LIQUIDITY AND CREDIT MANAGEMENT PRACTICES OF COMMERCIAL BANKS IN NEPAL

(A comparative study with reference to Nepal Investment Bank Ltd and Nepal Industrial and Commercial Bank Limited)

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RECOMMENDATION

This is to certify that the thesis

Submitted by

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Entitled

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(with reference to Nepal Investment Bank Ltd and Nepal Industrial and Commercial Bank Ltd.)

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

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VIVA –VOCE SHEET

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Found the thesis to be original work of the student and written according to the prescribed format. We recommend the thesis to be accepted as partial fulfillment of the requirements for the Degree of Master in Business Studies (MBS).

Viva-Voce Committee

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Member (Thesis Supervisor) **…….**

Member (External Expert) **…….**

DECLARATION

I hereby declare that the work reported in this thesis entitled **"LIQUIDITY AND CREDIT MANAGEMENT PRACTICES OF COMMERCIAL BANKS IN NEPAL (with reference to Nepal Investment Bank Ltd and Nepal Industrial and Commercial Bank Ltd.)"**, submitted to the Office of the Dean, Faculty of Management, Tribhuvan University, is my original work done in the form of partial fulfillment of the requirements for the Degree of Master's in Business Studies (MBS) under the supervision of Prof. Shilu Manandhar Bajracharya, Lecturer at Shanker Dev Campus, Kathmandu.

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This thesis entitled **"LIQUIDITY AND CREDIT MANAGEMENT PRACTICES OF COMMERCIAL BANKS IN NEPAL (with reference to Nepal Investment Bank Ltd and Nepal Industrial and Commercial Bank Ltd.)",** has been prepared in partial fulfillment for the degree of Master's of Business Studies (MBS), as required by the Office of the Dean, Faculty of Management, Tribhuvan University.

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Muna Tamrakar

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ABBREVIATIONS

AD	:	After Death
ATM	:	Automated Teller Machine
BS	:	Bikram Sambat
FY	:	Fiscal Year
GDP	:	Gross Domestic Productivity
GON	:	Government of Nepal
Govt.	:	Government
HMG	:	His Majesty Government
i.e.	:	That is
L/C	:	Letter of Credit
Ltd	:	Limited
MBS	:	Master of Business Studies
NBL	:	Nepal Bank Limited
NGOs	:	Non-government Organizations
NIBL	:	Nepal Investment Bank Limited.
NIC	:	Nepal Industrial and Commercial Bank Limited
SCBNL	:	Standard Chartered Bank Nepal Limited
EBL	:	Everest Bank Limited
HBL	:	Himalayan Bank Limited
NPAs	:	Non- Performing Assets
NRB	:	Nepal Rastra Bank
SWIFT	:	Fast and Reliable Money Transfer Service
TR	:	Trust Receipt
TU	:	Tribhuvan University
CR	:	Current Ratio
CV	:	Coefficient of Variation
r	:	Correlation Coefficient
R	:	Multiple Correlation Coefficient
S.D.	:	Standard Deviation
ROA	:	Return on Assets
IMF	:	International Monetary Fund
MOF	:	Ministry of Finance

CHAPTER I
INTRODUCTION

1.1 Background of the Study

The global financial sector is cautiously waking up from the longest recession that has gripped the world so tightly in the recent years. Economists and businessmen all around the world are rethinking their strategies and are wondering what went wrong. The recession that followed the credit crunch was felt throughout the world after the collapse of The Lehman Brothers, one of the biggest banks in the United States. The domino effect felt by the myriad banks and financial institutions across the world has, now, being recognized as the result of unhealthy corporate behavior and failed government policies and regulations.

This recent history, though not felt by many in Nepal, did had an adverse impact on the Nepalese Banking Sector. About 25% of the country's GDP is contributed by the remittances sent by many Nepalese working abroad, mainly in the gulf and eastern countries. So any impact on these countries would definitely have repercussions in Nepalese markets too.

Recently, the Nepalese commercial banks faced liquidity crisis, fuelled mainly by the hike in capital flight due to trade deterioration, excessive lending to real-estate and stocks and shares and drain in reserves etc. The slowdown in remittance growth contributed to a financial sector liquidity squeeze, which drove up interest rates and exposed financial sector weakness. As reserves fell, some banks experienced liquidity stress as bank's credit to deposit ratios was high. Then the Nepal Rastra Bank's (NRB) liquidity injections have since lowered interbank interest rates and banks are reported to have reduced new loan disbursements. Furthermore, in order to safeguard the stability of financial sector, NRB took some deci-

sive measures such as imposing moratorium on new bank licenses, lowering the single borrower limits, lowering exposure to real estate loans, loan-to-value limits, credit to deposit ratio limits, facilitating bank restructuring and risk management,*(Nepal Government, MOF, 2010:3).*

This experience has maneuvered the public awareness toward the unhealthy corporate governance practices going on in Nepalese business culture. It has also raised many eyebrows among the finance experts and pundits that Nepalese commercial banks need to understand the underlying foundation of the bank's credit policies and the liquidity position held by them. Furthermore, this has also strengthened the notion of recognizing the need to maintain healthy liquidity position of the banks along with its need to manage efficient credit practices for the growth and survival of banking institutions.

Credit policy and Liquidity Position are the two most important dimensions of any commercial banks. Liquidity is the most important element to the banks and financial institutions. In simple terms, it can be defined as the securities management of the cash balance in a systematic way. More broadly, the term "Liquidity management" can be defined as the process of readily converting assets and liabilities into cash immediately in a short span of time. Such liquid assets and liabilities include marketable securities, bills receivables, bills payable, short term loans, deposits etc. Liquidity measures the current financial position of the company through its capacity to pay dues at the time needed.

However, it has its pros and cons. Excessive liquidity leads to the loss of investment and profit opportunity while shortage of it results in customers' confidence erosion, thus losing their funds and placing the firm's survival at risk. Therefore, sound liquidity management involves prudently managing assets and liabilities, both as to cash flow and concentration to ensure that cash inflows have an appro-

priate relationship to approaching cash outflows. This needs to be supported by a process of liquidity planning which assesses potential future liquidity needs, taking into account changes in economic, regulatory or other operating conditions.

On the other hand, Credit is the trust which allows one party to provide resources to another party where that second party does not reimburse the first party immediately (thereby generating a debt), but instead arranges either to repay or return those resources (or other materials of equal value) at a later date. The resources provided may be financial (e.g. granting a loan), or they may consist of goods or services (e.g. consumer credit).

Credit is regarded as the most income generating assets especially in commercial banks. It is regarded as the heart of the commercial banks as most investment activities are based on credit and they form the main factor of creating profitability. In today's context, credit affects the national economy to a greater extent. Providing credit to retailers increase their customer's status, while providing to traders and business industries would result in government revenues as taxes, thus, ultimately contributing towards the national economy.

The credit policy of a firm provides the framework to determine whether or not to extend credit and how much credit to extend. A firm has to establish and use standards in making credit decision, develop appropriate sources of credit and methods of credit analysis. It strongly recommends, analyzes and manages the credit risk. Credit risk is defined as the possibility that the borrower will fail to meet its obligations in accordance with the agreed terms and conditions. The goal of the credit risk management is to maximize the bank's risk adjusted rate of return by maintaining the credit risk exposure within acceptable parameters.

For most banks, loans are the largest and the most obvious sources of credit risk; however, other sources of credit risk exist throughout the activities of the bank, including banking book, and in the trading book, and both increasingly facing credit risk in various financial instruments other than land, including acceptances, inter bank transactions, guarantees and the settlements of transactions.

Therefore, it can be said that credit and liquidity management are the two most important elements impacting the survival and growth of commercial banks. Any irregularity in any one of these dimension may lead to the bankruptcy. Efficient and effective credit management requires sound maintenance of liquidity level. Maintaining sufficient and appropriate liquidity encourages the investment in providing loans and advances, thus, increasing the chances of profitability and wealth maximization of the firm.

Hence, it is evident that there is a deep and meaningful relationship between the firm's liquidity position and its capability of providing advances and managing credit. Thus, this study has tried to understand the underlying relationship between a banks' liquidity position and its credit policies.

1.1.1 Evolution of Banking Sector: Past and Present

The history of banking is as old as the civilization itself. In the ancient Rome and Greece, the practice of storing precious metals and coins at safe places and loaning out money for the people and private purpose on interest was prevalent. In England, banking has its origin with the London goldsmiths who, in the 17th century, began to accept deposits from merchants and other for safe keeping of money and other valuables.

The history of banking in Nepal is very new as compared to history of modern banking system of the world. Although the system of granting loan was prevalent

from the ancient times, it can be traced back to the reign of *Gunkam Dev,* the king of Kathmandu, towards the end of 8th century, who had borrowed money to re-build and rule Kathmandu. In year 879/80 A.D. a low cast merchant named "*Sankhadhar*" introduced a new era after having paid off all the debt of people then existing in the country, and during the end of 14th century, the term 'Tanka Dhari' meaning money dealer was used as one of the 64 castes classified on the basis of occupation. This indicated that money changing was adopted as a profession and proved the existence of money lending operations on going on in a wide scale in the country at that time. *(Singh, 2063:10)*

The history of modern financial system of Nepal began in 1937A.D. with the establishment of the *Nepal Bank Ltd. (NBL)* as the first commercial bank of Nepal with the cooperation of Imperial Bank of India, under the "Nepal Bank Act 1937". This marked the beginning of the organized banking system in Nepal.

Later, in 1956 A. D, *Nepal Rastra Bank (NRB)* was established as the central bank of Nepal. It supervises the commercial banks in Nepal and guides monetary policy. It also oversees nationwide circulation of Nepalese currency, stability in foreign exchange rates and the country's foreign exchange reserves. After the establishment of NRB, Nepal witnessed a systematic development of the financial system.

In 1954 A.D, then HMG started the co-operative movement and in 1957 A.D., NRB established *Industrial Development Bank* to promote industrialization in the country, which was later converted to *Nepal Industrial Development Corporation* in 1959 A.D. In the same year, NRB also created a special fund for providing agriculture credit. In 1965 A.D, the first commercial bank, *Rastriya Banijya Bank* started functioning. The financial shapes of these two commercial banks had a

tremendous impact on the economy. That is the reason why these banks still exist in spite of their bad position.

In 1968 A.D. *Agricultural Development Bank* was established as the main source of financing small agro-businesses and cooperatives in order to develop the agriculture sector of the economy. Since the 1960s, both commercial and specialized banks have expanded. More businesses and households had better access to the credit market although the credit market had not expanded.

In the mid-1980s, HMG encouraged the foreign banks for joint venture in Nepal, by amending the Commercial Bank Act 1974. As a result, three foreign commercial banks opened branches in Nepal. In 2041 B.S., *Nepal Arab Bank* (now *Nabil Bank Ltd*) was established co-owned by Dubai Bank Ltd., Dubai. This is the first modern bank with the latest banking technology. Then, in 1985 A.D., *Nepal Indosuez Bank* (now *Nepal Investment Bank Ltd*) was established as a private joint venture owned by the French Banque Indosuez, Rastriya Banijya Bank, and Rastriya Beema Sansthan. After that, *Nepal Grindlays Bank* (now *Standard Chartered Bank Ltd*), *Himalayan Bank Ltd* (joint venture with Habib Bank of Pakistan), *Bank of Kathmandu* (joint venture with Syan Bank of Thailand), *Everest Bank* (joint venture with Punjab National Bank of India), etc soon followed. *(Singh, 2063:11)*

After the restoration of democracy in 1991A.D, Nepal has clearly been following a liberalized economic policy and witnessing diversification in financial system. As a result, various banking and non-banking financial institutions have come into existence. The number of banks operating in Nepal is increasing everyday and many more are in the pipeline to commence their business.

Today, more than 26 licensed commercial banks and more than100 financial institutions are operating in Nepal. The modern financial sector of Nepal can broadly be categorized into two groups: Banking sector and Non-banking sector. The banking sector comprises of Nepal Rastra Bank and Commercial banks while Non-banking sector comprises of Development Banks, Finance companies, Micro-credit Development Banks, Cooperative Financial Institutions, Non-governmental organizations (NGOs) performing limited banking activities and other financial Institutions such as Insurance Companies, Employees' Provident Fund, Citizen Investment Trust, Postal Saving Offices and Nepal Stock Exchange.

NRB classified these financial institutions into different classes such as Commercial banks as class "A"; development banks as Class "B"; Finance companies as Class "C"; and micro credit development banks as Class "D". As of Mid April 2010, there are 27 Commercial Banks, 78 Development banks, 79 Finance Companies, 18 Micro credit development banks. NRB licensed 16 Cooperatives and 45 NGOs, and 25 Insurance companies operating in Nepal, as shown in the following table

Table 1.1

Growth of Financial Institutions

Year	Commercial Banks	Development Banks	Finance Companies	Microcredit dev. banks	NRB licensed		Insurance Companies
					Cooperatives	NGOs	
1983 July	2	2	-	-	-	-	4
1993 July	8	2	8	2	-	-	6
2003 July	17	11	57	11	20	39	17
2005 July	17	26	60	11	20	46	19
2006 July	18	29	70	11	19	47	21
2007 Oct	23	58	79	12	17	47	21
2008 Oct	25	59	78	12	16	46	25
2009 Oct	26	70	77	15	16	45	25
2010 Apr	27	78	79	18	16	45	25

Source: Nepal Rastra Bank(Mid April2010), Quarterly Economic bulletin.

The structure of financial assets/liabilities shows that Commercial Banks alone hold more than 80 percent of the total assets and liabilities of the financial system. As of Mid – January 2010, Commercial Bank group occupied 80.8% of total assets/liabilities followed by Finance Companies 9.6%, Development Banks 8.0% and Micro-finance Development Bank 1.6% respectively. In Mid – July 2009, the respective shares were 82.1, 8.8, 6.9 and 1.6% respectively.

Commercial Banks held dominant share on the major balance sheet components of financial system. Of the total deposits Rs.715859.10 million in Mid - January 2010, the commercial banks occupied 81.91%. Similarly, finance companies held 9.49%, development banks 8.29% and micro finance development banks 0.31%.

Likewise, on the loans and advances, the share of commercial banks stood at 77.05%, development banks 9.49%, finance companies 11.89% and micro finance development banks 1.57 percent in Mid - January 2010. In the same year the share of commercial banks in the borrowings, liquid funds and investments constitute 65.9%, 74.3% and 96.7% respectively.

The capital fund, one of the components of liabilities, witnessed a significant growth of 20.03% and reached to Rs. 63232.2 million in Mid - January 2010 from Rs.52681.8 million in mid July 2009. The borrowings and deposit increased by 63.16% and 6.12% respectively, while other liabilities decreased by 28.12% compared to mid - July 2009. Similarly, loans and advances, the major component of assets increased by 17.56% and reached to Rs. 601630.0 million in Mid - January 2010 from Rs. 511752.8 million in mid July 2009. While, liquid fund and investment decreased by 20.01% and 13.73% in mid-January 2010 compared to the previous period.

Table 1.2

Growth of Major Balance-Sheet Indicators (%)

Particulars	Mid-July							Mid-Jan
	2003	2004	2005	2006	2007	2008	2009	2010
Capital Fund	26.56	-107.36	-516.43	17.90	192.5	273.5	104.36	20.03
Borrowings	-	12.46	23.77	34.61	22.32	17.55	12.73	63.1
Deposits	11.51	13.12	9.81	15.42	19.28	30.10	32.55	6.12
Liquid Funds	-20.59	22.08	-14.32	4.23	21.66	68.64	45.18	-20.01
Investment	31.00	8.64	18.95	33.76	14.53	18.11	17.46	-13.73
Loans and Advances	11.35	11.67	13.38	10.22	26.55	34.27	30.70	17.56

Source: Nepal Rastra Bank (2010), Banking and Financial Statistics, No.54

1.1.2 Introduction of Commercial Banks under Study

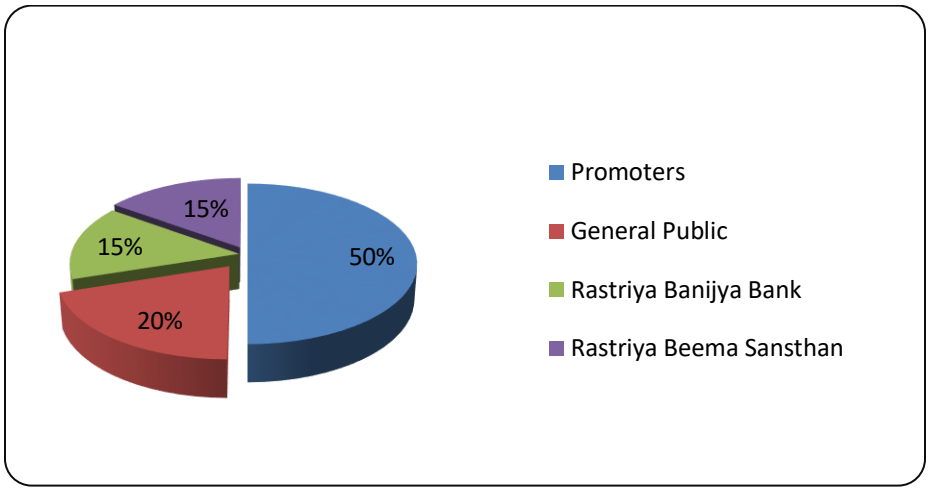
- **Nepal Investment Bank Limited(NIBL)**

Nepal Investment Bank Ltd. (NIBL), previously Nepal Indosuez Bank Ltd., was established in 1986 as a joint venture between Nepali and French partners. The French partner (holding 50% of the capital) was Credit Agricole Indosuez, a subsidiary of one of the largest banking groups in the world. When Credit Agricole Indosuez decided to divest, a group of companies comprising of bankers, professionals, industrialists, and businessmen acquired 50% of the holdings of Credit Agricole Indosuez in Nepal Indosuez Bank in April 2002. The name of the Bank was changed to Nepal Investment Bank Ltd., upon approval of the Bank's Annual General Meeting, Nepal Rastra Bank and Company Registrar's Office. The shareholding structure comprises of:

- A group of companies holding 50% of the Capital.
- Rastriya Banijya Bank holding 15% of the Capital.
- Rastriya Beema Sansthan holding 15% of the Capital.
- The general public holding 20% of the Capital.

Figure 1.1

Ownership Structure of NIBL



Source: NIBL Annual Report, 2009/10

Financial Highlights:

Over the past 8 years, NIBL has grown to become one of the biggest commercial banks in Nepal. Their overall growth record in deposits, lending, net profit and capital base is second to none. According to their annual report 2009/10 NIBL features following financial highlights:

Table 1.3

Main Financial Indicators for the Fiscal Year 2009/10

Particulars	**FY 2008/09**	**FY 2009/10**	**Growth in %**	**Growth in NPR (in millions)**
Total Assets	53,010	57,305	8.1	4,295
Total Deposits	46,698	50,094	7.3	3,396
Total Loans and Advances	36,827	40,948	11.2	4,121
Total Investments	7,399	8,635	16.7	1,236
Total Operating Profit (before provision for possible loss)	1,477	2,021	36.8	544
Total Net Profit	901	1,265	40.6	364
Non-Performing Assets (in %)	0.58	0.62	0.04	-

Source: NIBL Annual Report 2009/10

The bank has continued its long term strategy to become the leading bank in the country by pursuing a strategy of growth and delivery of quality financial services. This year alone, Nepal Investment Bank Limited paid Rs. 800 million to the Nepal Government coffers making it the highest tax payer among the Nepali Banks and the 5th largest amongst Nepali Corporate, with a customer base of about 3,70,000 clients.

The bank has achieved remarkable growth over the past 8 years. In 2002, NIBL started with total paid up Capital of NPR 0.5 Billion and today, the FY2009/10 shows the bank having the highest paid up capital of 2.41 billion. The bank has a deposit base of around Rs. 50 Billion. The total assets of the bank have increased from Rs 4.9 Billion in 2002 to Rs 57 billion in this year making it the largest lender in Nepal. The bank enjoys a return on shareholder's equity (ROE) of 28% and a return on Assets (ROA) of 2.2%. NIBL also earned the highest net profit of NPR 1.26billion. NIBL has a branch network of 40 branches and 67 ATM's throughout the country. This year alone the bank extended its branches in 10 different parts of the country, while also opening 20 new ATM kiosks.

NIBL provides banking services, specifically in three different broad areas. They are: Remittance, Retail Banking and Corporate Banking. Under Remittance, NIBL offers one of the safest and the most secured means of money transfer to Nepal operating under the guidelines set by The Government of Nepal and NRB. Remitters can send money to NIBL from any part of the globe through their correspondent banks, exchange houses and banks in the Middle East and using Prithvi Express, their in-house remittance software. The bank has maintained international relationship with 27 Correspondent Banks in more than 13 countries and Agency relationship with 21 remittance agencies and banks in more than 8 countries worldwide. Such remittance services are provided through various mediums like

SWIFT Transfers, Demand Draft, Traveler Cheques and Cash Management Services.

NIBL also provides Retail Banking, involving mobilization of deposits, consumer lending and customer services. The services offered include savings and current accounts, mortgages, personal loans, credit/debit cards, ATMs, e-Banking, certificate of deposits (fixed deposit) etc. Similarly, it also offers full-fledged Commercial Banking facilities and services to its customers such as: Loan and Advances, Consortium Finance, Working Capital Credit, Demand Credit, Trade Finance (Import Export), Hire Purchase Credit and Letter of Credit, Bills Purchase, Bank Guarantee, Housing and Vehicle loans, & others.

