes major conclusion derived from the study, some implication and recommendations regarding the bank profitability and some specific determinants affected by credit concentration of commercial banks. Finally, the chapter ends with the suggestions for future researchers.

5.1 Summary

It gives a brief overview of the introduction, review of related literature, methodology and findings of study. This study mainly finds the relationship between credit concentration and profitability of Nepalese commercial banks, and it also relates the sector wise credit concentration and product wise credit concentration with NRB guidelines and unified directives 2074. HHI index is used to measure the concentration and profitability is measured through ROA and net interest income.

This research starts with some question regarding the bank credit concentration and profitability and relationship between them. This research primarily focuses on situation of credit concentration and profitability of individual banks as well as collective analysis of the commercial bank in five years period from 2070/71 to 2074/75. It also highlights some NRB guidelines and directives regarding the loan allocation in different product and sector as divided by NRB directives. This study analyze the sector wise and product wise credit concentration to measure bank concentration, but one major aspect of credit concentration, lending to single borrower, is not analyzed due to the restriction on providing data. The guidelines related to single borrower limits are presented in the thesis.

The objectives of this research are to find the gap in analysis of credit concentration and profitability and it is the initiation in this field. Therefore, this research provides

an insight into credit concentration pattern within the standards set by NRB. Furthermore, this research searches the link between sector wise and product wise credit concentration and its relation with profitability. The HHI index is used to measure the credit concentration, which is widely used in many countries like USA and Bangladesh. NRB also used HHI to calculate the concentration.

Study of population that is all 28 commercial banks make the findings more accurate and dependable. The descriptive analysis has been done using minimum, maximum, mean, standard deviation and variance. The correlation between sector and product wise HHI and profitability (ROA and Net interest income) has been done to find the relation between them.

Similarly, the study provides a useful basis upon the topic for future researcher and helps to understand risk associated with the Nepalese commercial bank based on the credit concentration. The study ends with the several results.

5.2 Conclusion:

The study concludes that credit concentration of the bank is the most dominant variables that affect the banks' performance. NRB has set up a certain benchmark for banks for lending in different sectors thus minimizing credit concentration risks. The most important source of revenue for any bank is providing credit and credit is exposed to various types of risks. Proper and well planned management of money directs, determines and enhances the health and productivity of financial sectors.

1. This study concludes that high performing banks are more concentrated and distribute their lending proportionately to some sector with some exception like NBL. In fiscal year 2074/75 the banks credit concentration index shows the same scenario. Though banks are able to diversify their lending portfolio, most of the lending is done in wholesaler and retailer, manufacturing, and construction sectors, which cover 51.63 percent of total loan. Similarly, demand and other working capital loan, overdraft loan and term loan are found high covering 56.8 percent of total loan. Research shows that credit concentration have direct relation with profitability and non-performing loan.

2. This research shows that the profitability of bank increases over time. The average ROA of 28 commercial bank of fiscal year 2070/71, which was 1.42 percent, is increased to 1.68 percent over four year period.
3. The research also show that the Nepalese commercial banks are moderately credit concentrated both in sector wise and product wise. The relationship between sector wise loan credit concentration and profitability (ROA and Net interest income) is moderately positive having correlation 0.534 and 0.529 respectively at 1 percent significant level. On the other hand the correlation between product wise loan and profitability is negligible and cannot explain precisely.
4. While comparing NRB guidelines and directives with findings it is found that many banks are fail to maintain 5 percent deprived sector loan, but they are near and have two months period to follow the instruction. But in overall analysis all figures are according to the guidelines.
5. Loan portfolio can be used as a core competency in banking industry because different portfolio have different return and need different expertise. So bank can earn more profit from concentration since the cost related to loan evaluation, collection and allocation reduce, but the chances of loss also increase. Nepalese banking sector is guided by rule and regulation directed by NRB to save the depositor money. So there is lack of full control of bankers in banking operation and loan allocation and concentration in some sector may not be possible.
6. Concentration is always a source of risk in banking. So the rule of single borrower exposure limit, which is 25 percent now, is necessary to follow to save the depositor money

Banks have to monitor its credit portfolio which is sufficient to protect depositors and even creditors. This research has identified commercial banks current sector wise loan exposure and product wise loan and advances using concentration index (HHI), risk management tools, NRB guidelines on risk management and organization and different variables related to credit concentration. Bank should explicitly consider the extent of their credit concentration in their assessment.

5.3 Implications

In order to improve banks' performance and maintaining financial stability, it is vital to identify the variables that are influenced by credit concentration of commercial banks. Based on the study results the following implications are forwarded for the concerned bodies.

- This study can be regarded as the preliminary steps in investigation credit concentration status and implication in the context of Nepalese commercial banks. The future studies can be carried out by selecting other financial institutions like development banks and finance companies to grab the wider view of credit concentration. The variables included in the study were not exhaustive. Future researchers could include other bank specific and macroeconomic variables in their study. The new statistical tools other than HHI can also be used to evaluate the situation from other dimension. This research may act as a corner stone for future researchers.
- In order to maintain a sound and stable banking system, a commercial bank should strive to meet the requirement set by NRB. All commercial banks should properly analyze the customer before lending. They should not concentrate on one sector for providing credit.
- HHI index and related other index analysis need to make compulsory to analyses the situation of credit concentration.
- General public should consider credit concentration as major challenge in today's banking arena. Thus they should try to deposit and invest on those banks that believe and follow the regulations implemented by NRB.
- Proper regulations towards the banking sector need to be implemented by the NRB. Accordingly, government bodies should see the adverse effect of the policies imposed as well as liberated on the banks for existing private banks as well as for the new entrants.
- A bank's management needs to conduct periodic reporting of its major credit concentrations in proper format and review the results of those reports to identify and respond to potential changes in market conditions that could adversely impact the bank's performance.