AML Compliance

The Bank fully complies with the provisions of Nepalese Money Laundering Prevention Act, 2008 and regulations made there under and the Guidelines of NRB regarding anti-money laundering. In addition to above, the Bank has its own policies and procedures to combat and prevent laundering of criminally earned money using its services. The Bank's Management strictly ensures the compliance with all statutory and regulatory requirements, and is monitored by the NRB and by Bank's internal and external auditors.

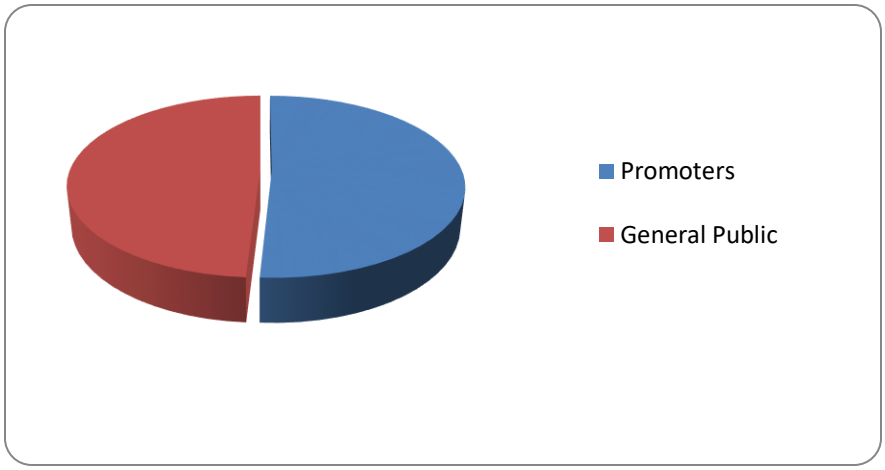
- **Nepal Industrial and Commercial Bank Limited (NIC)**

Nepal Industrial and Commercial Bank Limited (NIC Bank) commenced its operation on 21 July 1998 from Biratnagar. Promoted by several prominent business houses of Nepal, it is the first commercial bank in the country to be capitalized at NPR 500 million. It is one of the most widely held companies in Nepal with close to 35 thousand shareholders. The present shareholding structure constitutes of:

- A group of Promoters holding 51% of the capital
- The General Public holding 49% of the capital.

Figure 1.2

Ownership Structure of NIC



Source: NIC Bank Annual Report 2008/09

Financial Highlights:

The Bank has been in profitable operation from its inception and has recorded a robust growth in its overall business and profitability during the recent years. NIC Bank features the following financial highlights as per the financial performance for fiscal year 2009/10.

Table 1.4

Main Financial Indicators for the Fiscal Year 2009/10

(NPR in millions)

Particulars	**FY 2008/09**	**FY 2009/10**	**% Change**
Total Assets	18.751	20,309	8
Total Deposits and Borrowings	16,240	17,692	9
Total Loans and Advances	13,916	12,929	(7)
Total Investments	3,026	4,947	63
Total Operating Profit (before provision for possible loss)	526	705	34
Total Net Profit	317	450	42
Non-Performing Assets (in %)	0.93	0.72	
Paid up Capital	1,140	1,312	15

Source: NIC Annual Report 2009/10

NIC has also achieved a remarkable progress during the last 7 years. In FY2004/05, the bank had a paid up capital of about NPR 500 million, which has now increased to NPR 1,140 million in the FY2009/10. Its deposit base increased from NPR 6,692 million in FY 2004/05 to over NPR 17,692 million in the FY2009/10. Similarly, its total assets have increased to NPR 20,309 million this year, thus earning a net profit of NPR 450 million. The bank also enjoys a return on equity (ROE) of 27.09% and return of assets (ROA) of 2.30%.

The Bank has been consistently embarking on sustainable network expansion and has successfully added several new branches every year in strategic new locations. As at the fiscal year ended on 15th July 2009, its branch network has been extended to 28 branches at 20 different locations throughout the country. All its branches are inter-connected through VSAT with micro-wave/optical fiber back-ups and are capable of providing on-line real-time banking services.

During its year, NIC Bank has played a pioneering role in the Nepalese banking sector introducing innovative and customized products and services to its customers. It is the first bank in Nepal to be awarded an ISO 9001:2000 Certificate for Quality Management System, which has recently been upgraded to ISO9001:2008 standards. It is also the first Bank in Nepal to be sanctioned a credit line by International Finance Corporation (IFC), an arm of World Bank Group under its Global Trade Finance program, thus enabling the Bank's Letter of Credit and Guarantee to be accepted /confirmed by more than 200 banks worldwide. NIC also introduced Savings Account Scheme bundled with life insurance, offered lowest priced Home Loan Schemes and bullion trading and introduced high interest earning Fixed Deposit Scheme with the ease of a Savings Account for the first time in Nepal.

NIC is committed and to provide superior banking products and financial services to its patrons through efficient cost-effective service delivery; offering of new innovative products and friendly customer service; and at the same time maintaining confidentiality, professionalism & good governance. It consistently upgrades its processing systems and technology support besides broadening its scope, range and quality of services.

NIC Bank provides financial services to its clients in five major areas. They are: Transaction Banking, Consumer Banking, Business Banking, SME Banking, Deposit Products and Bullion Business. Through transactional banking, NIC provides personal deposit products and banking services such as debit cards, ATMs, safe deposit lockers, payment services, drafts, remittance, SMS Banking, Travelers' Cheques etc.

Consumer banking services include consumer lending, retail credit products and banking services that include home loans, auto loans, personal loans, education loans, travel loans, etc., such as NIC Ghar Subidha, Sajilo Karja, NIC Auto Loan and Education Loan. Under Business banking, NIC offers funded and non-funded credit facilities such as working capital finance, trade finance, pledge finance, margin lending, deprived sector ending etc. NIC also offers SME Banking that includes NIC Small Business Loan and NIC SME Trade and Industry Loan. Its deposit products include many innovative and customer friendly features such as NIC Life savings account, remit savings account, sikshya kosh etc to name a few.

1.2 Focus of the Study

The main focus of this study is to understand and compare the credit management practices of two commercial banks and its relation with their liquidity position. This thesis will highlight the major trends in maintaining the liquid assets of the firms and will analyze the credit and advances provided by the commercial banks.

For this purpose, two commercial banks Nepal Investment Bank and Nepal Industrial and Commercial Bank limited are taken as samples.

1.3 Statement of the Problem

Commercial Banks are those banks which perform all kinds of banking function as accepting deposits, advancing credits creation and agency function etc. They provide short term credit, medium term credit and long term credit for trade and industry. Most of these commercial banks in Nepal are now facing myriad of challenges and problems from all sorts of sources. Most of them arise from the unclear and disorienting banking policies of the government while a significant part of the problem arises from the ambitious undertakings by the major banking corporations.

The recent trend in banking sector has been to spread out and launch as many branches as possible, especially within the urban circles. This trend has been accompanied by the banks giving out as much loans and credits to many corporative houses as possible and receiving deposits from customers through as many lucrative schemes as possible. Last year, the banking sector came to a partial halt and witnessed the flaw in this trend of earning bigger profits in short period. Because of the continuous lending and borrowing in credit, the major commercial banks almost forgone the need of maintaining adequate liquid assets and cash reserves. This led to a serious liquidity crunch and the market saw a sharp decline in the supply of cash in major banks. The problem was so serious that NRB had to take immediate actions and plans to save these banks from liquidation.

Therefore, it is essential for the banks to be aware of the need to identify measure, monitor and control credit as well as to determine that they hold adequate capital against it. It is necessary to analyze the “Credit management” or credit disbursement, credit monitoring, credit supervision, recovery provision for loss and write

off of credit etc. along with the need to analyze the liquidity management practices of the banks. As the samples of commercial banks, NIBL and NIC banks have been selected. The issues faced by the banking sector can be pointed out as follows:-

- Liquidity position
- Credit Rating Company is not available; therefore, the banks are providing credit on the basis of their own judgment.
- Unhealthy competition among banks in the limited areas
- Due to poor credit administration, the credit recovery process is slow.
- Non- performing credits are going upward.
- Clear-cut objectives and policy of the credit management is lacking.

More specifically the study is expected to answer the following research questions:

a. What is the trend of maintaining the liquid assets level by the sample banks?
b. What is the volume of contribution made by sample banks in credit and advances?
c. What is the position of maintaining cash reserves in the sample banks?
d. What are the strengths and weaknesses in the credit administration of the sample banks?

1.4 Objectives of the Study

The general objective of the study is the comparative study of Nepal Investment Bank and NIC Bank. The specific objectives of the study are as follows:

- To analyze the trend of liquid assets maintained by the commercial banks.
- To evaluate the cash reserve ratio maintained by the selected banks.
- To analyze the credits and advances provided by the commercial banks.
- To find out the strengths and weaknesses in the credit administration of the selected banks.

1.5 Significance of the Study

Commercial banking sector is considered a successful area in the financial sector in Nepal. In today's context, commercial banks have to be more organized and sincere to establish better credibility position due to vast competition among them. The present concept deals with how commercial banks have managed credit position and how do it affect the overall organizational effectiveness and its long term survival and growth.

Present study is important from the viewpoint of bank management. The main strategy of every commercial bank is to establish the better credibility position, which has directly impacted the financial performance of an organization. Besides it helps to build positive attitude and perceptions on customer that helps to make the organizational successes in terms of better transactions, better turnover and better profitability. At present the private sector and joint ventures banks are gaining a wide popularity through their efficient management and professional cum personalized services and playing important role in domestic and foreign trade. This study is expected to have importance to various groups but in particular is directed to a certain groups of people/organizations, as follows:

- Importance to shareholders of the respective banks
- Importance to the management bodies of these banks for the evaluation of the performance of their banks, and in comparison with other banks.
- Importance to "outsiders" which are mainly the customers, financing agencies, stock exchanges.
- Importance to government bodies or the policy makers such as the central bank
- Interested outside parties such as investors, customers (depositors as well as borrowers), and competitors, human resources of the bank, stockholders, dealers, and market makers.
- Fellow researchers on the same /similar object.

Hence, this study will be beneficial to identify the hidden weaknesses regarding financial cum credit management and the liquidity position of the banks.

1.6 Limitations of the Study

The scope of the study is limited only to two commercial banks because of time and resources constraints. Most of the analyses are descriptive in present study. This study is very basic attempt to address the researches issues; therefore, it might not be able to show casual linkage or effect. Instruments used for the data collection is not standardized questionnaire.

Although this study will try its utmost care to cover most of the important sectors, it is still subjected to following limitations:

- The study is associated only to the financial performance of Nepal Investment Bank Limited and Nepal Industrial & Commercial Bank Limited.
- In this study, only selected financial and statistical tools and techniques are used, and therefore, the data calculations may contain some error.
- The study will be based only on the past six years periods data since 2004/05 to 2009/10.
- The study relies heavily on secondary data only.

1.7 Organizational Structure of Study

The present study will be organized into five chapters as follows:

Chapter I - Introduction

This chapter includes background of the study, a brief description of the evolution of the banking system in Nepal; an introduction of the two commercial banks under study, the focus of the study, statement of the problems, objectives of the

study, significance of the study, limitations of the study and finally, the organizational structure of the study.

Chapter II – **Review of Literature**

This chapter deals with review of literatures, which includes conceptual/ theoretical review and review of related studies.

Chapter III -Research Methodology

This chapter includes research design, population and sample, source of data, data collection techniques and data analysis tools.

Chapter IV – Data Presentation and Analysis

This chapter deals with the various analysis and interpretations of data like analysis of deposits, loan & advances, trend of maintaining liquid assets; cash reserve ratio and profile of NIBL and NIC Bank Limited, financial and statistical analysis of primary data. It will also show major finding of the study.

Chapter V – Summary, Conclusion and Recommendations

This chapter includes summary and conclusion of the study. It also deals with recommendations suggested.

Besides these, Bibliography and Appendix will be presented at the end of the study.

CHAPTER II

LITERATURE REVIEW

Liquidity and Credit Management is not a new topic in the area of banking history. There have been various discussions and debates among bankers, scholars, experts and other government authorities on how to handle the balancing need of maintaining liquidity along with the bank's objective of earning reasonable profits.

As both the domestic and international markets developed, many bankers faced new problems in tackling liquidity crisis that usually comes up with credit mismanagement. Identifying and understanding why such problems usually surface, the financial experts have forwarded many concepts and theories related to liquidity and credit management. This chapter deals with such concepts and theories along with the various opinions and researches made by various individuals in understanding these subject matters even better. Its primary objective is to widen the readers' knowledge base and illuminate them with the widespread researches going on around it.

2.1 Conceptual Framework

2.1.1. Modern day Commercial Banking

One of the many inventions that changed the world is the development of "Bank". The development of bank and its continuous restructuring have revolutionized the way we handle our money and economic hassles. The modern and the next-gen lifestyle of 21st century bears witness to the importance of banking in our day to day life.

Simply defined as the institution that deals with money and credit, majority of the world population is familiar with the myriad functions a bank deals with. From its very basic function of accepting deposits and providing loans to the modern day

banking facilities, majority of banks are continuously restructuring and reinventing themselves according to the need and demand of time and people. Today, banks have become the primary source of credit in financing public utilities such as highways, hospitals, airports, stadiums etc. Modern banking services include ***Transaction services*** such as ATMs, debit cards, safe deposit lockers, drafts, remittance, SMS banking, ***Consumer services*** such as home loans, auto loans, personal loans, educational loans even travel loans, and other ***Business Banking services*** such as working capital and term loan credit, cash management and advisory services, corporate financing solution etc.

Professor Kinley has rightly pointed out when he said a bank is "an establishment which makes to individuals such advance of money as may be required and safely made, and to which individuals entrust money when not required by them for use."

Among the various types of banks that prevail today, commercial banks are still the "dominant privately owned financial institutions." *(Thapa, 2065:52)* Accepting deposits and offering business loans are the primary denominators of their services. A wide range of innovative and dynamic services have emerged recently in modern day banking modus operandi. These include investment advice, security underwriting, selling insurance, financial planning, etc. This demonstrates the fact that the modern commercial banks have been expanding their horizon and broadening their base of deposits and loan advances.

Their major functions include Accepting deposits, advancing loans, investment of funds, Agency functions, Credit creation, General utility functions and offers Investment banking and merchant banking services.

The Commercial Bank Act 2031 states a Commercial Bank as "a bank, which deals in exchanging currency, accepting deposits, giving loans and doing commercial transaction."

"The business of commercial banks is primarily is to hold deposits and make credits and investments with the object of securing profits for its shareholders. Its primary motive is profit; other considerations are secondary."
(Sudarshanam, 1976:23)

2.1.2 Concept of Liquidity and Liquidity Management

2.1.2.1 Definition of Liquidity

"One of the most important tasks faced by the management of any bank is ensuring adequate liquidity. A bank is considered to be liquid if it has ready access to immediately spending funds at reasonable cost at precisely the time those funds are needed. This suggests that a liquid bank either has the right amount of immediately spendable funds on hand when they are required or can quickly raise liquid funds by borrowing or by selling assets."*(Ross, 2002:345)*

"Liquidity is the availability of cash at the time needed at a reasonable cost."

"Lack of adequate liquidity is one of the first signs that a bank is in serious financial trouble. The troubled bank usually begins to lose deposits, which erodes its supply of cash and forces the bank to dispose of its more liquid assets. Other banks become increasingly reluctant to lend the troubled bank any funds without additional security or a higher rate of interest. This will further reduce the earnings of the problem institution and threatens it with failure." *(Ross, 2002:345)*

"The amount of liquidity that a commercial bank or the commercial banking system should maintain is one of the basic problems of the bank management. If too

much liquidity is maintained, it means that the bank and the banking system are foregoing income. Too little, however, may be fatal not only to an individual bank but to the commercial banking system as a whole, the financial structure of the country, and the economy of the nation. Too little liquidity and the demands of the depositors in the form of 'runs' on the banks are like oil and water, they do not mix well." *(Reed, 2002:115)*

"Many banks assume that the liquid funds can be borrowed virtually without limit any time they are needed. Therefore, they see little need to store liquidity in the form of easily marketed, stable-priced assets. The enormous cash shortages experienced in recent years by banks in trouble make clear that liquidity needs cannot be ignored. Liquidity management is far more important than we may realize, because, a bank can be closed if it cannot raise enough liquidity even though, technically, it may still be solvent. For example, in 1991, the Federal Reserve forced the closure of the $10 billion Southeast Bank of Miami, because it couldn't come up with enough liquidity to repay the loans it had received from the Fed."*(Ross, 2002:345)*

2.1.2.2 Needs and Importance of Bank Liquidity

"The liquidity position of banks is very important to maintain the public faith upon banks. People deposit their precious assets and funds into bank with faith that banks repay it with guarantee as agreed terms and conditions. So bank must refund the public deposit on demand or on expiry of predetermined time period. When a bank fails to repay deposited money on demand, it leads to the loss of public faith upon banks. Then accountholders rush into bank to withdraw their money deposited." *(Singh, 2063:138)*

"Liquidity always comes first: without it a bank doesn't open its doors; with it, a bank may have time to solve its basic problems." *(Howard, 1983:275)*

These above statements capture the essence and need to maintain liquidity by the commercial banks. The significance of these needs can be briefly understood from the following points *(Bhandari, 2004:146)*:

- For payment of Daily Administrative expenses such as rent, salary, stationeries**,** and equipments in cash, and for the daily transactions and operations of the bank, sufficient liquidity is essential.

- Adequate bank liquidity is also essential for the Payment of Deposits through cheques, for the account holders of current and saving accounts who frequently withdraw their deposits through cheque, and as per the nature and conditions of the deposits, the bank has the liability to pay them at the time when the customer asks for it.

- Liquidity is also important to maintain Cash reserve ratio and Statutory Liquidity ratio in banks. All commercial banks are required to keep a certain portion of total deposits collected from public into Nepal Rastra Bank, called Cash Reserve Ratio (CRR) for which banks need sufficient liquidity. Currently, the banks must keep CRR of 5.5% in their own accounts in NRB. Similarly, Statutory Liquidity Ratio (SLR) is the minimum cash balance to be maintained in bank vault. As in mid-July 2010, the government, through NRB, made it mandatory for all commercial banks to invest 8.0% of domestic deposits into government securities as a minimum cash balance to be maintained in bank vault for safeguarding the interests of depositors.

- Maintaining adequate liquidity is also necessary to provide regular and uninterrupted fresh Loan advancement to its debtors, as the income generated from such loans is the main source of income of the commercial banks.

- To Control the Economic Fluctuation and risk from uncertain future, there is a dire need to keep sufficient liquidity in the banks. Economic fluctuations and uncertainties usually bring about undesirable economic crisis and dire consequences not expected by the economists. To handle such crisis and to safeguard the survival of going-concerns, it is a must to maintain liquidity.

- The expansion of banks into many branches and its continuous growth is essential for its long term survival, which requires the banks to invest heavily on changing trends, innovative programs, schemes and other corporate social initiatives. For all this, there is an importance of proper maintenance of bank liquidity.

- Complete trust and faith gained from public mobilizes the people into depositing their hard-earned money in the banks and encourages them to become their long term customers. Such customers are invaluable to the banks. Therefore, to retain this complete trust, the banks should be willing to listen to their demands, complaints and take necessary steps to fulfill their obligations on time. Such prompt customer services require cash and fluid liquidity.

Therefore, maintaining liquidity is extremely essential from its need to fulfill working capital to gaining trust and faith for ensuring its long term survival.

2.1.2.3. The Demand for and Supply of Bank Liquidity

"A bank's need for liquidity (immediately-spendable funds) can be viewed within a demand-supply framework. What activities give rise to the demand for liquidity inside a bank? And what sources can the bank rely upon to supply liquidity when spendable funds are needed is briefly shown in the table below:

Table 2.1

Sources of Demand and Supply for Liquidity within the Bank

Supplies of Liquid Funds Come From:	**Demands for Bank Liquidity Typically Arise From:**
Incoming customer deposits	Customer deposit withdrawals
Revenues from the sale of non-deposit services	Credit requests from quality loan customers
Customer loan repayments	Repayment on non-deposit borrowings
Sales of bank assets	Operating expenses and taxes incurred in producing and selling services
Borrowings from the money markets	Payment of stockholder cash dividends

Source: Peter Ross (2002), Commercial Bank Management, McGraw Hill Book Company, New York, p. 347.

"For most banks, the most pressing demands for spendable funds come from two sources: (1) customers withdrawing money from their deposits, and (2) credit requests from customers the bank wishes to keep, either in the form of new loan deposits, renewals of expiring loan agreements, or drawing upon existing credit lines. Other sources of liquidity demand include paying off obligations arising from bank borrowings, such as loans the bank may have received from other banks or from the central bank (i.e., the Federal Reserve, the Bank of England). Similarly, payment of income taxes or cash dividends to the bank's stockholders periodically gives rise to a demand for immediately spendable cash. (See Table 2.1)" *(Ross, 2002:346)*

"To meet the foregoing demands for liquidity, banks can withdraw upon several potential sources of supply. The most important source normally is receipt of new customer deposits, both from newly opened accounts and from new deposits placed in existing accounts. These deposit inflows are heavy the first of each month as business payrolls are dispensed, and they may reach a secondary peak toward the middle of each month as bills are paid and other payrolls are met.

Another important element in the supply of bank liquidity comes from customers repaying their loans, which provides fresh funds for meeting new liquidity needs, as do sales of bank assets, especially marketable securities, from the bank's investment portfolio. Liquidity also flows in from revenues generated by selling non-deposit services and from borrowings in the money market."

"These various sources of liquidity demand and supply come together to determine each bank's **net liquidity position** at any moment in time. That net position at time t is as follows:

Table 2.2

Net Liquidity Position Calculation Table

A. Supplies of Liquidity Flowing into the Bank	
Incoming deposits(inflows)	……..
+ Revenues from the sale of non-deposit services	……..
+ Customer loan repayments	……..
+ Sales of bank assets	……..
+ Borrowings from the money market	……..
	…….
B. Demands on the Bank for Liquidity	
Deposit withdrawals(outflows)	……..
- Volume of acceptable loan requests	……..
- Repayments of bank borrowings	……..
- Other operating expenses	……..
- Dividend payments to bank stockholders	…….
	…….
C. A bank's Net Liquidity Position(L_t) (A – B)	**…….**

Source: Peter Ross (2002), Commercial Bank Management, McGraw Hill Book Company, New York, p. 347.

"When the bank's *total demand for liquidity exceeds its total supply of liquidity* (i.e., $L_t < 0$), management must prepare for a **liquidity deficit**, deciding when and where to raise additional liquid funds. On the other hand, if at any point in time the *total supply of liquidity to the bank exceeds all of its liquidity* demands (i.e., $L_t > 0$),

management must prepare for a **liquidity surplus**, deciding when and where to profitably invest surplus liquid funds until they are needed to cover future liquidity demands.

Liquidity has a critical time dimension. Some bank liquidity needs are immediate or nearly so. Longer term liquidity demands arise from seasonal, cyclical, and trend factors. For example, liquid funds are generally in greater demand during the fall and summer coincident with school, holidays, and customer travel plans. Anticipating these longer term liquidity needs, bankers can draw upon a wider array of alternative sources of funds than is true for immediate liquidity needs, such as selling of accumulated liquid assets, aggressively advertising the bank's current menu of deposits and other services, or negotiating long-term borrowings of reserves from other banks. Of course, a bank need not meet all demands for liquidity by selling assets or borrowing new money. For example, just the right amount of new deposits may flow in, or loan repayments from borrowing customers may occur very close to the date that new funds are needed. Timing is critical to liquidity management: bankers must plan carefully how, when, and where needed liquid funds can be raised.

Most liquidity problems in banking rise from outside the bank as a result of the financial activities of its customers. In effect, customers' liquidity problems gravitate toward their banks. If a business is short on liquid reserves, for example, it will ask for a loan or draw down its deposit balances, either of which will require the firm's bank to come up with additional funds. A dramatic example of this phenomenon occurred in the wake of the worldwide stock market crash in October 1987. Investors who had borrowed heavily to buy stock on margin were forced to come up with additional funds to secure their stock loans. They went to their banks in huge numbers, turning a liquidity crisis in the capital market into a liquidity crisis for banks.

The essence of the liquidity management problem for a bank may be described in two succinct statements:

1. Rarely are the demands for bank liquidity equal to the supply of liquidity at any particular moment in time. The bank must continually deal with either a liquidity deficit or a liquidity surplus.
2. There is a trade-off between bank liquidity and profitability. The more bank resources are tied up in readiness to meet demands for liquidity, the lower is that bank's expected profitability (other factors held constant).

Thus, ensuring adequate liquidity is a never-ending problem for bank management that will adequately have significant implications for the bank's profitability. Liquidity management decisions cannot be made in isolation from all the other service areas and departments of the bank.

Moreover, resolving liquidity problems subjects a bank to costs, including the interest cost on borrowed funds, the transactions cost of time and money in finding adequate liquid funds, and an *opportunity cost* in the form of future earnings that must be forgone when earning assets are sold in order to help meet a bank's liquidity needs. Clearly, management must weigh these costs against the immediacy of the institution's liquidity needs. If a bank winds up with excess liquidity at any time, its management must be prepared to invest those excess funds immediately to avoid incurring an opportunity cost from idle funds that are not generating earnings for the bank.

From a slightly different vantage point, we could say that management of bank liquidity is subject to the risk that interest rates will change (*interest rate risk*) and the risk that liquid funds will not be available in the volume needed by the bank (*availability risk*). If interest rates rise, financial assets that the bank plans to sell to raise liquid funds, such as government bonds, will decline in value, and some must

be sold at a loss. Not only will the bank raise fewer liquid funds from the sale of those assets, but the losses incurred will reduce bank earnings as well. Then, too, raising liquid funds by borrowing will cost more as interest rates rise, and some forms of borrowed liquidity may no longer be available to the bank. If the lenders of liquidity perceive a bank to be more risky than before, that bank will be forced to pay higher interest rates to borrow liquidity, and some lenders will simply refuse to make liquid funds available at all."

2.1.2.4 Why Banks Face Significant Liquidity Problem

"It should be clear from the foregoing discussion that banks face major liquidity problems. The significant exposure of banks to liquidity pressures arises from several sources.

First, banks borrow large amounts of short-term deposits and reserves from individuals and businesses and from other lending institutions and then turn around and make long term credit available to their borrowing customers. Thus, most banks face some imbalances between the maturity dates on their assets and the maturity dates attached to their liabilities. Rarely will incoming cash flows from assets exactly balance the cash flowing out to cover liabilities.

A problem related to the maturity mismatch situation is that banks hold an unusually high proportion of liabilities subject to immediate payment, such as demand deposits, NOW accounts, and money market borrowings. Thus, banks must always stand ready to meet immediate cash demands that can be substantial at times, especially near the end of a week, at the first of each month, and during certain seasons of the year.

Another source of liquidity problem is the bank's sensitivity to changes in interest rates. When interest rates rise, some depositors will withdraw their funds in search

of higher returns elsewhere. Many loan customers may postpone new loan request or speed up their drawing on those credit lines that carry lower interest rates. Thus, changing interest rates affect both customer demand for deposits and customer demand for loans, each of which has a potent impact on a bank's liquidity position. Moreover, movements in interest rates affect the market values of assets the bank may need to sell in order to raise additional liquid funds, and they directly affect the cost of borrowing in the money market.

Beyond these factors, a bank must give high priority to meeting demands for liquidity. To fail in the area may severely damage public confidence in the institution. We can imagine the reaction of bank customers if the teller windows and teller machine had to be closed one morning because the bank was temporarily out of cash and could not cash cheques or meet deposit withdrawals (as happened to a bank in Montana several years ago, prompting a federal investigation). One of the most important tasks of a bank's liquidity manager is to keep close contact with the bank's largest depositors and holders of large unused credit lines to determine if and when withdrawals of funds will be made and to make sure adequate funds are available."

2.1.2.5 Factors Affecting Bank's Liquidity

A Bank's Liquidity is determined by various external and internal factors. These factors play a significant role in maintaining the liquidity requirements of the bank. They determine the bank's overall performance, progress and management's efficiency and effectiveness *(Singh and Khadka, 2058:160)*. These main factors affecting Bank's liquidity can be easily understood from the following table:

Table 2.3

Factors Affecting Bank's liquidity needs

Factors	Basis	High level of Liquidity	Low level of liquidity
External Environmental Factors:	Prevailing Interest rate	Low bank interest raises the demand of cash.	High bank interest rate lowers the demand of cash.
	Income and Savings	Low level of income increases the liquidity needs.	High level of income and savings lowers the liquidity needs.
	Investment	High investment demands more liquidity needs.	Low investment produces low levels of liquidity needs.
	Growth and Slackening Position of the Financial Market	High growth of economic and financial market lowers the liquidity needs.	Slackening position of economic and financial market raises the liquidity needs.
Internal Environmental Factors	Lending Policy of Bank	Adopting a longer term loan policy raises the liquidity needs.	Short term investment policy lowers the liquidity needs.
	Management Capacity	Risk averter and inefficient management give rise to liquidity needs.	High risk bearing and capable risk handling management lowers the liquidity needs.

Source: Hriday Bir Singh, (2063), Banking and Insurance, Asia Publications Pvt. Ltd, Kathmandu

2.1.2.6 Estimating Bank's Liquidity Needs

Several methods have been developed in recent years for estimating each bank's liquidity requirements. Each method rests on specific assumptions and yields only an approximation of actual liquidity requirements at any given time. This is why a liquid manager must always be ready to fine-tune estimates of the bank's liquidity requirements as new information becomes available. Some of these approaches or methods of estimating liquidity needs are: *(Ross, 2002:355)*

- The Sources and Uses of Funds Approach
- The Structure of Funds Approach
- The Liquidator Approach

1. The Sources and Uses of funds Approach*:*

This is an important method of estimating bank's liquidity requirements by focusing primarily on expected changes in deposits and loans. The sources and uses of funds method begins with two simple facts:

a. Bank liquidity rises as deposits increase and loans decrease.
b. Bank liquidity declines when deposits decrease and loans increase.

Whenever the sources and the uses of funds do not match, the bank has a ***liquidity gap***, which is measured by the size of the total difference between its sources and uses of liquid funds. When sources of liquidity exceed the uses of liquidity, the bank will have a positive liquidity gap. It is surplus liquid funds, which must be invested quickly in earning assets until they are needed to cover future cash needs. On the other hand, when uses of liquidity exceed sources of liquidity, the bank faces a liquidity deficit, or negative liquidity gap. It must now raise funds from the cheapest and most timely sources available from money market or elsewhere.

The key steps in the sources and uses of funds approach are as follows:

a. Loans and deposits must be forecast for a given liquidity planning period.
b. The estimated changes in loans and deposits must be calculated for that same planning period.
c. The liquidity manager must estimate the bank's net liquid funds, (surplus or deficit) for the planning period by comparing the estimated change in loans to the estimated change in deposits.

To prepare forecasts of deposits and loans, banks can use a wide variety of statistical techniques supplemented by management's judgment and experience. For example, the bank's economic department or its liquidity managers might develop the following forecasting models:

Figure 2.1

Calculation for the estimated change in total loans

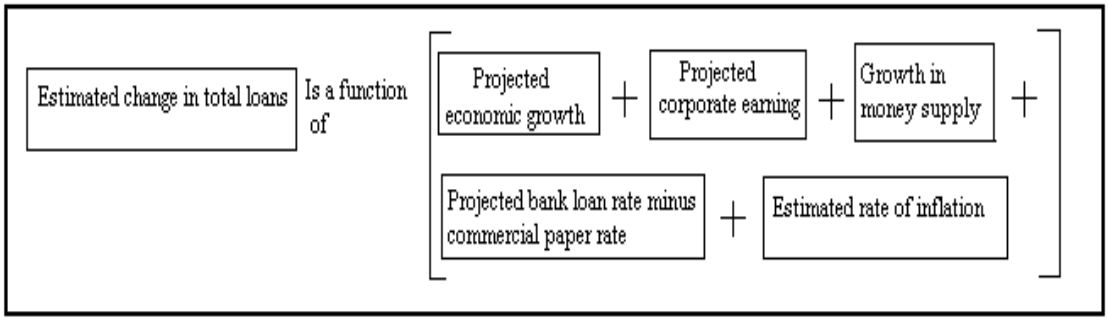
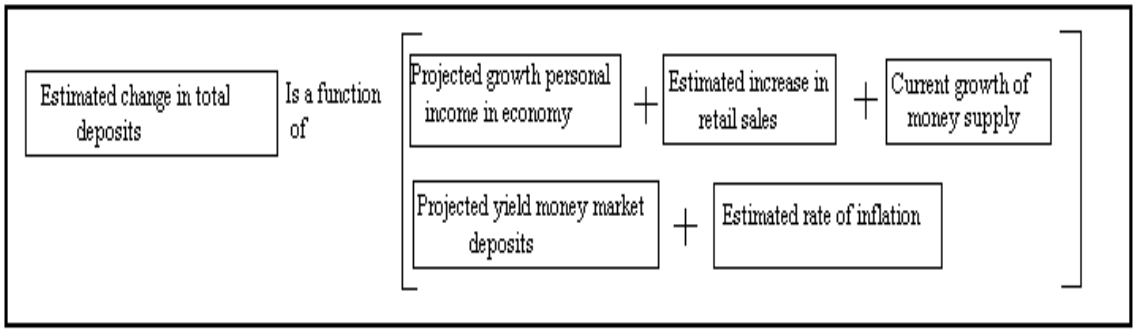


Figure 2.2

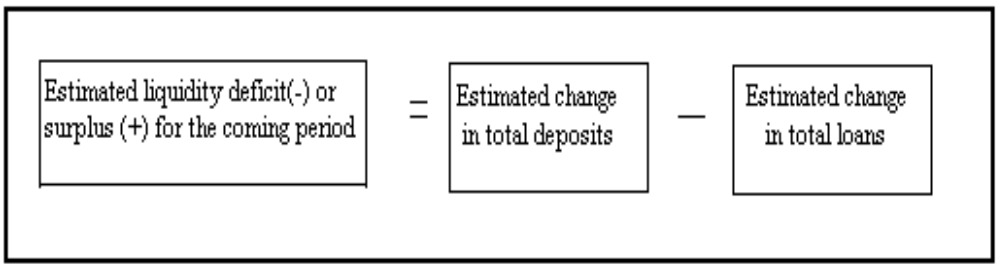
Calculation for the estimated change in total deposits



Using the forecasts of loans and deposits generated by the foregoing models, management can then estimate the bank's need for liquidity by calculating:

Figure 2.3

Calculation for the estimated change in liquidity



2. The Structure of Funds approach:

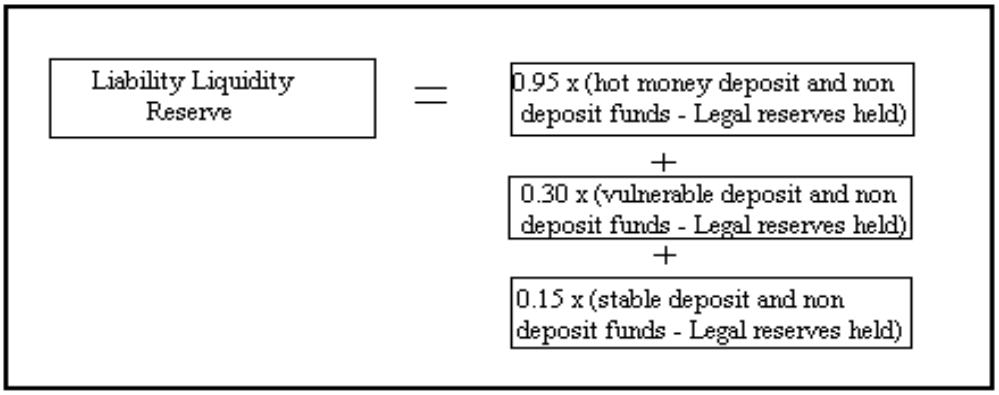
Another approach in estimating a bank's liquidity requirements is the structure of funds method. In this method, a bank's liquidity requirement is estimated by dividing its borrowed funds into categories based upon their probability of withdrawal. In the first step, the bank's deposits and other funds sources are divided into categories based on their estimated probability of being withdrawn and therefore, lost to the bank. Secondly, the liquidity manager must set aside liquid funds according to some desired operating rule for each of the three kinds of funds sources. As an illustration, the bank's deposit and non-deposit liabilities can be divided into three different categories:

a. **'Hot Money' liabilities:** - It includes deposits and other borrowed funds that are very interest sensitive and the management is sure that they will be withdrawn during the current period. Generally, the manager should decide to set up a 95%liquid reserve behind all hot money funds. This liquidity reserve might consist of holdings of cash, treasury bills, purchase agreements and immediately spendable deposits in other banks. Such liquid funds can be converted into cash within minutes or hours.
b. **Vulnerable funds:** - It includes customer deposits of which a substantial portion, perhaps, 25 or 30%, will probably be removed from the bank sometime during the current time period.
c. **Stable Funds**: - They are often called core deposits or core liabilities, these funds are what the management considers most unlikely to be withdrawn from the bank, except for the minor percentage of the total. Therefore, the bank manager may decide to place perhaps 15% or less of their total in liquid reserves.

Thus, liquidity reserve behind the bank's deposit and non-deposit liabilities would be as follows:

Figure 2.4

Calculation for the liability liquidity reserve



In the case of loans, the bank must be ready at all times to make good loans-that is, meet the legitimate credit needs of those customers who satisfy the bank's loan quality standards. The bank must have sufficient liquid reserves on hand because, once a loan is made, the borrowing customer will spend the proceeds, usually within hours or days, and those funds will flow out to other banks. However, the bank does not want to turn down any good loan, because loan customers bring in new deposits and normally are the principal source of bank earnings from interest and loans.

Under today's concept of *relationship banking*, once the customer is sold a loan, the bank can then proceed to sell that customer other bank services, establishing a multidimensional relationship that will bring in additional fee income and increase the customer's dependence on (and, therefore, loyalty to) the institution. This reasoning suggests that management must try to estimate the maximum possible figure for the total loans and hold in liquid reserves or borrowing capacity the full amount of the difference (100%) between the actual amount of loans outstanding and the maximum potential for the total loans.

3. Liquidity Indicator Approach:

Many banks estimate their liquidity needs based on experience and industry averages. In this approach, the future liquidity demand is estimated on the basis of historical data of the bank as well as overall banking business. This often means using certain financial rations or liquidity indicators. The most common ratios used to indicate the future liquidity needs are given below:

a. **Cash Position Indicator: -** It shows the ratio between cash and bank assets. It indicates that a great proportion of cash implies that the bank is in a stronger position to handle immediate cash needs.
b. **Liquid Securities Indicator: -** It compares the marketable securities a bank can hold with the overall size of its asset portfolio; the greater the proportion of government securities, the more liquid the bank's position tends to be.
c. **Capacity Ratio: -** It shows the relationship between the net loans and total assets of a bank. It is really a negative indicator, because the loans and leases are often among the illiquid assets a bank can hold. Greater the capacity ratio, lesser the bank's liquidity.
d. **Pledged Security Ratio: -** This is also a negative liquidity indicator because the greater the proportion of securities pledged to back government deposit, the fewer securities are available to sell when the liquidity needs arise.
e. **Hot money Ratio: -** It reflects whether the bank has balanced its borrowings in the money market with increases in its money market assets that can be sold quickly to uncover those money market liabilities.
f. **Deposit Brokerage Index: -**This is a highly interest sensitive ratio. It may be quickly withdrawn from depositors, the more the bank holds brokered deposits, the greater the change of a liquidity crisis. Brokered deposits consist of packages of funds placed by securities brokers for their customers with banks paying the highest yields.

Other liquid indicators include core deposit ratio, deposit composition ratio etc. For more accurate estimation of bank's liquidity needs, each liquidity indicator need must be compared with the average value indicated by other banks, which are comparable in size in a similar location. These indicators are highly sensitive to the season of the year and the stage of the business cycle. Liquidity indicators, often decline in a boom period under pressure from heavy loan demand, only to rise again during the ensuring business recession. Moreover, the bank managers usually focus on the changes in the bank's liquidity indicators rather than on the level of each indicator. They want to know whether liquidity is rising or falling and why. Therefore, industry wide averages are often misleading.

2.1.2.7 Liquidity Management and its Strategies

"Liquidity management is the part of risk management framework of the financial services industry, which concerns all financial institutions whether they are commercial banks or development banks or finance companies or other financial institutions." *(Shrestha, 2061: 16)*

Over the years, experienced liquidity managers have developed several broad strategies for dealing with bank liquidity problems. Peter Ross has sketched three major strategies for dealing with such problems. *(Ross, 2002:350)*

1. Asset Liquidity Management Strategy

This is an oldest approach to meeting bank liquidity needs which calls for storing liquidity in the form of holdings of liquid assets, predominantly in cash and marketable securities. When liquidity is needed, selected assets are sold for cash until the entire bank's demands for cash are met. This liquidity management strategy is often called asset conversion because liquid funds are raised by converting non cash assets into cash.

The principal options open to bank managers for holdings of liquid assets that can be sold when additional cash is needed are: Treasury bills, Government loans to other institutions, municipal bonds and notes, Banker's acceptances, commercial paper, Eurocurrency loans etc. Peter Ross has defined a liquid asset as "a readily marketable asset with a relatively stable price that is reversible (so the holder can fully recover the funds originally invested in the asset.)"

This strategy is used mainly in small banks that find it a less risky approach to liquidity management than relying on borrowings. But asset conversion is not a cost less approach to liquidity management. Selling asset means the bank loses the future earnings from those assets. Thus, there is an opportunity cost in converting the liquid asset and cash. So, bank should manage adequate cash balance as per prediction so that assets should not be needed to be sold normal circumstances.

Most asset sales also involve transaction costs (commission) paid to security brokers. Moreover, the assets may need to be sold in a market experiencing declining prices, subjecting the bank to capital losses. Management must take care that those assets with the least profitable potential are sold first in order to minimize the opportunity cost of future earnings foregone. Selling assets to raise liquidity also tends to weaken the appearance of the bank's balance sheet, because the assets sold are often low-risk government securities that give the impression that the bank is financially strong. At last, liquid assets generally carry the lowest rates of return of all financial assets.

2. Borrowed Liquidity Management Strategy:

This borrowed liquidity strategy was extensively used during the 1960s and 70s when the banks began to raise more of their liquid funds through borrowings in the money market. This strategy specifically calls for borrowing enough immediately-spendable funds to cover all the anticipated demands for liquidity.

Borrowed liquidity strategy is considered better than asset liquidity strategy because unlike the latter where the storehouse of at least some liquid funds must be held at all times, in this borrowed strategy, a bank can choose to borrow only when it actually needs funds. This increases the bank's potential return as the bank need not hold much liquidity. Moreover, selling assets to provide liquidity shrinks the size of a bank as its total asset holdings decline while using borrowed funds permits a bank to leave the volume and composition of its asset portfolio unchanged if it is satisfied with the assets it currently holds.