REFERENCE

Ash, D.-K., & Harry, H. (1999). Determinants of Commercial Bank Interest Margins and Profitability: Some International Evidence. *The World Bank Economic Review , 13* (2), 379-408.

Athanasoglou, P. P., Brissimis, S. N., & Delis, M. D. (2005). *Bank-Specific, Industry-Specific and Macroeconomic Determinants of Bank Profitability.* Greece: Bank of Greece.

Atul, C. P., & Nur, A. F. (2012). *Bank Credit Concentration in Bangladesh: Status and Implication.* Dhaka, Bangladesh: Bangladesh Institute of Bank Management.

Bandyopadhyay, A. (2010). *Understanding the Effect of Credit Concentration Risk in the Banks' Credit Portfolio: Indian case.* India: National Institute of Bank Management (NIBM).

Basel Committee on Banking Supervision. (1999). *A new capital adequacy, Framework.* Swizerland: Basel Committee.

Basel Committee on Banking Supervision. (2006). *Core Principals for Effective Banking Supervision.* Swizerland: Bank for International Settlements Press & Communication.

Bhanumurthy, N. R. (2014). *Recent Downturn in Emerging Economies and Macroeconomic Implications for Sustainable Development: A case of India.* New Delhi: Department of Economic & Social Affairs.

Black, F., & Scholes, M. (1997). The pricing of options and corporate liabilities. *Journal of Political Economics, 81* , 637-659.

Boot, A. (2000). Relationship banking: What do we know? *Journal of finance intermediation , 50* (2).

Boyd, J. H, & Nicolo, G. D. (2005). The Theory of Bank Risk Taking and Competition Revisited. *The Journal of Finance , 60* (3), 27, 87.

Boyd, J. H, & Nicolo, G. D. (2006). Bank Risk Taking and Competition Revisied: New Theory and New Evidence. *IMF working paper 06/297* .

Bundesbank, D. (2006, June). Concentration risk in credit portfolio. *monthly report* , 10.

Bundesbank & Deutsche. (2006). *Concentration risk in credit portfolios.* Deutsche Bundesbank eurosystem.

Cerqueiro, G. (2008). *Bank Concentration, Credit Quality and Loan Rates.* Tilburg University.

Chaudhary, C. P. (2015). *Credit Concentration of Nepalese Commercial Bank.* Kathmandu: Pokhara University.

Demirguc, K. A., & Levine, R. (2000). *Bank concentration: cross-country evidence*. Retrieved July 01, 2010, from The World Bank: http://documents.worldbank.org/curated/en/979371468780328170/Bank-concentration-cross-country-evidence

Dhakal, R. (2011). *Comparisin Between Government Sector Banks and Private Sector banks and Their Performance.* T.U., Kirtipur: An Unpublished Master Degree Thesis: Central department of management.

Lamanda, G. (2011). *Regulation and practice of managing bank's operational risk.* Faculty of Social and Economic Sciences. Budapest: Budapest University of Technology and Economics.

Maharjan, R. (2010). *Policy to Manage Credit Risk and Operational Risk in Nepalese Banking Industry.* Apex College, Purano Baneswor: Unpublished Master Degree Thesis.

Nepal Rastra Bank. (2074). *Unified-Directives.* Kathmandu, Nepal: Nepal Rastra Bank Central Office.

Neupane, B. P. (2016). *Competition in Nepalese Commercial Bank.* Kathmandu: Nepal Rastra Bank.

Office of the Comptroller of the Currency. (2011). *Concentration of Credit.* Washington DC: Office of the Comptroller of the Currency.

Onyiriuba, L. (2009). *Analyzing and Managing Risk of Banks lending.* Lagos, Nigeria: Mathouse Press Ltd.

Petersen, M., & Rajan, R. (1994). The benefits of lending relationships: Evidance from small business data. *Journal of Finance* , 49, 3-37.

Petersen, M., & Rajan, R. (1994). The benefits of lending relationships: Evidance from small business data. *Journal of Finance* , 49, 3-30.

Petersen, M., & Rajan, R. (1994). The benefits of lending relationships: Evidence from small business data. *Journal of Finance* , 49, 10-17.

Poudel, R. P. (2012). The impact of credit risk management on financial performance of commercial banks in Nepal. *International Journal of Arts and Commerce , I* (5), 9-13.

Rhoades, S. A. (1993). The Herfindahl-Hirschman Index. In F. R. Louise. St. Louis.

Rose, P. (1999). *Commercial bank management.* Boston: McGraw-Hill.

Sapkota, P. (2009). *Fund Mobilisation Policy of Standard Charted Bank Nepal Ltd.* Purano Baneswor Kathmandu: Unpublished Master Degree Thesis: Pokhara University.

Sathye, M. (2013, September 25). *The Impact of Foreign Banks on Market Concentration: The case of india*. Retrieved from Applied Econometrics and InternationalDevelopment:http://www.usc.es/economet/journals1/aeid/aeid211 .pd

Shiwakoti, N. (2006). *Capital and Assets Structure of Nepal Industrial Development Corporation.* Lalitpur: Unpublished Thesis of Master Degree; Kathmandu University School of Management.

Shrestha, S. (2006). *Financial Performance and Analysis of Nepal Bangladesh Bank Limited.* Tu, Kritipur: An Unpublished Master Degree Thesis, Central Department of management.