Liquidity management comes with its *own control lever* – the interest rate offered to borrow funds. If the borrowing bank needs more funds, it merely raises its offer rate until the requisite amount of funds flow in. If fewer funds are required, the bank's offer rate may be lowered. When a liquidity deficit arises, the bank can usually borrow funds from any of the following sources: Federal funds borrowings, selling liquid, low-risk securities under a repurchase agreement (RP), issuing large negotiable CDs, issuing Eurocurrency deposits etc.

Even though this strategy has the highest expected return, borrowing liquidity is still the most risky approach of solving bank liquidity problems because of the volatility of money market interest rates and the rapidity with which the availability of credit can change. A bank's borrowing cost is always uncertain, which adds greater uncertainty to the bank's net earnings. And any bank in financial trouble will have problem receiving any borrowed liquidity as its troubles will evoke the depositors to withdraw their funds and other institutions reluctant to lend due to the risks involved.

3. Balanced Liquidity Management:

Balanced Liquidity Management is the combined use of Liquid assets holding management and borrowed liquidity management to meet the bank's liquidity

needs. Most banks compromise in choosing such a mixed management due to the risks inherent in relying on borrowed liquidity and the costs of storing liquidity in assets.

Therefore, under this balanced liquidity, some of the expected demands for liquidity are stored in assets, principally in marketable securities and other deposits, while other anticipated liquidity needs are backstopped by advance management for lines of credit from correspondent banks or other suppliers of funds. Unexpected cash needs are typically met from near-term borrowings. While the longer-term liquidity needs can be planned and the funds managed to meet short-term and middle-term loans and advances.

2.1.2.8 Lines of Defense

There is a set of defense lines which when maintained by banks can enable them to tackle the supply of liquidity needs. These lines of defense assists the bank in investing their funds in various sectors, thus, creating optimum mobilization of deposits and enjoying significant returns from these investments. These lines of defense are as follows: *(Shrestha, 2009:219)*

a. **First line of Defense: -** It includes cash in hand and deposits maintained at the central bank (as statutory requirement) and various other banks. Though cash gives complete protection of liquidity, it gives little or no return.
b. **Second line of Defense: -**It includes the short-term loans provided by banks to other banks and customers within their predetermined limits in the form of call loans, overnight loans or loans repayable on a few days notice. These loans have very low interest rates but are highly liquid due to their short maturity period.

c. **Third line of Defense: -** This defense comprises the investments made on government securities such as National Savings Bond, Treasury Bills, Development Bonds and Debentures and Preference Shares of first class companies.
d. **Fourth line of Defense**: - It includes Bills Purchased and Discounted from first class parties. The retirement of Demand Bills on presentation and Usance Bills on maturity make bank's fund highly liquid and constitutes a strong and valuable line of defense.
e. **Fifth line of Defense: -** It includes is the regular advances comprising of loans, cash credits and overdrafts to different types of customers."

2.1.3 Concept of Credit and Credit Management

2.1.3.1 Definition of Credit

According to well known free encyclopedia website, Wikipedia, the term "credit" is defined as -"the trust which allows one party to provide resources to another party where that second party does not reimburse the first party immediately (thereby generating a debt), but instead arranges either to repay or return those resources (or other materials of equal value) at a later date."

"The resources provided may be financial (e.g. granting a loan), or they may consist of goods or services (e.g. consumer credit). Credit encompasses any form of deferred payment. Credit is extended by a creditor, also known as a lender, to a debtor, also known as a borrower.

Credit does not necessarily require money. The credit concept can be applied in barter economies as well, based on the direct exchange of goods and services. *(Ingham, 2004:12)*." However, in modern societies credit is usually denominated by a unit of account. Unlike money, credit itself cannot act as a unit of account.
"Movements of financial capital are normally dependent on either credit or equity transfers. Credit is in turn dependent on the reputation or creditworthiness of the

entity which takes responsibility for the funds. Credit is also traded in financial markets. The purest form is the credit default swap market, which is essentially a traded market in credit insurance.

A credit default swap represents the price at which two parties exchange this risk – the protection "seller" takes the risk of default of the credit in return for a payment, commonly denoted in basis points (one basis point is 1/100 of a percent) of the notional amount to be referenced, while the protection "buyer" pays this premium and in the case of default of the underlying (a loan, bond or other receivable), delivers this receivable to the protection seller and receives from the seller the par amount (that is, is made whole)."

"Credit and advances is an important item on the asset side of the balance sheet of a commercial bank. Bank earns interest on credits and advances, which is one of the major sources of income for banks. Bank prepares credit portfolio, otherwise it will not only add bad debts but also affect profitability adversely."
(Varshney and Swaroop, 1994:6)

Therefore, "Credit administration involves the creation and management of risk assets. The process of lending takes into consideration about the people and system required for the evaluation and approval of loan requests, negotiation of terms, documentation, disbursement, administration of outstanding loans and workouts, knowledge of the process and awareness of its strength and weaknesses are important in setting objectives and goals for lending activities and for allocating available funds to various lending functions such as commercial, installment and mortgage portfolios." *(Johnson, 1940:132)*

"It is very important to be reminded that most of the bank failures in the world are due to shrinkage in the value of loan and advances. Hence, risk of nonpayment of loan is known as credit risk or default risk." *(Dahal, 2002:114)*

Hence, in short, it can be said that credit management is the process for controlling and collecting payments from the customers. A good credit management system will assist in reducing the amount of capital tied up with debtors and, at the same time, helps in minimizing one's exposure to bad debts.

2.1.3.2. Types of Credit facilities

"Commercial banks offer two types of credit facilities namely: Funded facility and Non-funded facility. In the case of funded facilities offered, cash is involved such as in OD facility, Demand Loan, Time loan, Short term loan, long term loan, etc. and in the case of non-funded facility, cash is not involved but only the contingent liabilities increase. Letter of Credit (LC) and Guarantee facility offered by banks are non funded facilities." *(Shrestha, 2009:191)*

"Loans can be classified on the basis of nature of loans, on the basis of sector wise loan distribution and on the basis of security provided. Some of these loans are briefly explained below:

Classification of Loans on the basis of Different factors

- **Classification based on the Nature of Loans**

Overdraft facility : It is the excess amount withdrawn by a customer over their deposits. A limit is assigned in the current account of the customer up to which the customer can withdraw his account.

Demand Loan : It is a working capital loan, provided for not more than a year, which once settled is reinstated by the settled amount. That is, the customer can withdraw as much as he pleases within the expiry period of the loan.

Consortium Loans	:	It is the loan provided by two or more banks jointly in certain agreed proportion against a common security when the borrower's demand of advance is very large.
Hire Purchase loans	:	It is the type of loan in which the article belonging to the owner (bank) is given on hire to the customer, who will later pay the hired money agreed on Equal monthly installments over a period of time.

Classification based on Sector-wise Loan Distribution

Real Estate Loan	:	It is the domestic office loans secured by real estate. In other words, it is the credit extended to purchase or improve real property such as land and buildings. Such real estate loans can be classified into construction and development loans, home equity, multifamily residential real estate, farmland etc.
Commercial or Industrial loans	:	They are extended to finance the business of a borrower. It can be for financing the working capital need, purchase of fixed asset and various other seasonal or miscellaneous requirements.
Individual or Consumer loan	:	They are extended to individual borrowers. They are provided to finance the purchase of automobiles, appliances like refrigerator, washing machine, television etc. Such loans can also be used for medical care personal expenses.
Agriculture loans:	:	They are provided to finance the planting and harvesting crops, storing and marketing them. They are also utilized in the purchase of seeds, pesticides, fertilizers, wages of farm workers and various other production costs.

Classification based on Security

Secured Risk loan	:	It is the loan fully secured against the 100% cash margin or by instruments equivalent to cash held in banks own account.
Sovereign Risk loan	:	It is the loan provided against the government security such as National Savings Bond, development bonds, treasury bills etc.

Bank Risk loan : It is the loan provided against the security of fund held in some other bank.

2.1.3.3. Factors Determining the growth and mix of Bank Loans

"Throughout the whole banking industry, the loan mix and growth usually differ quite marketed from institution to institution. The major factors that play a significant role in the growth and mix of bank loans are given below:

a. Market Area

One of the key factors in shaping an individual bank's loan portfolio is the profile of characteristics of the market it serves. Each bank must respond to the particular demands for credit arising from customers in its own market. A bank serving a new urban community with large numbers of single family homes and small retail stores will normally have mainly residential and estate loans, automobile loans, and credit for the purchase of home appliances and for meeting household expenses. In contrast, a bank situated in a central city surrounded by office buildings, department stores, and manufacturing establishments will typically devote the bulk of its loan portfolio to business loans designed to stock shelves with inventory, purchase equipment, and meet payrolls.

b. Participation with other banks

Banks are not totally dependent on the local areas they serve for all the loans they acquire. They can purchase whole loans or pieces of loans from other banks, share in loans with other banks or even use credit derivatives to offset the economic volatility inherent in loans from their trade territory. These steps can help to reduce the risk of loss, it the local areas served by the bank incur severe economic problems. However, most banks are chartered by government authorities primarily to serve selected markets.

c. Bank size

Bank size is also a key factor shaping the composition of the bank's loan portfolio mix. Especially, the size of bank's capital determines its legal lending limit. Large banks typically are wholesale lenders, devoting the bulk of their credit portfolios to large-denomination loans to corporations, and other business firms. While, small banks tend to emphasize retail credit, in the form of small-denomination personal cash and installment loans and home mortgage loans extended to individuals, and families, as well as smaller business loans to farms and branches.

d. Loan Policy

The experience and expertise of bank also have the decision making role in loan mix. The decisions of management regarding different types of loans also shape a bank's loan portfolio mix; as does the bank's official loan policy, which prohibits its loan officers from making certain kinds of loans.

e. Expected Yield

Loan mix at any particular bank depends heavily upon the expected yield to the bank that each loan offers compared to the yields on all other assets the bank could acquire. Other factors held equal, a bank would generally prefer to make loans bearing the highest expected returns. After all, expenses and the risk of loan losses are taken into account. *(Singh, 2063:194)*

2.1.3.4 Rating System used by the Central Bank

The quality of a bank's loan portfolio and the soundness of its lending policies are the basis for bank examiners to look at them most closely. There should be continuous rating system by central bank to determine the quality of asset and loan portfolio of commercial banks. The possible examiner ratings are:

1= strong performance

2= satisfactory performance

3= fair performance

4= marginal performance

5= unsatisfactory performance

The higher a bank's asset-quality rating, the less frequently it will be subject to review and examination by central bank. When an examiner finds some loans that carry an immediate risk of not paying out as planned, these loans are adversely classified into three groups:

a. Criticized loans

The examiner generally looks into all the bank's loans that are above the designated minimum size and a random sample of small loans. Loans that are performing well but have minor weaknesses because the bank has not followed its own loan policy or has failed to get full documentation from the borrowers are called criticized loans.

b. Scheduled loans

These are the loans that appear to contain significant weaknesses and the examiner regards it as dangerous concentration of credit in one borrower.

c. Substandard loans

These are such loans when the bank's margin of protection is inadequate due to the weaknesses in collateral or in the borrower's repayment abilities. Such loans carry a strong probability of an uncollectible loss to the banks

Review of NRB directives relating to Loan

Nepal Rastra Bank has classified the outstanding principal amount of loan and advances on the basis of aging. As per the directives issued by NRB, all loans and advances shall be classified into the following four categories:

a. **Pass Loan: -** Loans and advances whose principal amount is not past due and past due for a period up to 3 months shall be included in this category. These are classified and defined as performing loans.
b. **Sub-Standard Loan: -** All loans and advances that are past due for a period of 3 months to 6 months shall be included in this category.
c. **Doubtful Loan: -** All loans and advances which are past due for a period of 6 months to 1 year shall be included in this category.
d. **Loss: -** All loans and advances which are past due for a period of more than 1year as well as advances which have least possibility of recovery or considered unrecoverable and those having thin possibility of even partial recovery in future shall be included in this category.

The ***loan loss provisioning***, on the basis of the outstanding loans and advances and bills purchases classified as per this directives, shall be provided as follow

Classification of Loan	**Loan Loss Provision**
Pass loan	1%
Sub-standard loan	25%
Doubtful loan	50%
Loss	100%

2.1.3.5. Credit Analysis

In short, Credit Analysis is the thorough financial examination and evaluation to determine the level of creditworthiness of applicant. In most banks, there is a separate credit analysis division whose main function is to conduct credit analysis in order to determine whether the customer has sufficient cash flow and backup assets to repay the loan. The division then prepares a brief summary and recommendation that is sent to the loan committee for approval.

The credit analysis division of the bank is responsible for analyzing and making recommendations on the fate of most loan applicants. Regarding each loan application, this department must conduct proper analysis of the following points:

- **The Creditworthiness of the borrower**, i.e., the capacity of the borrower to repay the loan in due time, must be determined by the credit analyst. This involves a detailed study of six aspects of the loan applicant, namely, character, capacity, capital, collateral, conditions and control.

  Character: - It is the analysis of the applicant as to his ability to meet the obligations put forth by the lending institution. For this analysis, generally the following documents are needed: Memorandum and articles of association; Registration certification; Tax registration certificate (Renewed); Resolution to borrow; Authorization-person authorizing to deal with the bank; Reference of other lenders with whom the applicant has dealt in the past or bank A/C statement of the customer. *(Chhabra and Taneja, 1991:15)*

  Capacity: - It describes customer's ability to pay. It is measured by applicants past performance records and followed by physical observation. For this, an interview with applicant's customers/suppliers will further clarify the situation. A loan agreement signed by unauthorized persons can prove to be uncollectible. So it must be sure that the applicant requesting credit has the authority to request a loan and the legal standing to sign a binding loan agreement.

  Capital: - This indicates applicant's capacity to inject his own money. By capacity analysis, it can be concluded that whether borrower is trying to play with lender's money only or is also injecting his own fund to the project. For capital analysis, financial statements, like certified balance sheet, profit and loss account is the only tools. *(Chhabra and Taneja, 1991:16)*

Collateral: - It is the security proposed by the borrower that may be of either nature movable or immovable. Movable collateral comprises right from stock, inventories to plying vehicles while immovable are land with or without building or fixtures, plant machineries attached to it. The loan officer must be able to answer whether the borrower posses adequate net worth or own enough quality assets to provide adequate support taking into consideration the age, condition, and degree of specialization of the borrower's assets.

Conditions: - This refers to the changing economic conditions that might affect the loan. The credit analyst must be aware of the trends in the borrower's line of business because a loan may look very good on paper but in times of recession, its value can wear down by declining sales or income, or, by the high interest rate in times of inflation. *(Singh, 2005:205)*

Control: - This is the last factor for assessing the creditworthy of applicant. It should be clear that the changes in law and regulations can adversely affect the borrower and that the loan request meets loan quality and standard determined by the bank and the regulatory authorities.

- **The credit analyst should be able to answer if the loan provision can be properly structured and documented**. The draft of the loan agreement, before the loan is provided, should be structured in such a way that it meets the borrower's need for funds with a comfortable repayment schedule. Since the success of any bank depends fundamentally upon the success of its customers, it is essential that the customer is able to handle loan repayments comfortably. Otherwise a troubled borrower may as well push the bank in the same destructive direction."

"A properly structured loan agreement protects the bank as well as those it represents, primarily its depositors and stockholders. This is achieved by the bank imposing strict restrictions on certain activities of the borrower, when these 'certain activities' can threaten the recovery of bank loans. The process of recovering the bank's funds- where and when the bank can take action to get its funds returned- also must be carefully spelled out in a loan agreement."

- Another point the analyst must answer is **whether the Bank perfect its claim against the Borrower's earnings and any asset that may be pledged as collateral.** "Usually borrowers need to pledge some of their assets or earnings to guarantee the repayment of loans. For a lender bank to get pledge of certain borrower's assets as collateral serves two main purposes. First, in case of the borrower's inability to repay the loan, the bank holds the right to seize and sell the assets placed as collateral, in order to recover the loan payment. Second, collateralization of loan gives the lender a psychological advantage over the borrower. The borrower may feel more obligated to work hard to repay the loan in order to avoid losing valuable assets placed as collateral."

  "When a bank holds a claim against a borrower's assets that stands superior to the claims of other lenders and to the borrower's own claim, we say the bank's claim to collateral has been perfected. This procedure is necessary for establishing a perfected claim on someone else's property difference depending on the nature of the assets pledged by the borrower. The perfecting may also depend upon the laws of the state or nation where the assets reside. For example, if a borrower pledges a deposit already held in the bank or stocks and bonds or automobiles or land and building, the legal procedure to make superior claim against these assets taken as collateral, may vary significantly from each other. The common assets banks accept most as collateral for loan are Accounts receivables, Factoring, Inventory, Real Property, Personal Property, etc."

2.1.3.6 Handling Loan Problem Situations

There is always the risk of some borrowers defaulting on their promised loan repayments, and there are many cases where the collateral pledged behind the loan decline significantly in value. Most of the banks face such unexpected changes in their loan situations, usually, after advancing loan to the customers. Despite the various safeguards built into their lending program, some loans on the bank's book will become problem loans. Such unexpected changes pose a serious threat to the bank's effort in recovering their loan and interests. *(Singh, 2005:217)*

Table 2.4

Warning Signs of Weak Loans and Poor Lending Policies

Indicators of Weak or Troubled Loan	Indicators of Inadequate or Poor Lending Policies
Irregular or delinquent loan payments	Poor selection of risks among borrowing customers
Frequent alteration in loan terms	Lending money contingent on possible future
Poor loan renewal record(with each loan renewal, a little reduction in principal)	Lending money because a customer promises a large deposit
Unusually high loan rate	Failure to specify a plan for the liquidation of each loan
Unusually or unexpected buildup of the borrower's account receivable and/or inventories	High promotion of loans made to borrowers outside the bank's trade territory
Rising leverage ratio(debt to net worth)	Incomplete credit files
Missing documentation(especially missing customer's financial statements	Substantial self-dealing credits(loans to insiders-employees, directors or stockholders)
Absence of cash flow statements	Lack of sensitivity to changing economic condition.

Source: Hriday Bir Singh, (2063), Banking and Insurance, Asia Publications Pvt. Ltd, Kathmandu

2.1.3.7 Managing Credit Problems

The institution should establish a system that helps to identify problem loan ahead of time when there may be more options available for remedial measures. Once the loan is identified as problem, it should be managed under a dedicated remedial process.

"A bank's credit risk policies should clearly set out how the bank will manage problem credits. Banks differ on the methods and organization they use to manage problem credits. Responsibility for such credits may be assigned to the originating business function, a specialized workout section or a combination of the two, depending upon the size and nature of the credit and the reason for its problems. When a bank has significant credit-related problems, it is important to segregate the workout function from the credit origination function. The additional resources, expertise and more concentrated focus of a specialized workout section normally improve collection results." *(William, 1990:21)*

A problem loan management process encompass following basic elements:

a. Negotiation and follow-up

"Proactive effort should be taken in dealing with obligors to implement remedial plans, by maintaining frequent contact and internal records of follow-up actions. Often rigorous efforts made at an early stage prevent institutions from litigations and loan losses."

b. Workout Remedial Strategies

"Sometimes appropriate remedial strategies such as restructuring of loan facility, enhancement in credit limits or reduction in interest rates help improve obligor's repayment capacity. However it depends upon business condition, the nature of problems being faced and most importantly obligor's commitment and willingness

to repay the loan. While such remedial strategies often bring up positive results, institutions need to exercise great caution in adopting such measures and ensure that such a policy must not encourage obligors to default intentionally. The institution's interest should be the primary consideration in case of such workout plans it needs not mention here that competent authority, before their implementation, should approve such workout plan."

c. Review of Collateral and Security Document

"Institutions have to ascertain the loan recoverable amount by updating the values of available collateral with formal valuation. Security documents should also be reviewed to ensure the completeness and enforceability of contracts and collateral guarantee."

d. Status Report and Review

"Problem of credits should be subject to more frequent review and monitoring.
The review should update the status and development of the loan accounts and progress of the remedial plans. Progress made on problem loan should be reported to the senior management."

2.1.4 Credit risk and Liquidity risk

Credit risk is an investor's risk of loss arising from a borrower who does not make payments as promised. Such an event is called a default. In other words, it is the probability that some of the bank's assets, especially its loans, will decline in value and perhaps become worthless.

Significant resources and sophisticated programs are used to analyze and manage risk. Most lenders employ their own models (credit scorecards) to rank potential and existing customers according to risk, and then apply appropriate strategies. With products such as unsecured personal loans or mortgages, lenders charge a

higher price for higher risk customers and vice versa. With revolving products such as credit cards and overdrafts, risk is controlled through the setting of credit limits. Some products also require security, most commonly in the form of property.

Credit risk has been shown to be particularly large and particularly damaging for very large investment projects, so-called megaprojects. This is because such projects are especially prone to end up in what has been called the "debt trap," i.e., a situation where – due to cost overruns, schedule delays, etc. – the costs of servicing debt becomes larger than the revenues available to pay interest on and bring down the debt.

Liquidity Risk is the risk that a given security or asset cannot be traded quickly enough in the market to prevent a loss (or make the required profit). Such risk arises from situations in which a party interested in trading an asset cannot do it because nobody in the market wants to trade that asset. Liquidity risk becomes particularly important to parties who are about to hold or currently hold an asset, since it affects their ability to trade.

Manifestation of liquidity risk is very different from a drop of price to zero. In case of a drop of an asset's price to zero, the market is saying that the asset is worthless. However, if one party cannot find another party interested in trading the asset, this can potentially be only a problem of the market participants with finding each other. This is why liquidity risk is usually found to be higher in emerging markets or low-volume markets. It is financial risk due to uncertain liquidity. An institution might lose liquidity if its credit rating falls, it experiences sudden unexpected cash outflows, or some other event causes counterparties to avoid trading with or lending to the institution. A firm is also exposed to liquidity risk if markets on which it depends are subject to loss of liquidity.

To overcome the liquidity problem, the financial institution can increase a bank's cash and readily marketable assets, such as government securities, or using long term liabilities to fund the bank's operation.

2.2 Review of Related Studies

Richard Barfield and Shyam Venket (2008), in their research "Liquidity risk management" has stressed on three major elements that needs to be considered by the banks during these uncertain financial times. These elements are confidence and trust among investors, understanding and monitoring the inter-relationship between the markets, credit risk and liquidity risk and thirdly, need for greater transparency and communications about the bank's liquidity information in great detail.

The article opened with a catchy sentence "Though, Confidence is neither listed on any exchange nor is it a line item on any financial institution's balance sheet, it is, nonetheless, the most valuable asset of every financial institution." Barfield and Venket have pointed out that confidence needs to be restored to gain the trust of the regulators and to recover from the financial turmoil a bank has sunk into. They pointed out to the fact that many profitable and capitalized banks have collapsed as a result of their failure to deal with liquidity risk issues. Profitability and capitalization are no defense for the liquidity risk. Therefore, they have stressed on understanding the inter-relationship between the markets, credit risk and the liquidity risk of the bank.

Furthermore, they suggest that the tenor of the bank's funding also needs to be diversified. Banks should stagger their sources of lending to avoid having to make too many debt repayments at any one time. They point out the fact that when term

funding has virtually disappeared, it is difficult to address if the mitigates are not already in place. Inevitably, utilizing a multiplicity of source will drive up cost but failure to diversify may ultimately result in a far higher price being paid. Moreover, they believe that by using a wider range of lending sources and by being transparent about those sources, banks can regenerate confidence.

Therefore, in assessing the required improvements to the banks' liquidity risk management approach and to develop their strategic view, Barfield and Venket recommended that banks should undertake a gap analysis against best practices. This analysis should evaluate liquidity risk management in the following areas- risk definition; governance and oversight; liquidity management; measurement and reporting; stress tests; contingency funding plan; and public disclosure.

Kosmas Njanike (2009) in his article, "The Impact of Effective Credit Risk management on Bank Survival", has highlighted some key elements that have plagued Zimbabwe's banks during their 2003/2004 crisis. His research has concluded that a number of financial institutions have collapsed or experienced financial problems due to inefficient credit risk management systems. The research conducted by Njanike seek to evaluate the extent to which the failure to effectively manage credit risk led to Zimbabwe's bank's demise during their crisis. Furthermore, through the research, he also sought to establish other factors that led to the banking crisis and to outline the components of an effective credit risk management system.

The article states that the study conducted found that the failure to effectively manage credit risk contributed to a greater extent to the banking crisis. The research also identified poor corporate governance, inadequate risk management systems, ill planned expansion drives, chronic liquidity challenges, foreign currency shortages and diversion from core business to speculative non-banking activi-

ties as other factors that caused the crisis. There is also need for banks to develop and implement credit scoring and assessment methodologies, review and update the insider lending policies and adopt prudential corporate governance practices.

Markus K. Brunnermeir (2009) in his well read article, "Deciphering the Liquidity and Credit Crunch 2007-2008, he explained the economic mechanisms that caused losses in the mortgage market to amplify into such large dislocations and turmoil in the financial markets in the U.S and described the common economic threads that explain the plethora of market declines, liquidity dry-ups, defaults, and bailouts that occurred after the crisis broke in summer 2007.

In his paper, Brunnermeir explored four economic mechanisms through which a crisis in mortgage market amplified into a severe financial crisis. First, *borrowers' balance sheet effects* cause two "liquidity spirals"-loss spiral and margin spiral. A loss spiral arises for leverage investors because a decline in the value of assets erodes the investors' net worth much faster than their gross worth (because of their leverage) and the amount that they can borrow falls whereas a margin spiral reinforces the loss spiral. As margins rise, the investor has to sell even more because the investor needs to reduce its leverage ratio (which was held constant in the loss spiral). Margins spike in times of large price drops, leading to a genera tightening of lending. Hence, when assets prices drop, financial institutions capital erodes and, at the same time, lending standards and margins tighten. Both effects cause fire-sales, pushing down prices and tightening funding even further.

Second, lending channel can dry up when banks become concerned about their future access to capital markets and start hoarding funds (even if the credit worthiness of borrowers does not change). Third, runs on financial institutions, like those that occurred at Lehman Brothers, Bear Stearns, can cause a sudden erosion of bank capital. Fourth, network effects can arise when financial institutions are

lenders and borrowers at the same time. In particular, a gridlock can occur in which multiple trading parties fail to cancel out offsetting positions because of concerns about counterparty credit risk. To protect themselves against the risks that are not netted out, each party has to hold additional funds.

Furthermore, Brunnermeir identified two trends in the banking industry that contributed significantly to the lending boom and housing frenzy that laid the foundation for the crisis. First, instead of holding loans on bank's balance sheets, banks move to an "originate and distribute" model. Banks repackaged loans and passes them on to various other financial investors, thereby off-loading risk. Second, banks increasingly financed their asset holdings with shorter maturity instruments. This change left banks particularly exposed to a dry-up in funding liquidity.

Kalpana Khanal (2011) in her well read article, "Nepal's Minsky moment" argued how an American economist's theory on debt and deregulation applies to Nepal's current context. She had referred to an American economist, Hyman Minsky (1919-1996) whose Financial Instability Hypothesis (FIH) argues that markets are inherently unstable and long stretches of good times just end in bigger collapses.

Minsky believed that over periods of prolonged prosperity, the economy moves from financial relations that make for a stable system to relations that make for an unstable one. During good times, capitalist economies tend to move from a financial structure dominated by hedge finance units to a structure engaged in speculative and Ponzi finance. The net worth of Ponzi units quickly falls down. Consequently, units with cash flow shortfalls are forced to try to make a position by selling out a position. This is likely to a collapse of asset value. FIH is a model of capitalist economy that doesn't need outside shocks to generate business cycles.

Khanal argues that in the midst of real estate boom, Minsky's FIH is relevant to Nepal's context. Nepal's liberal monetary policy encouraged the rapid expansion of private sector credit. A large portion of additional financing went to the retail and real estate sectors, thanks to political uncertainty and poor business climate. Much of the real estate investment is seen to be speculative and was often funded by banks and under regulated cooperatives. The tough competition among bank made newer banks to take aggressive risks to expand their market shares, which in turn forced remaining banks to take similar risks. World Bank (2010) data revealed that much of the real estate boom was financed by credit-exactly in line with FIH. Commercial bank credit to real estate increased by 120% while credit to housing rose by 25%. In fact, 70% of all commercial bank loans were collateralized by real estate. In the mean time, rising real estate prices had a temporary positive impact on bank performance indicators, since the inflated prices of collateralized land raised its value and turned many non performing loans into good ones-without actual repayments.

Hence, Khanal suggested that it is necessary to rely on income and not debt for financing investments. The government should favor small to medium debt and discourage predatory lending by profit seeking financial institutions. And, come up with debt relief strategies for small household loans.

2.3 Review of Unpublished Thesis

Adhikari (2010), in her Master's thesis titled, 'Credit Management of Nepalese commercial banks' expressed the major objective of the research as to analyze the credit efficiency of NIB and NIC banks. Specifically, she analyzed the loan and advances of the sampled banks along with analyzing their credit efficiency and the relationship between many variables.

Her research concluded that NIC seems to be strong to mobilize its total deposit as loan and advances than NIB since it has maintained higher loan and advances to total deposits. However, in terms of average interest income to loans and advances, NIB is the best performer than NIC because of its lowest non performing loan to total loan and advances. Therefore, he suggested that NIB should focus to increase loan and advances to total asset ratio to increase lending performance. The researcher recommended that both of the banks should try to increase the loan and advances to deposit as high ratio shows the capability of bank on mobilizing its total deposit and advances. He further recommended that banks should do a lot more exercise to create more credit creation, and reducing rate for increasing loan and advances which helps them to be more competitive. And, provision of doubtful loans should be maintained as per the directives of Nepal Rastra Bank.

Subedi (2009), in his Master's thesis entitled, 'Credit management in commercial banks of Nepal', has the major objective of finding out the credit management position of Standard Chartered Bank Nepal Limited, Nepal Arab Bank Limited, Everest Bank Limited and Himalayan Bank Limited. This objective was accomplished by analyzing the volume of contribution made by the sample banks along with the analysis of deposit mobilization, its relationship with loan and advances, and net profit of the sample banks.

His research concluded that HBL was most successful than other banks to disburse highest average amount of credit and advances. Also, it had more uniform policy than other sampled banks in credit and advances disbursement. However, EBL was much better at deposit mobilization, while SCBNL had the most productive credit and advances due to its highest interest income. Furthermore, the researcher concluded that the net profit of all banks is highly dependent on the credit and advances disbursed. The relationship of net profit to credit and advances of all the banks is perfectly correlated with the credit and advances and the relationship is

statistically significant. However, he concluded that it is not mandatory that the net profit should change with the change in both the deposit and loan and advances.

Furthermore, he recommended that the bank should make the valuation of mortgage from related specialist and only grant credit if the evaluation is satisfactory. The bank should be consumer oriented and should be prompt in making the evaluation, and granting credit and advances to meet the requirement of the customer.

Khanal (2010), in her Master's thesis titled, 'Comparative study on Liquidity management of Everest Bank Ltd and Himalayan Bank Ltd', stated her basic objective of study was to have true insight into the liquidity management of the above mentioned banks, and to examine the efficiency and effectiveness in disbursing and recovery of loans.

Her research concluded that the overall aspect of liquidity position of EBL is comparatively better than HBL as it is sound in meeting short term obligations. EBL is more efficient in utilizing the outsider's funds in extending credit for profit generating sectors while HBL is more successful in utilizing its total deposits by investing in marketable securities. It seems HBL is successful in earning high profit on loan and advances but the return has not been consistent. Since both banks have small mean returns on its loans and advances, neither seems to perform better in order to receive reasonable returns from these loans.

However, both have positive correlation among deposit, loans and advances, investment, total assets and net profit. Considering the growth position of financial markets, lending policy management capabilities, strategic planning and fund flow situation, she recommended that the banks should maintain enough liquid assets to pay short term obligations. Idle assets of the banks in the form of excess cash and equivalents should be diverted in various investment opportunities available in the

market, along with identifying the less risky investment sectors. Furthermore, she recommended the banks should develop an innovative approach to bank marketing and form market department in its central level, which deals with the banking products, place, price and promotion.

Karki (2010), in his thesis, 'Liquidity and Profitability Position of Commercial Banks of Nepal', has stated the major objective of the research as to examine the liquidity and profitability position of the commercial banks of Nepal. He produced his research on the analysis of five banks SCBNL, NABIL, HBL, EBL and NIBL.

The research concluded that though the liquid asset maintained by SCBNL was highest, the liquidity position of NABIL was strongest in terms of current ratio, and CRR. Furthermore, NABIL was most successful in optimizing the assets mobilization due to its highest ROA. The statistical analysis concluded that except in HBL, there existed a positive relationship between cash and bank balance with the net profit. The researcher recommended that it would be better if all the banks focus on collecting the deposit through fixed deposit, which requires less liquidity and the fund collected can be invested in productive sector.

Chaulagai (2009) in his Master's thesis entitled, 'Cash and Liquidity management of commercial banks in Nepal', had the primary objective to comparatively examine and analysis the liquidity position and cash management practices of SBL and NIBL.

He concluded that lack of adequate liquidity is one of the first signs that the bank is in trouble, thus ensuring adequate liquidity is a never ending problem of bank management that will have significant impact on bank's profitability.

The research found that the total deposit of EBL and HB is in increasing trend over the period. Both of them have high positive correlation between total deposit and loan and advances. The trend line of loan and advances for both banks is upward slopping which refers to the increase in the disbursement of loan and advances. The researcher recommended that the both banks should keep sufficient level of current and quick assets to maintain its liquidity position. He further recommended SBL and NIBL to give priority to invest in profitable opportunity than providing maximum unsecured loan. Finally, he suggested the government to provide certain legal framework in liquidity management policy as well as debt financing policy.

Maharjan (2009), in her thesis titled, 'Liquidity Management of Commercial Banks of Nepal', expressed her major objective behind the research work was to find out and analyze the liquidity management practice in Nepalese commercial banks, taking HBL, NABIL and HBL as sampled banks.

The research concluded that the liquidity position of NIBL is very strong while HBL and NIBL have strong capacity to meet the short term obligations. HBL have invested significant portion of deposit to total investment than other. The research found that that the total deposit, investments and loans and advances of all banks are in increasing trend. Furthermore, the researcher concluded that the liquidity management practice is still in developing phase in Nepal. Most of the banks have maintained liquid fund to fulfill the statutory provision only. Since, NRB has to threaten commercial banks to maintain liquidity; commercial banks have maintained liquidity measuring tools like liquidity profile and GAP analysis by compulsion, not voluntarily.

The researcher suggests the banks to take liquidity management tools positively and have them mandatorily implemented for the better managing liquidity, bank

credibility and safety of depositor's amount. She further recommended that the liquidity profile analysis and GAP analysis with IRC should be prepared quarterly basis and send to NRB within stipulated time period. An effort should be made on the development of market for the liquidity generating assets like; T-bills, Options and Bank CDs etc. In order to manage the liquidity effectively the existing regulation should be effectively put in practice.

2.4 Research Gap

The main focus of this study is to understand and compare the credit management practices of two commercial banks, as well as show its relation with their liquidity position. Taking NIBL and NIC as sampled banks, this study tends to highlight the major trends in maintaining the liquid assets and also to analyze the credit and advances provided by them. The above review of articles, journals and unpublished thesis have dealt only with either one of the topic, credit management or liquidity management, and have failed to recognize that the most successful bank is the one that demonstrates excellent performance in both topics. Besides, the data taken for analysis are up to date and range from FY 2004/05 to FY2009/10, thus incorporating the current financial troubles seen in the market.

A modern bank thrives on its capability to provide credit, and earn through its mechanisms earn huge sum of profits. However, the hassles and the uncertainties of the day have brought along some strict regulations that must be heeded for the bank to survive. Therefore, it seems every bank is walking on a tight rope to maintain the balance between providing more credit and maintaining enough liquidity. The banks that are able to maintain this balance are the ones that are enjoying huge returns. Hence, this research was conducted to understand whether the sampled banks have been successful on maintaining this balance or not.

CHAPTER III
RESEARCH METHODOLOGY

In general, Research Methodology is a way to systematically solve the research problem. It may be understood as a science of studying how research is done scientifically. This chapter deals with the various systematic steps adopted by the researcher in gathering all the information required for the study and making sense of the data collected. It covers research design, nature and sources of data, population and sample, data collection procedures and the various tools and techniques used for analyzing the collected data.

3.1 Research Design

A research design is the arrangement of condition for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure. Research designs serves as a framework for the study, guiding the research instruments to be utilized, and the sampling plan to be followed.

This research is basically designed to analyze the liquidity and the credit management practices of the commercial banks of Nepal, mainly NIC and NIBL. Descriptive and Analytical approaches were adopted to evaluate the liquidity and credit position of these banks. The study was widely based upon secondary data collected over the past 6years.

3.2 Population and Sample

Among 30 commercial banks now operating in Nepal, only two commercial banks have been selected as samples from the population. These two sample banks are Nepal Investment Bank Ltd and Nepal Industrial & Commercial Bank Ltd., which

have been selected for the present study. Similarly, financial statements of these two banks from past 6year periods from 2004/05 to 2009/10 have been taken as secondary data samples.

3.3 Sources of Data and Data Collection Procedure

This research study has been heavily based on secondary data only. The secondary data was collected through various secondary outlets such as Published and un-published economic bulletins and financial statements of the concerned banks, 'Banking and Financial Statistics' reports of Nepal Rastra Bank, Economic Survey book, Published studies and reports of various foreign professors and writers, published articles on newspapers and online and various internet websites.

3.4 Data Analysis Tools

To make the data more specific and reliable, the researcher used two types of tool for analysis, Financial and Statistical Tools. Financial tools include various ratio analyses that specifically measured the liquidity and credit position of the banks while the Statistical tools include arithmetic mean, standard deviation, correlation coefficient and other statistics that measure the performance, relationship and significance of calculated statistics. These tabulated data were carefully analyzed and presented in tables and bar charts. These tools are specifically explained below:

3.4.1 Financial Tools:

The following financial ratios are going to be analyzed under the liquidity and credit position of the selected commercial banks.

3.4.1.1 Liquidity Ratio Analysis

Liquidity ratios measure the firm's ability to satisfy its short term commitments and are used to ascertain the short term solvency position of the firm by focusing on current assets and current liabilities. It is essential to measure the liquidity posi-

tion of the bank as it helps us to understand the cash management system of the firms. Excess liquidity erodes the earning capacity of the firm while too less liquidity may result in cash shortfalls or liquidity crunch in the market. Following ratios are calculated to measure the liquidity position of the banks:-

i. Current Ratio:

Current Ratio (CR) is the quantitative relationship between the current assets and current liabilities. It is used to measure the bank's capability to meets its obligations due within one year. This assumes a regular cash flow and that both account receivables and inventory can be readily converted into cash.

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

Higher current ratio indicates better liquidity position and vice versa. As a conventional rule, the ratio of 2:1 is employed as a standard of comparison. Current ratios less than 2:1 are typically considered very low and indicate financial difficulties.

ii. Cash Reserve Ratio(CRR):

To maintain sound liquidity position, all commercial banks are required to maintain a certain portion of total deposits with NRB in their own account. This portion is called Cash Reserve Ratio (CRR) and is currently held at 5.5%. The CRR shows whether the banks have complied with the NRB requirements or not. It is computed as follows:

$$\text{Cash Reserve Ratio} = \frac{\text{Cash in Reserve}}{\text{Total Deposits}}$$

iii. Cash and Bank Balance to Total Deposit Ratio:

This ratio measures the capacity of the bank to meet immediate payments of the depositors. It shows the proportion of total deposits held as compared to the most liquid assets. It is obtained by dividing cash and bank balance by the total deposits available. This ratio is also called Liquidity risk ratio.

$$\text{Cash and Bank balance to Total deposits ratio} = \frac{\text{Total Cash and Bank balance}}{\text{Total Deposits}}$$

Higher ratio indicates the higher liquidity position and ability of the bank to cover the deposits and vice versa.

iv. Cash and Bank Balance to Current Assets Ratio:

This ratio measures the proportion of most liquid assets, i.e. cash and bank balance, among the total current assets of the bank. It is calculated by dividing the total cash and bank balance by current assets.

$$\text{Cash and Bank balance to Current Assets ratio} = \frac{\text{Total Cash and Bank balance}}{\text{Total Current Assets}}$$

Higher ratio indicates the bank's ability to meet its demand for cash and vice versa.

v. Cash and Bank balance to Current Liabilities Ratio:

This ratio indicates how much cash and bank balance is available to meet the current liabilities of the bank. It is calculated by dividing the total cash and bank balance by current liabilities.

$$\text{Cash and Bank balance to Current Liabilities ratio} = \frac{\text{Total Cash and Bank balance}}{\text{Total Current Liabilities}}$$

Higher ratio indicates the bank's ability to meet its obligations by cash and vice versa.

vi. Fixed Deposit to Total Deposit Ratio

Fixed Deposit is a long term, high interest bearing deposit. Investing more fixed deposit on long term credit, the bank can gain an additional advantage of charging higher interest rate from their clients. This ratio indicates the proportion of fixed deposits among total deposits available, so that accordingly, they can be mobilized on granting loans and advances to earn high interest. It is calculated as follows:

$$\text{Fixed Deposit to Total Deposit Ratio} = \frac{\text{Total Fixed Deposit}}{\text{Total Deposit}}$$

Higher ratio indicates the presence of higher interest bearing deposits and less liquidity, while lower ratio indicates the presence of more short term deposits or current deposits.

vii. Current Deposit to Total Deposit Ratio:

Current Deposit is a short term, non-interest bearing deposit. It is also known as short term obligation because of its ability to be withdrawn without the requirement of prior notice. This ratio indicates the proportion of current deposits among total deposits. It is calculated as follows;

$$\text{Current deposit to Total Deposit ratio} = \frac{\text{Total Current Deposit}}{\text{Total Deposit}}$$

3.4.1.2 Credit Management Analysis

i. Total Loan to Total Deposit Ratio:

This ratio indicates the capability of the banks to successfully utilize the total deposits on loans and advances for profit generating purposes. It measures how quickly the total deposits collected can be granted as loans and advances to earn reasonable returns. It is calculated as follows:

$$\text{Total loans and advances to total deposit ratio} = \frac{\text{Total Loans and Advances}}{\text{Total Deposit}}$$

Higher ratio indicates the efficient and effective utilization of funds while lower ratio indicates the inefficiency of the banks to stop them from remaining idle.

ii. Interest Income to Loans and Advances Ratio:

This ratio indicates the capability of the banks to manage the loans and advances in earning higher interest income. It shows the proportion of interest income earned as compared to the total loans and advances granted. It is calculated as follows:

$$\text{Interest income to Loans and advances ratio} = \frac{\text{Total Interest Income}}{\text{Total Loans and Advances}}$$

Higher ratio indicates the higher rate of earning interest income and so is the indicator of good performance in lending activities, and vice versa.

iii. Loans and Advances to Total Assets Ratio

This ratio indicates the ability of the banks in mobilizing the total assets into loans and advances for profit generation. It shows the proportion of total loans and advances as compared to total assets for earning profit. It is calculated as follows:

$$\text{Loans and Advances to Total Assets ratio} = \frac{\text{Total Loans and Advances}}{\text{Total Assets}}$$

Higher ratio indicates the effective utilization of total assets of the bank to grant loans and advances which in turn creates more opportunity to earn more profit.

iv. Loans and Advances to Fixed Deposit Ratio:

This ratio indicates the capability of the banks to utilize the long term, interest bearing deposits in granting loans and advances for income generating purposes. It shows the proportion of fixed deposits used for granting loans and advances so that high interest income can be earned. It is calculated as follows:

$$\text{Loans and Advances to Fixed deposit ratio} = \frac{\text{Total Loans and Advances}}{\text{Total Fixed Deposit}}$$

v. Loan Loss Provision to Total Loans and Advances Ratio:

This ratio indicates the percentage of loan loss provision on loans and advances. Loan loss provision on loan is given to reduce the risk of non-payment of released loan. It reflects the increasing probability of non-performing loans and indicates the decrease in the net profit of the bank due to these nonperforming loans. However, the presence of loan loss provision tends to strengthen the financial condition of the bank by controlling the credit risk and reducing the risks relating to deposits. It is calculated as follows:

$$\text{Loan loss provision to total loans ratio} = \frac{\text{Total Loan loss provision}}{\text{Total Loans and Advances}}$$

Lower ratio indicates the presence of good quality assets in the total volume of loan and advances while higher ratio indicates the presence of more risky assets.

vi. Overdue Loan to Total Loan Ratio:

This ratio indicates the proportion of non-performing loans to total loans. It measures the efficiency of the banks in recovering the overdue loans. It is calculated as follows;

$$\text{Overdue loan to total loan ratio} = \frac{\text{Total Overdue loan}}{\text{Total loans}}$$

Lower ratio indicates the better performance of the bank in recovering the overdue loans while higher ratio indicates the opposite.

vii. Credit Risk Ratio:

This ratio indicates the possibility of loan being default or not getting repaid by the client with subsequent losses to the bank. It is calculated as the percentage of non-performing loans to total loans and advances.

$$\text{Credit Risk Ratio} = \frac{\text{Total Non performing loans}}{\text{Total loans and advances}}$$

Higher ratio shows the presence of more risky assets in the volume of loans and advances, and vice versa.

Hence, these are the various financial tools that were used to achieve the objectives of this study.

3.4.2 Statistical Tools:

3.4.2.1Arithmetic Mean or Average

In short, arithmetic mean, also known as average, is a single value within the range of the data that represents all the value in the series. It is a representative of the entire mass of homogeneous data, with its value lying somewhere between the two extremes, i.e. largest and smallest item. Mathematically, arithmetic mean of a given set of observations is calculated as the sum of the observations divided by the number of observations, which is given by the following formula:

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

Where,

$\sum X$ = Sum of all variables of the observations

N = No. of observations

X = Value of observations.

3.4.2.2 Standard Deviation

Standard deviation, denoted by S.D., is the widely used measure of dispersion and is often used to describe the variability in the data distribution. It is defined as the positive square root of the mean of the square of the deviations taken from the arithmetic mean. It is denoted by σ (read as sigma). Mathematically, it is calculated as follows:

$$\text{Standard Deviation } (\sigma) = \sqrt{\frac{\sum (x-\bar{x})^2}{n}}$$

Where,

x = value of the variate

$\bar{x}$ = arithmetic mean of the variable

n = no. of observations

The greater the standard deviation, greater will be the magnitude of the deviation of the values from their mean. A small standard deviation means a high degree of the uniformity of the observations as well as homogeneity of the series and vice versa.

3.4.2.3 Coefficient of Variation

If standard deviation is the absolute measure of dispersion, then the relative measure of dispersion based on the standard deviation is known as the coefficient of standard deviation. Hence, the coefficient of dispersion based on standard deviation multiplied by 100 is known as Coefficient of Variation (C.V.). Mathematically, it is calculated as:

$$\text{C.V.} = \frac{\sigma}{\bar{x}} \times 100$$

Where,

C.V. = Coefficient of Variation

σ = Standard Deviation of the distribution

$\bar{x}$ = Arithmetic Mean of the distribution.

C.V is independent of unit, so, two distributions can be better compared with the help of C.V. for their variability. Less the C.V. more will be the uniformity, consistency, etc and more the C.V. lesser will be their uniformity and consistency.

3.4.2.4 Coefficient of Correlation

Two variables are said to have 'correlation', when they are so related that the change in the value of one variable is accompanied by the change in the value of other. The measure of correlation called the correlation coefficient summarizes in one figure, the degree and direction of movement. One of the widely used mathematical methods of calculating the correlation coefficient is the Karl Pearson's correlation coefficient. It is denoted by r_{xy} or simply r and is defined by the formula:

$$\text{Coefficient of correlation}(r) = \frac{\sum xy}{n\sigma_x\sigma_y}$$

Where,

$x = X - \overline{X}$

$y = Y - \overline{Y}$

$\overline{X}$ and $\overline{Y}$ = Arithmetic mean of X series and Y series respectively.

σ_x and σ_y = Standard deviation of X series and Y series respectively.

n = No. of observations

The value of correlation coefficient always lies between +1 and -1. However, there are following rules for interpreting the value of r.

- When r =1, there is a positively perfect correlation between the two variables.
- When r = -1, there is a negatively perfect correlation between the two variables.
- When r = 0, the variables are uncorrelated.

- Nearer the value of r to +1, closer will be the relationship between the two variables and nearer to 0, lesser will be the relationship.

Probable error of correlation coefficient

This is used to measure the significance and the reliability of the calculated value of correlation coefficient(r). If r were the calculated value of correlation coefficient from sample of n pair of observations, then the Probable Error(P.E.) is defined as:

$$P.E. = \frac{0.6745(1-r)}{\sqrt{n}}$$

If r < P.E, then it is insignificant. That is there is no evidence of correlation.

If r > 6P.E, then the calculated r is significant.

In other cases, nothing can be concluded.

3.4.2.5 Coefficient of Determination(R)

Coefficient of determination measures only the strength of a linear relationship between the two variables. It refers to a measure of the total variance in a dependent variable that is explained by its linear relationship to an independent variable. It denotes to the fact that the independent variable is a good predictor of the behavior of the dependent variable. Coefficient of determination is calculated as the square of correlation coefficient (r).

$$\text{Coefficient of Determination}(R) = r^2$$

3.4.2.6 Trend Analysis

Trend analysis, also known as Regression analysis, is the statistical method for investing the relationship between the variables by establishing an approximate functional relationship between them. It is a dynamic method of indicating the changes in terms of financial statement. Trend analysis helps to identify the con-

trollable items of a given period and future forecast can also be made for ongoing concerns. It is one of the useful tools in making a comparative study of the financial statements for a certain period of years.

One of the useful methods of analyzing trend is through least square method or regression analysis. Therefore, trend analysis is also known as Regression analysis, which is given by the following formula:

$y = a + b\,x$

Where,

y = the regression line of dependent variable

a = constant

b = slope of the trend line or regression coefficient

x = independent variable

Here, $a = \frac{\sum y}{n}$ And $b = \frac{\sum Xy}{\sum X^2}$ where, X = x – middle year

3.4.2.7 Testing of Hypothesis

Webster has defined hypothesis as 'a tentative theory or supposition provisionally adopted to explain certain facts and to guide in the investigation of others.' However, in statistics, hypothesis means a statistical statement about the values of one or more parameters of the population. After setting the hypothesis, it is necessary to test the reliability of such statistical statements. For this purpose, an experiment is conducted by using sample information and the hypothesis is rejected if the results obtained are improbable under this hypothesis. If the results are not improbable, the hypothesis is accepted. Thus, the procedure of drawing such conclusion based on sample hypothesis is known as Testing of Hypothesis.

CHAPTER IV
DATA PRESENTATION AND ANALYSIS

This chapter deals with the detail analysis and presentation of data in line with the objectives of the study. The data are presented and analyzed in a systematic order using the various financial and statistical tools. The facts received from these tools are simultaneously presented in diagrammatic forms such as line graphs. For the easy perusal of the readers, the tables and diagrams have been constructed in a simple and understandable form, with each result interpreted along with it.

4.1 Financial Tools Analysis

The financial tools analysis include various ratio analysis that clearly depict the position of liquidity and credit management of the sampled banks and attempts to correctly analyze the results emerging henceforth.

4.1.1 Liquidity Analysis of the Commercial Banks

Liquidity ratios measure the firm's ability to satisfy its short term commitments and are used to ascertain the short term solvency position of the firm. Hence, this section considers the current ratio, ratios of cash and bank balance to various other variables such that the liquid assets trend maintained by the sampled commercial banks can be analyzed and its CRR evaluated.

4.1.1.1 Current Ratio

Current Ratio (CR) is used to measure the bank's capability to meets its obligations due within one year. Higher current ratio indicates a better liquidity position and vice versa. Therefore, the ratios, given by dividing total current assets by total current liabilities, for the two banks have been determined as follows.

Table 4.1

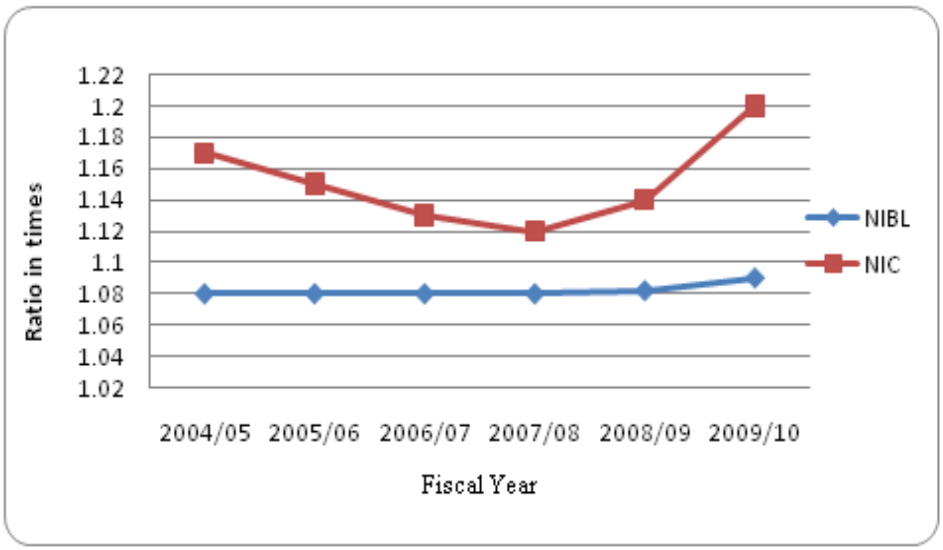
Current Ratio

Banks	Fiscal Year								
	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	Mean	S.D.	C.V.
NIBL	1.08	1.08	1.08	1.08	1.082	1.09	1.082	0.00365	0.337
NIC	1.17	1.15	1.13	1.12	1.14	1.20	1.152	0.0267	2.32

Source: - Appendix I and II

Figure 4.1

Current Ratio



The above table 4.1 presents the current ratio of the banks NIBL and NIC during the last six fiscal years. From the table, it can be easily seen that NIBL maintained a consistent current ratio of 1.08 during the last six year period. On the other hand, NIC maintained a near-consistent but slightly fluctuating current ratio of average 1.152 during the same period. Similarly, the SD of these two banks shows that the current ratio of NIBL is less risky than that of NIC while the lesser CV of NIBL indicates that NIBL maintains more uniformity in current ratio than NIC.

The result shown by the above line graph 4.1suggests that the current assets and liabilities maintained by NIBL are sufficient enough to maintain the liquidity of the bank without having any liquidity woes. On the other hand, the fluctuating

curve of NIC suggests that the current assets and liabilities maintained by the bank are in fluctuating trend. Its graph shows the ratio in continuous decline from 2004/05 and after reaching its lowest in FY2007/08, the ratio gradually increased to its highest in FY 2009/10. This may suggest that the liquidity woes in the market may have affected the bank since 2004, however, gradual improvements to maintain sound liquidity seems to be in progress since FY2007/08 as clearly seen in the graph.

4.1.1.2 Cash Reserve Ratio (CRR):

The Cash Reserve Ratio (CRR) is currently held at 5.5% standard, and it shows whether the banks have complied with the NRB requirements or not. CRR of the two banks for NIBL and NIC have been computed as follows

Table 4.2

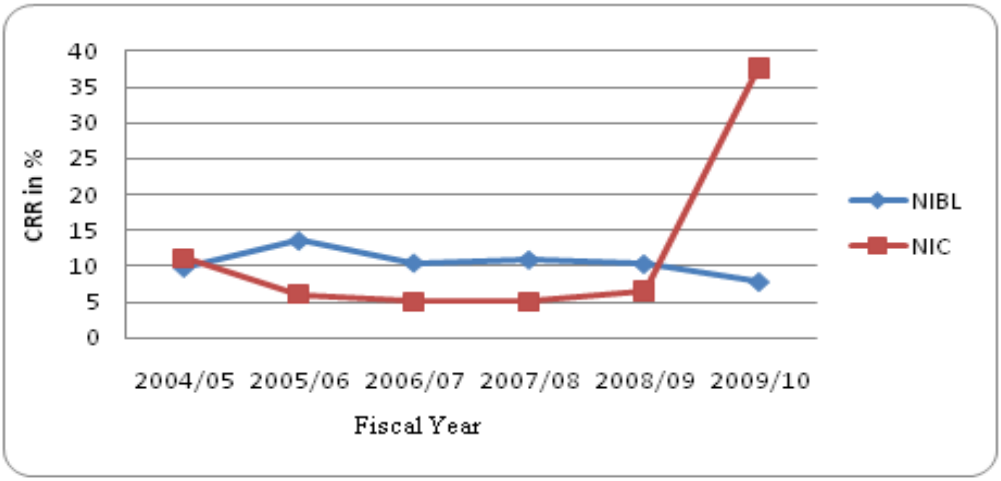
Cash Reserve Ratio

Banks	Fiscal Year								
	2004/05	**2005/06**	**2006/07**	**2007/08**	**2008/09**	**2009/10**	**Mean**	**S.D**	**C.V.**
NIBL	9.78	13.61	10.47	10.91	10.32	7.77	10.48	1.72	16.41
NIC	11.07	6.10	5.02	5.09	6.50	37.61	11.90	11.67	98.07

Source: Appendix I and II

Figure 4.2

Cash Reserve Ratio



The above table 4.2 presents the cash reserve ratio of NIBL and NIC during the last six fiscal years. From the table, it can be easily seen that the CRR of NIBL have been on a downward trend during the last four years after reaching the highest level in 2005/06. On the contrary, the data of NIC shows the decreasing trend of CRR from 2004/05 jump suddenly to its highest level of 37.61% during the last fiscal year, 2009/10. The average CRR of the two banks look similar except with NIC slightly in the lead. However, the higher level of SD and CV of NIC than NIBL shows the greater risk posed by this bank in terms of its liquidity level.

Similarly, the result shown by the above line graph 4.2 suggests that NIC has placed large amount of cash in reserves as compared to its deposits. The NRB requirements of CRR at 5.5% was maintained by NIC during the last 5years, however, the CRR rose to its highest in last fiscal year only. This may suggest the ongoing liquidity crisis faced by the bank due to which it may have been compelled to place a higher degree of cash in reserves. The risk prevalent in the market may also have created unexpected threats to this bank. However, in the case of NIBL, which has always maintained a slightly large CRR than the NRB requirements, has actually maintained a lowest CRR of 7.7% in the last fiscal year, 2009/10. This indicates that the liquidity position of NIBL is sounder than NIC. With lower S.D. and CV, the liquidity maintained by NIBL is less risky and has more uniformity than NIC.

4.1.1.3 Cash and Bank Balance to Total Deposit Ratio / Liquidity Risk Ratio

This ratio measures the capacity of the bank to meet immediate payments of the depositors. It is obtained by dividing cash and bank balance by the total deposits available. Higher ratio indicates the higher liquidity position and ability of the bank to cover the deposits and vice versa. Therefore, this ratio is also called Liquidity risk ratio, which is calculated as follows for the following two banks.

Table 4.3

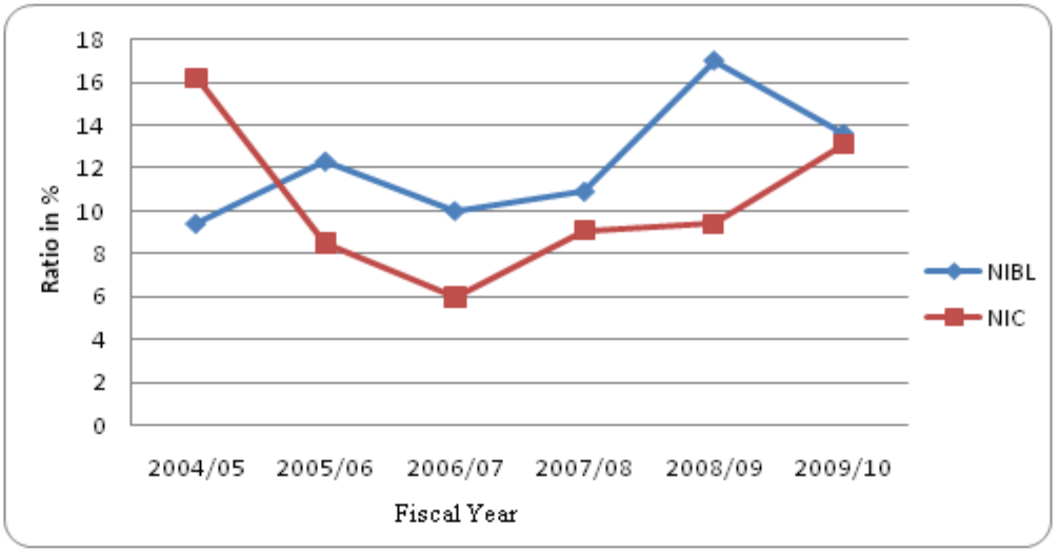
Cash and Bank Balance to Total Deposit Ratio

Banks	Fiscal Year								
	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	Mean	S.D.	C.V.
NIBL	0.094	0.123	0.100	0.109	0.170	0.136	12.2	2.56	20.98
NIC	0.162	0.085	0.060	0.091	0.094	0.131	10.4	3.33	32.02

Source: Appendix I and II

Figure 4.3

Cash and Bank Balance to Total Deposit Ratio



The above table 4.3 presents the fluctuating trend of the banks cash and bank balance to total deposit ratio. The liquidity risk ratio of NIBL seems to be on a steadily upward trend during the last 3years with a sharp decrease of 3% last FY. In case of NIC, the data showed its ratio drop dramatically when it lost almost 8% in the year 2005/06, and to its lowest level in the year after, but since FY2006/07, NIC has witnessed a gradual increase in the ratio, thus showing a remarkable progress in maintaining healthy liquidity position. The lesser SD and higher CV of NIBL show its liquidity is less risky and more uniform than NIC.

Similarly from the above line graph 4.3, the decreasing and then increasing curves of NIC shows the improvement in maintaining the cash reserves in order to

strengthen their liquidity position. Similarly, in case of NIBL, even though, the up and down curves of the line graph shows the fluctuating trend of maintaining cash reserves or total deposits, it has maintained a higher and less riskier liquidity position than NIC.

4.1.1.4 Cash and Bank balance to Current Assets Ratio

This ratio measures the proportion of most liquid assets among the total current assets of the bank. It is calculated by dividing the total cash and bank balance by current assets. The ratios for the two sampled banks are determined as follows:-

Table 4.4

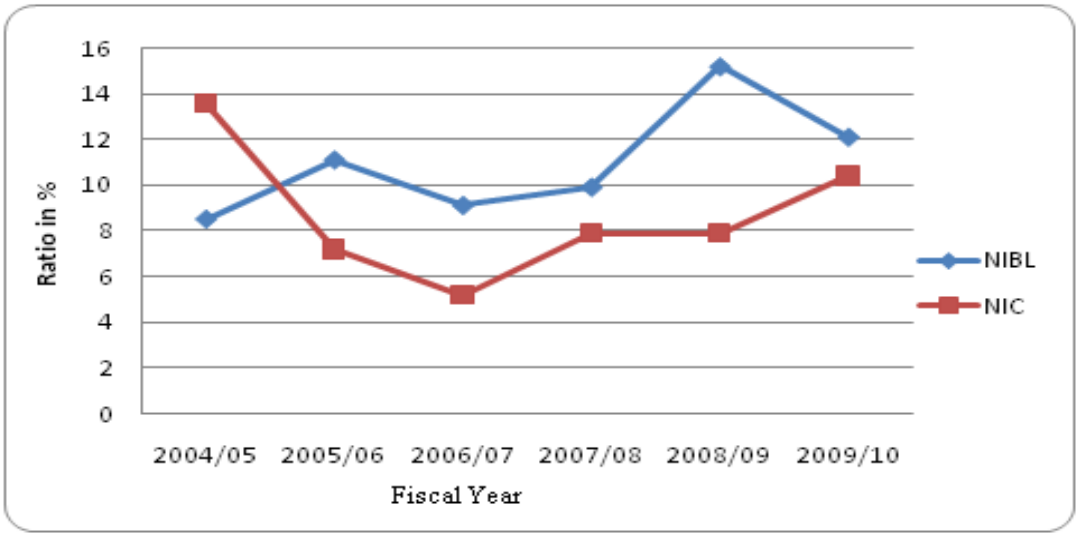
Cash and Bank Balance to Current Assets Ratio

Banks	Fiscal Year								
	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	Mean	S.D.	C.V.
NIBL	0.085	0.111	0.091	0.099	0.152	0.121	11%	2.23	20.27
NIC	0.136	0.072	0.052	0.079	0.079	0.104	8.7%	2.67%	20.27

Source: Appendix I and I

Figure 4.4

Cash and Bank Balance to Current Assets Ratio



The above table 4.4 presents the proportion of cash and bank balance among the total current assets of the respective banks. The table presents the fact that NIBL

has highest level of liquid assets, cash and bank than NIC. During the FY2008/09, NIBL reached its highest level in 5 years to 15.2%, only to lose 3% in the FY2009/10. On the contrary, NIC has seen a drastic decrease in its proportion of cash and bank among the total current assets of the bank. During the FY2005/06, NIC witnessed a dramatic drop of 6% in its cash and bank balance to current assets ratio which reached to 7.2% and further dropped to its lowest level at 5.2% in the FY2006/07. Since then, NIC has steadily been improving its position to reach 10.4% in the FY2009/10. Although, NIBL witnessed a decrease in FY2009/10, it has still maintained a higher position than NIC at 12.1% than compared to 10.4% of NIC. NIBL enjoys higher average ratio of 11% than NIC (8.7%), and less risk than NIC as shown by the lower SD of NIBL. However, the same level of CV depicts them having uniform and consistent variability in their ratios.

The line graph 4.4 shown above looks similar to the previous one. The line graph clearly shows the fact presented in the above table. Higher ratio enjoyed by NIBL suggests its greater ability to meet the demand for cash when and where it rises, while it suggests the contrary for NIC.

4.1.1.5. Cash and Bank balance to Current Liabilities ratio:

This ratio indicates how much cash and bank balance is available to meet the current liabilities of the bank. It is calculated by dividing the total cash and bank balance by current liabilities. Higher ratio indicates the bank's ability to meet its obligations by cash and vice versa. The ratios for the two banks are calculated as follows:-

Table 4.5

Cash and Bank Balance to Current Liabilities Ratio

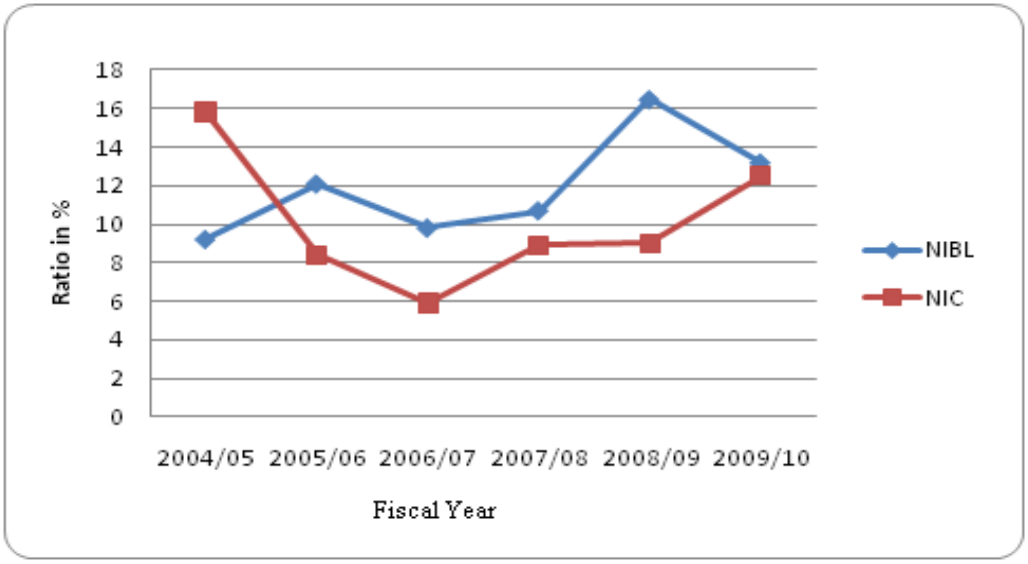
Banks	Fiscal Year

	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	Mean	S.D.	C.V.
NIBL	0.092	0.121	0.098	0.107	0.165	0.132	11.9%	2.5%	21.00
NIC	0.158	0.084	0.059	0.089	0.090	0.125	10.1%	3.2%	31.7

Source: Appendix I and II

Figure 4.5

Cash and Bank Balance to Current Liabilities Ratio



The above table 4.5 presents the proportion of cash and bank balance as compared to its current liabilities. The FY 2004/05 saw the highest level of cash and bank balance to current liabilities ratio of NIC at 15.8% and the lowest ratio of NIBL at 9.2%. The situation exchanged dramatically in the FY 2005/06 which witnessed NIC's ratio plunged to 8.4% and to its lowest in the year after. While NIBL's ratio gained almost 3% in FY 2005/06, the ratio dropped in the year after. After both reached their lowest in FY 2006/07, both showed signs of improvement in the years ahead but it was more intense in NIBL than NIC. In the FY2008/09, NIBL managed to reach its highest level at 16.5% only to decrease slightly in the FY2009/10 while NIC's ratio has been climbing steadily upward during the last 4years .The higher average and lower SD and CV of NIBL depicted the same fact that NIBL is better than NIC.

The above line graph 4.5 also supports the fact that NIBL possess greater ability to meet its obligation by cash than NIC. Although the FY2009/10 shows the ratio decline in NIBL and increase in NIC, it cannot be denied that that NIBL has maintained a higher cash and bank balance to current liabilities ratio.

4.1.1.6 Fixed Deposit to Total deposit Ratio

This ratio indicates the proportion of fixed deposits among total deposits available. It is obtained by dividing total fixed deposit by total deposit calculated as follows:

Table 4.6

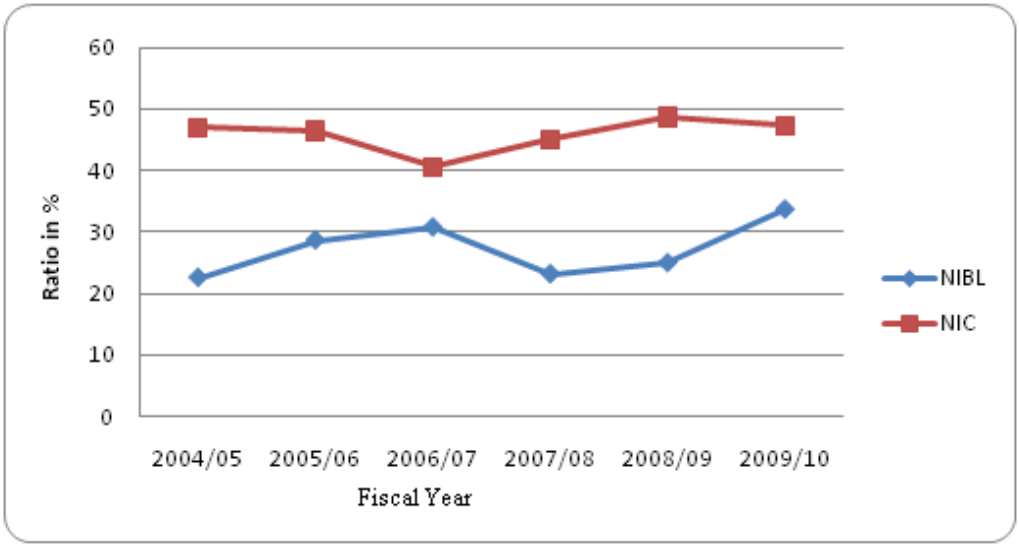
Fixed Deposit to Total Deposit Ratio

Banks	Fiscal Year								
	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	Mean	S.D.	C.V.
NIBL	0.225	0.286	0.307	0.231	0.249	0.336	27.2%	4.1%	15.07
NIC	0.470	0.464	0.405	0.450	0.487	0.473	45.8%	2.6%	5.68

Source: Appendix I and II

Figure 4.6

Fixed Deposit to Total Deposit Ratio



The above table 4.6 presents the proportion of fixed deposits among total deposits of the respective banks. The data shows NIC having higher level of fixed deposits than compared to NIBL. In the FY 2006/07, when NIBL reached its highest level

of fixed deposits at 30.7% in past 3years, NIC saw its lowest level at 40.5%. After that NIC witnessed a steady upward climb of fixed deposits in the later years with 47.3% in the last FY 2009/10, while the same year saw NIBL reach its highest level in six years at 33.6%. This fact has been more highlighted by the larger average ratio of NIC and lower level of S.D and CV than compared to NIBL.

Similarly, the line graph 4.6 above supports the data presented. Its analysis shows that NIC possess high proportions of fixed deposits than NIBL which suggests that in the long run, NIC can gain additional advantage of charging higher interest rates from its clients than NIBL, but maintains low level of current deposits for short-term benefits. Similarly, the lower level of fixed deposits of NIBL shows that the bank possess lesser chances of earning high interest rates in the longer run through mobilizing the fixed deposits on granting loans and advances in the future. This also suggests that NIC has more fixed deposits than current deposits, which has seriously undermined its liquidity position.

4.1.1.7 Current Deposit to Total Deposit Ratio

This ratio indicates the proportion of current deposits among total deposits. The ratios for the two sample banks have been calculated as follows.

Table 4.7

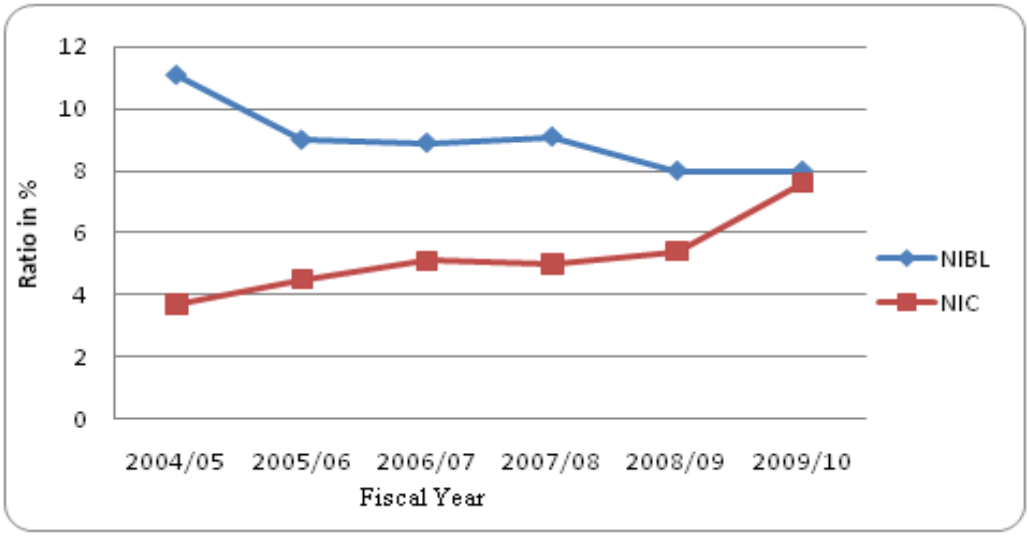
Current Deposit to Total Deposit Ratio

Banks	Fiscal Year								
	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	Mean	S.D.	C.V.
NIBL	0.111	0.090	0.089	0.091	0.080	0.080	9.0%	09.9%	10
NIC	0.037	0.045	0.051	0.050	0.054	0.076	5.2%	1.2%	23.08

Source: Appendix I and II

Figure 4.7

Current Deposit to Total Deposit Ratio



The above table 4.7 presents the proportion of current deposit to total deposit ratio of the respective banks. Here, NIBL is seen to have higher level of current deposit proportions than NIC. The FY 2004/05 shows NIBL's current deposit level at its highest at 11.1% and the lowest at 3.7% for NIC. After that, NIC witnessed a steady increase in its current deposit ratio reaching 7.6% in FY2009/10, while, the same period shows NIBL's ratio in a decline reaching 8% in FY2009/10. Although, the FY2009/10 shows both banks having similar level of current deposits, their six year average ratio is higher in NIBL which indicates NIBL having a greater level of short term deposits and more liquidity. Similarly, the lesser S.D and CV of NIBL also reiterates the same fact that NIBL' liquidity position is stronger and less risky than NIC.

The interesting curves shown by the above line graph 4.7 also supports the previous graphs that although the current deposits of NIBL may be slowing down, its higher levels than compared to NIC suggests the stronger liquidity position of NIBL.

4.1.1.8Findings of Liquidity Position of Commercial Banks

In conclusion to the analyses of above given data and line graphs, following findings have been drawn out.

- NIBL enjoys a higher six year average current ratio than NIC, along with its lower SD and CV. This indicates that NIBL' ability to meet its obligation due in one year is much better than NIC. Similarly, its low SD and CV indicate that the current ratio maintained by NIBL is less risky and has a more uniform variability than NIC.
- NIBL has always maintained a slightly larger Cash Reserve Ratio than the NRB requirements. This has resulted in higher levels of CRR than compared to NIC. Though, the trend is more downward in case of NIBL and more upward in case of NIC, the higher levels in average CRR and lower SD and CV indicates that the liquidity maintained by NIBL is sounder, less risky and has a greater uniformity in its variations.
- The liquidity risk ratio of the two banks clearly supports the above fact that although NIBL's ratio is more fluctuating and NIC shows more promises of remarkable gain, the six year average ratio indicates that NIBL has maintained a better liquidity risk ratio than NIC. This indicates that NIBL has a greater capability of meeting the immediate payments of its depositors.
- The higher cash and bank balance to current assets ratio and the cash and bank balance to current liabilities ratio also signifies the same thing that NIBL has greater capability of meeting its demand for cash as and when required and also has a greater ability of meeting its obligations by cash.
- The contrasting nature of fixed deposit to total deposit ratio and the current deposit to total deposit ratio is in consistent with the two banks. NIC has higher levels of interest bearing fixed deposits and lower levels of short term current deposits and vice versa for NIBL. This also reiterates the same fact that the liquidity position of NIBL is much better than NIC.

4.1.2 Credit Management Analysis

4.1.2.1 Total Loan To Total Deposit Ratio

This ratio indicates the capability of the banks to successfully utilize the total deposits on loans and advances for profit generating purposes. It is obtained by dividing total loan from total deposit. It is calculated for the following two banks as follows:

Table 4.8

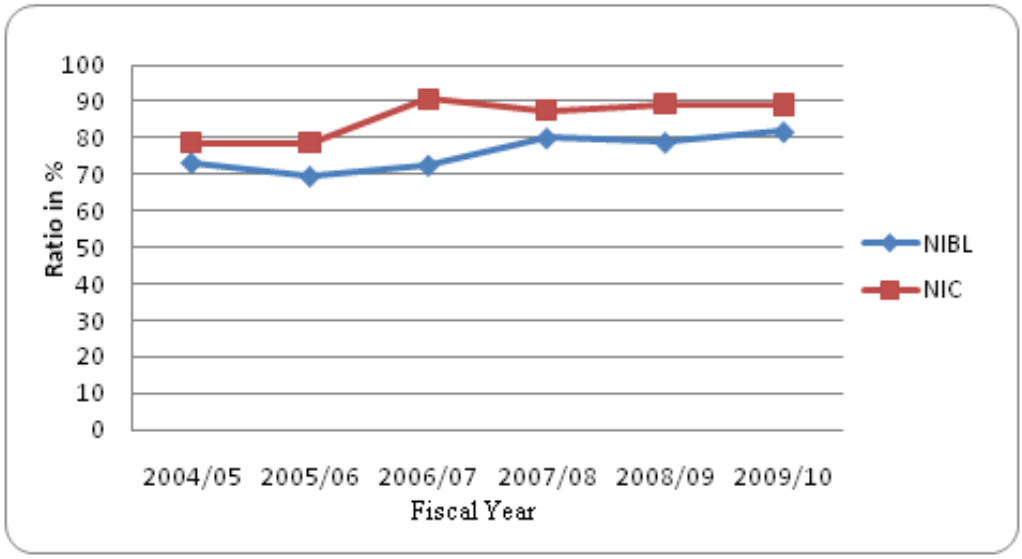
Total loan to Total Deposit Ratio

Banks	Fiscal Year								
	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	Mean	S.D.	C.V.
NIBL	0.733	0.696	0.726	0.800	0.788	0.817	76%	4.4%	5.79
NIC	0.787	0.787	0.907	0.876	0.893	0.890	85.7%	5%	5.8

Source: Appendix I and II

Figure 4.8

Total Loan to Total Deposit Ratio



The above table 4.8 presents the proportion of total loans and advances as compared to the total deposits of the respective banks. The data shows an interesting fact that although both banks seem to be in a similar fluctuating trend, the FY2006/07 of NIC showed the ratio reach its highest level at 90.7% while at the same time, NIBL showed the slightest increase in its ratio. After the year 2006/07,

both banks showed a uniform gain in their ratios, although NIC maintained higher levels of total loans and advances ratio than compared to NIBL. However, even though NIC enjoys a higher average ratio than NIBL, it also has a higher SD by almost 0.6%. The higher SD indicates that more credit always come with more risk. The almost equal CV indicates the similar variations in their variability.

The fact presented by the line graph 4.8 shows similar fluctuating trends in maintaining the total loans and advances proportion, although, NIC seem to be in slight lead. This trend suggests that NIC has a greater ability of successfully utilizing their total deposits on granting loans and advances to earn more profit.
Therefore, it can be concluded that NIC has a greater efficient and effective capability of utilizing its funds than NIBL.

4.1.2.2 Interest Income To Loans And Advances Ratio

This ratio indicates the capability of the banks to manage the loans and advances in earning higher interest income. It shows the proportion of interest income earned as compared to the total loans and advances granted. The ratios for the two sampled banks have been calculated as follows:

Table 4.9

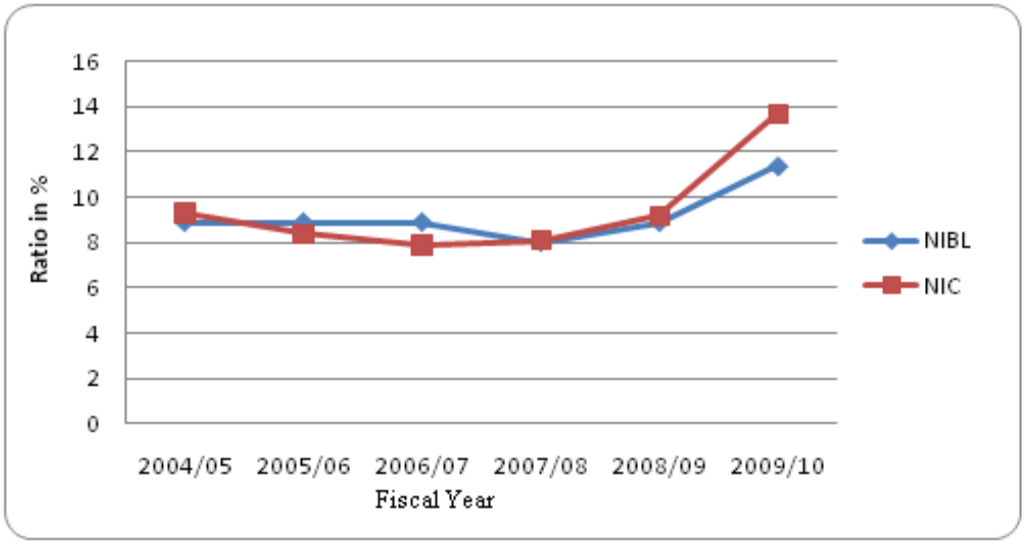
Interest Income to Loans and Advances Ratio

Banks	Fiscal Year								
	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	Mean	S.D.	C.V.
NIBL	0.089	0.089	0.089	0.080	0.089	0.114	9.2%	1.1%	11.9
NIC	0.093	0.084	0.079	0.081	0.092	0.137	9.4%	1.9%	20.2

Source: Appendix I and II

Figure 4.9

Interest Income to Loans and Advances Ratio



The above table 4.9 presents the proportion of interest income earned as compared to the total loans and advances granted by the respective banks. Both banks seem to have a similar trend of earning interest incomes from their loans and advances. However, the FY 2009/10 witnessed NIC earning a higher level of interest incomes than compared to NIC. Although the mean and SD of both banks seem similar, NIC slightly leads with 0.2% gain in average and 0.8% in SD.

The line graph 4.9 depicted above clearly shows NIC's capability for managing the loans and advances is higher than in NIBL. This suggests that NIC is much better in lending activities than NIBL such that it earns higher rates of interest income from its loans and advances. The greater SD of NIC also reiterates the same fact that higher lending activities is always more risky, and thus more profitable.

4.1.2.3 Loans and Advances to Total Assets ratio

This ratio indicates the ability of the banks in mobilizing the total assets into loans and advances for profit generation. It shows the proportion of total loans and advances as compared to total assets for earning profit. The ratios for the two banks have been determined as follows:

Table 4.10

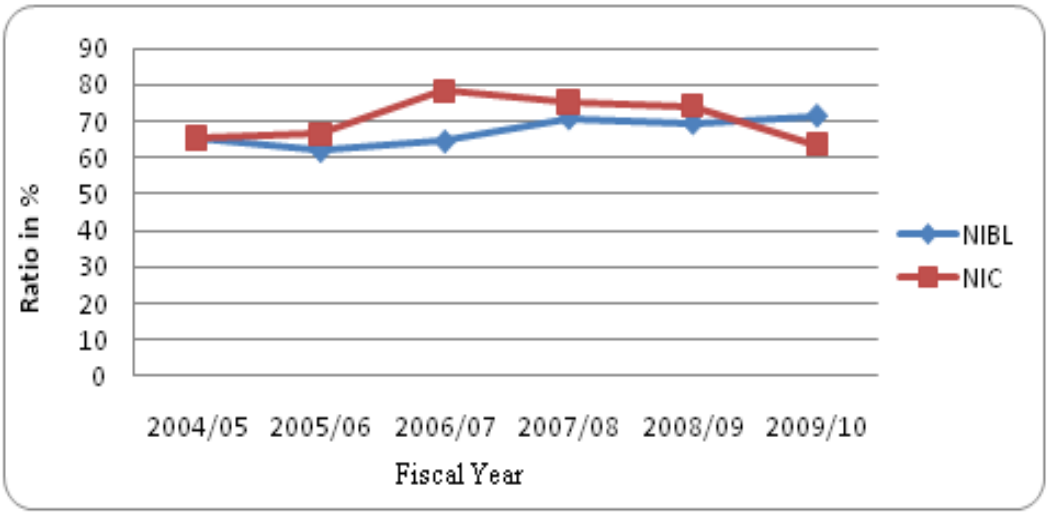
Loans and Advances to Total Assets Ratio

Banks	Fiscal Year								
	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	Mean	S.D.	C.V.
NIBL	0.651	0.618	0.644	0.708	0.695	0.715	67.2%	3.5%	5.21
NIC	0.654	0.665	0.782	0.752	0.742	0.637	70.5%	5.5%	7.8

Source: Appendix I and II

Figure 4.10

Loans and Advances to Total Assets Ratio



The above table 4.10 presents the proportion of total loans and advances as compared to the total assets of the respective banks. A close analysis of the data reveals the fact even though both banks had started at 64% in FY2004/05; NIC has been able to maintain a higher level of this ratio than NIBL. NIC's total loans to total assets ratio reached its highest in FY2006/07, only to decrease thereafter reaching its lowest in FY2009/10. The data of NIBL shows its total loans proportion on a steady climb during the last 4years with a minor hitch in FY 2005/06 where the ratio dropped almost 0.4%. However, the six year average shows NIC as the one with higher ratio as well as with higher SD and CV.

The graph 4.10 clearly points out NIC as the one with higher ratio of total loans and advances as compared to the total assets of the bank. This suggests that NIC has greater ability in mobilizing the total assets into granting loans and advances

so that profit can be generated in the long run. The ability to provide a higher ratio of total assets in granting credit have, in turn, increased the risk as well.

4.1.2.4 Loans and Advances to Fixed Deposit ratio:

It shows the proportion of fixed deposits used for granting loans and advances so that high interest income can be earned. The ratios for the two sampled banks have been determined as follows:

Table 4.11

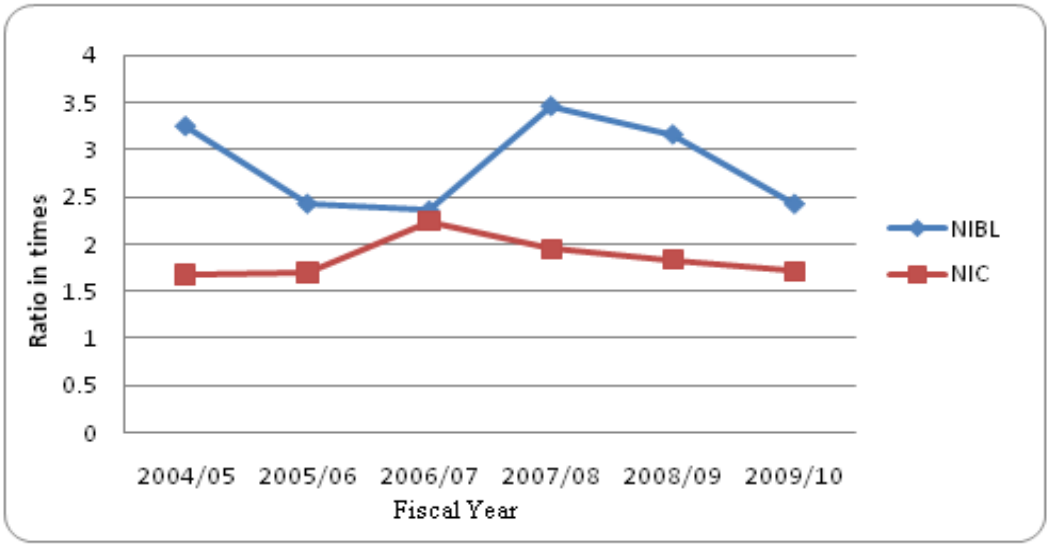
Total Loans and Advances to Fixed Deposits Ratio

Banks	Fiscal Year								
	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	Mean	S.D.	C.V.
NIBL	3.254	2.435	2.364	3.465	3.166	2.434	2.853	45.1%	632.6
NIC	1.675	1.698	2.240	1.951	1.836	1.714	1.852	19.8%	935.4

Source: Appendix I and II

Figure 4.11

Loans and Advances to Fixed Deposit Ratio



The above table 4.11 shows NIBL having a higher level of total loans and advances to fixed deposits ratio than NIC. In FY2004/05, NIBL had the highest ratio at 3.25 while NIC had lowest at 1.67times. The next two years saw NIC gain remarkably reaching its highest at 2.24 times in FY2006/07 whereas the same year

saw NIBL had slipped downward to its lowest at 2.36times. Since then, NIC has been on a downward spiral while NIBL seem to be gaining, only to slip down in the years after. The FY2009/10 saw NIBL having a higher ratio than NIC, despite their downward trends. The higher mean and SD of NIBL seem to conclude that NIBL has a higher proportion of loans and advances than fixed deposits.

The line graph 4.11 above indicates an interesting fact that NIBL seem to grant more loans and advances out of its total fixed deposits than NIC. This fact suggests that NIBL is more capable of utilizing its long term, high interest bearing deposits into granting loans and advances for profit generating purposes, This may be the reason behind the high risk faced by the bank in terms of this ratio.

4.1.2.5 Loan Loss Provision to Total Loans and Advances Ratio:

Loan loss provision (LLP) on loan is given to reduce the risk of non-payment of released loan. This ratio indicates the percentage of LLP on loans and advances. Lower ratio indicates the presence of good quality assets in the total volume of loan and advances while higher ratio indicates the presence of more risky assets. The ratios for the two banks have been determined as follows:

Table 4.12

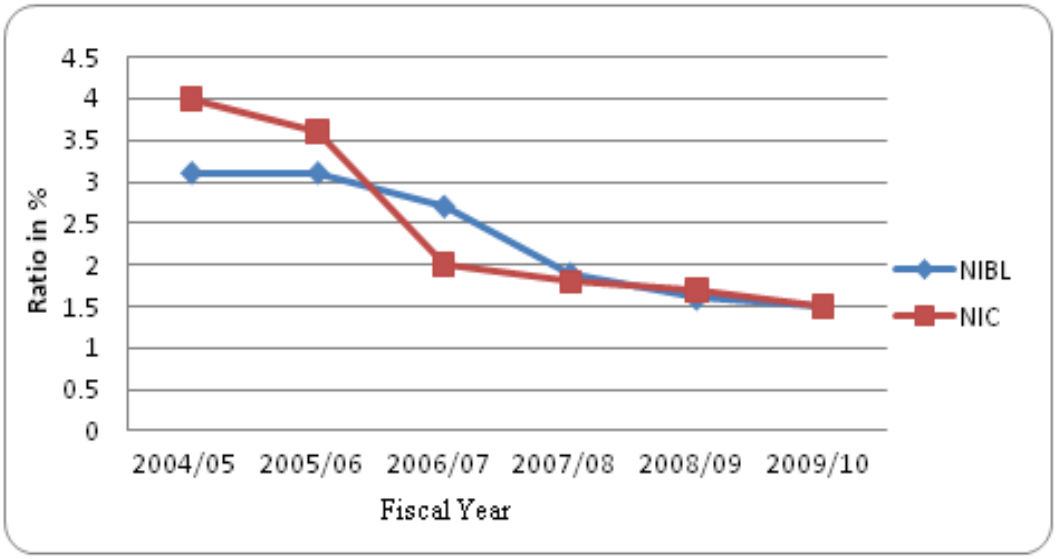
Loan Loss Provision to Total Loans and Advances Ratio

Banks	Fiscal Year								
	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	Mean	S.D.	C.V.
NIBL	0.031	0.031	0.027	0.019	0.016	0.015	2.3%	0.67%	29.13
NIC	0.040	0.036	0.020	0.018	0.017	0.015	2.4%	0.98%	40.8

Source: Appendix I and II

Figure 4.12

Loan Loss Provision to Total Loans and Advances Ratio



The above table 4.12 presents the proportion of LLP on loans and advances. The table clearly highlights both banks having the highest level of LLP in the FY2004/05, with NIC on a slightly higher scale than NIBL. The data of the later years shows a steady decline in maintaining LLP. However, the FY2006/07 shows NIC's ratio drop drastically to almost 16% to NIBL's 4%. The latter three consecutive years saw both banks having almost similar levels of ratios. However, even though both banks have almost equal six year average, NIC slightly leads by 0.1%. The SD and CV data reveals NIC having higher degree of risk than NIBL and less uniformity in its variability than NIBL.

The line graph 4.12 shown above clearly demonstrates the fact that since LLP is generally given to reduce the risk of nonpayment of released loan, the higher ratio indicates the prevalent of more nonperforming loans and risky assets. Thus, the continuous downward trend of both banks indicates the presence of good quality assets in the total volume of loans and advances. However, since this trend is more vivid in NIBL as shown by its average ratio, it can be concluded that NIBL has a more good quality assets than NIC.

4.1.2.6 Credit Risk Ratio:

This ratio indicates the possibility of loan being default or not getting repaid by the client with subsequent losses to the bank. It is calculated as the percentage of non-performing loans to total loans and advances, as follows:

Table 4.13

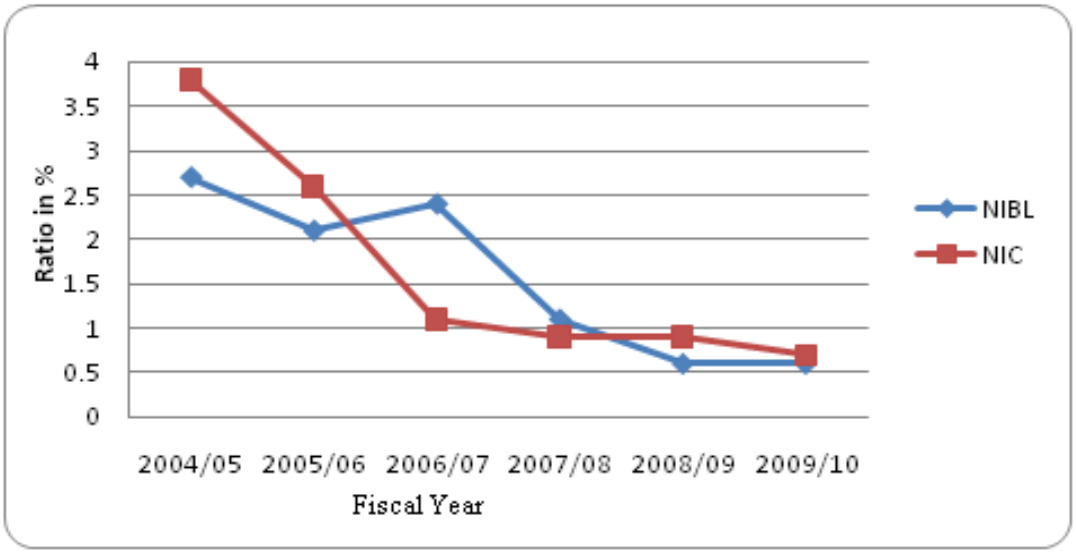
Credit Risk Ratio

Banks	Fiscal Year								
	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	Mean	S.D.	C.V.
NIBL	0.027	0.021	0.024	0.011	0.006	0.006	1.6%	0.85%	53.13
NIC	0.038	0.026	0.011	0.009	0.009	0.007	1.7%	1.14%	67.05

Source: Appendix I and II

Figure 4.13

Credit Risk Ratio



The above table 4.13 presents the credit risk ratio of respective banks. The table clearly highlights the plight of the banks in reducing their non performing loans. This trend is more vivid in case of NIC with its credit risk ratio dropping dramatically over the years after reaching the highest at 3.8% in FY2004/05. In the years leading to FY2006/07, NIC almost shed 2.7% in two years, while in case of NIBL; it seemed to be having a more fluctuating trend. However, the years afterward saw NIBL shed more points than NIC leading to its lowest level in FY2009/10 at 0.6%,

while the NIC had a slow decreasing trend, ending FY2009/10 at 0.7%. This trend is highlighted by the six year average ratio of banks, with NIBL having a slightly lower ratio than NIC. Similarly, lesser SD indicated the low risk posed by the bank than NIC.

This trend of Credit Risk ratio is depicted distinctively by the above line graph 4.13. The lower ratio of NIBL indicates its lower chances of having their loan being defaulted and presence of more less risky assets in the volume of loans and advances.

4.1.2.7 Findings on Credit Management Practices of Banks

In conclusion to the analyses of above data tables and line graphs, following conclusions have been drawn:

- The total loans and advances to total deposit ratio is higher in NIC Bank than in NIBL. This indicates that NIC grants more proportion of its deposits to loans and advances than NIBL. It also indicates NIC's greater ability in utilizing its funds more efficiently and effectively.
- Similarly, the interest income to loans and advance ratios higher in NIC than compared to NIBL. This indicates that NIC grants more loan and advances than NIBL such that it earns a higher rate of interest income from such loans. The higher standard deviation of NIC also confirms this fact that NIC is much better in lending activities.
- In the same way, NIC also has a slightly higher total loans and advances to total assets ratio. This indicates that NIC grants more loans and advances from its total assets than NIBL. The result also suggests NIC's ability to mobilize the total assets is much better than NIBL such that reasonable profit can be earned in the long run.
- The total loans and advances to total fixed deposit picture an interesting fact that NIC grants fewer loans from its fixed deposits than NIBL. This indicates

that NIBL grants more credit from its long run high interest bearing deposits. Therefore, this fact suggests that even if NIC provides more credit from its total deposits and assets and earns more interest income, its mobilization of fixed deposits is very much in downhill. Thus, NIBL is more able to earn profit in the longer run from its high interest bearing deposits.

- The loan loss provision to total loans and advances witnessed both banks having similar levels of ratio. However, the six year trend average indicates NIBL as the one having lesser ratio than NIC. This seems to suggest that NIBL has a lower rate of non-performing loans and lesser risky assets among its total volume of loans and advances.
- Similarly, the credit risk ratio shows NIBL having lower ratio than NIC. This indicates that the chances of having default on their loans are much narrower in NIBL than in NIC. This also suggests the fact that the risk posed by the loans in NIC is comparatively graver than in NIBL.

4.2 Statistical Tools Analysis

The statistical analyses include the calculation of correlation coefficients of different variables in order to find out the liquid assets trend of the respective commercial banks and to figure out the strengths and weaknesses of credit management of the commercial banks.

4.2.1 Trend Analysis Of Liquid Assets Of Commercial Banks

The trend of liquid assets of commercial banks tend to identify the average liquid assets maintained by the banks and to identify the rate of changes in the volume of liquid assets in the next five years using the trend shown by the historical data.

The following table reveals the forecast of the liquid assets to be maintained by the respective banks for the next 5 years. This has been calculated using the regression analysis (trend analysis) of last six years' data.

Table 4.14

Trend Analysis of Liquid Assets

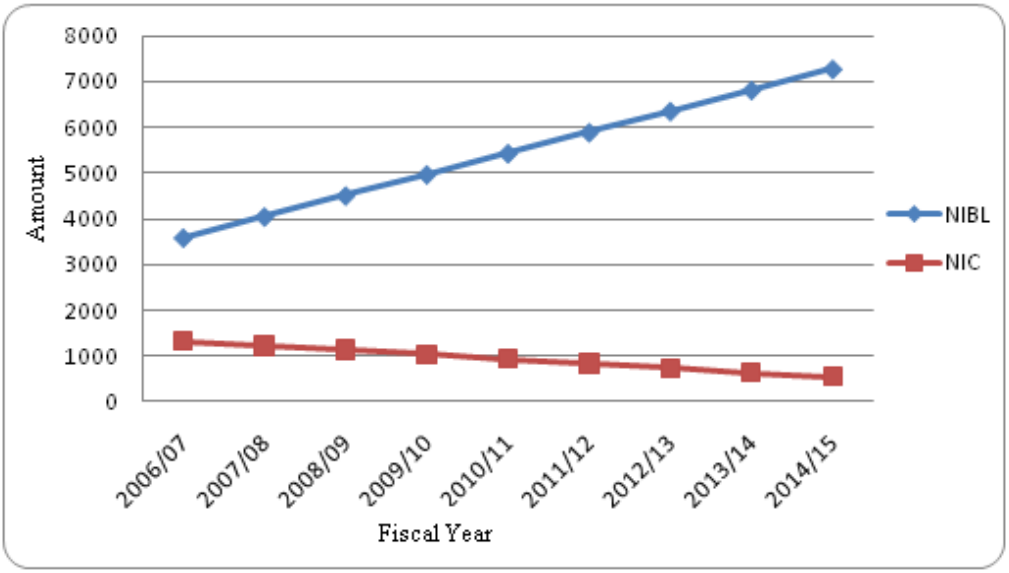
Fiscal year	X	NIBL: y=Rs. Rs.4057.62 + 461.43x	NIC: y=Rs.1228.58 – 98.11x
2006/07	-1	3596.19	1326.69
2007/08	0	4057.62	1228.58
2008/09	1	4519.05	1130.47
2009/10	2	4980.48	1032.36
2010/11	3	5441.91	934.25
2011/12	4	5903.34	836.14
2012/13	5	6364.77	738.03
2013/14	6	6826.2	639.92
2014/15	7	7287.63	541.81

Source: Appendix III

The above table 4.14 deals with the trend of the liquid assets maintained by the respective banks for the next 5years. The table presents the forecast of the banks liquid assets from the FY2010/11 to FY2014/15. As already given by their regression equation, the average liquid assets maintained by the banks, NIBL and NIC are Rs. 4057.62 million and Rs. 1228.58 respectively, with other things remaining unchanged. However, the slope of the equation, that usually shows the rate of change in the value, reveals two different directions of the banks. NIBL has a positive rate of 461.43 which denotes that with every unit change in the year, the value of the liquid assets maintained will increase by additional 461.43. Whereas, in case of NIC, the negative value of this rate of change (-98.11) reveal the decreasing trend of the bank in maintaining the liquid assets volume. The above regression equation of NIC pictures the dismal trend of the bank which states that with every unit change in year, the volume maintained by the bank will actually decrease by 98.11 units. This trend is more clearly understood from the following line graph.

Figure 4.14

Liquid Assets Trend



The above line graph 4.14 clearly projects NIBL in a steady uphill climb while the graph of NIC shows its downhill trend. This indicates that NIC has not been doing a good job maintaining the required level of liquid assets as compared to NIBL. This suggests that NIC may have a hard time in maintaining a sound liquid position in the market in future. The downhill projection of NIC may suggest its inability to generate cash to meet the obligations within one year.

4.2.2 Strengths/Weakness of the Credit management of the Commercial banks

This section deals with the degree of management success in handling the credit of the bank. It does not deal with the SWOT analysis of the Credit department. The degree of the management success in handling the credits and advances of the bank is determined by the significance of a series of relationship of loans and advances among a number of factors such as net profit, liquid assets, total deposits etc. This relationship among different variables is determined by the Pearson's coefficient of correlation of the data of the respective banks. The objective behind this analysis is to understand and analyze the impact of the credit provided by the banks to its net profitability and liquidity position.

4.2.2.1 Relationship between the Total loans and advances and Total deposit

The relationship between the total credit (loans and advances) and total deposit is of great significance as it indicates the direction taken by the total credit with the changes in the volume of total deposit. A bank will be unable to provide large volumes of credit if it does not receive adequate and sufficient deposits in a timely basis. The following table shows the correlation coefficient between the total credit and total deposits denoted by 'r'. '$R^{2'}$ indicates the coefficient of determination and P.E denotes the probable error in the correlation coefficient between the variables.

Table 4.15

Correlation coefficient between Total Credit and Total Deposits

Banks	r	Direction	R^2	P.E.	6P.E.	Remarks
NIBL	0.9985	+ve	0.9970025	0.000825	0.004953	Significant
NIC	0.9867	+ve	0.9735769	0.007275	0.043545	Significant

Source: Appendix IV

The table above 4.15 clearly highlights the relationship between the total credit granted and the total deposit received. The positive relationship shown by their correlation coefficient points out the fact that the changes in each variable are taking place in the same direction, i.e., an increase in total credit is supported by an increase in the total deposit. This positive relationship is highly significant as the banks won't be able to sustain for a longer period if any one of these variables do not increase or decrease with one another.

4.2.2.2 Relationship between the Total loans and advances and Net Profit

The relationship between the total credit (loans and advances) with the net profit of the bank indicates how much credits granted has actually resulted in profit. In other words, it tries to analyze whether the total credit and net profit of the banks

are moving in the same direction or not. The following table shows the correlation coefficient between the total credit and net profit denoted by 'r'. '$R^{2'}$ indicates the coefficient of determination and P.E denotes the probable error in the correlation coefficient between the variables.

Table 4.16

Correlation coefficient between Total Credit and Net Profit

Banks	r	Direction	R^2	P.E.	6P.E.	Remarks
NIBL	0.9761	+ve	0.95277	0.013005	0.07803	Significant
NIC	0.8629	+ve	0.74459	0.070328	0.42196	Significant

Source: Appendix IV

The table above 4.16 clearly highlights the relationship between the total credit granted and the net profit earned by the banks. The positive relationship shown by their correlation coefficient pointed out the fact that an increase in total credit has resulted in an increase in the net profit. This positive relationship is considered highly significant as the increase in total credit has contributed in increasing the net profit of the banks.

4.2.2.3 Relationship between the Total Credit and Total Liquid Assets

The relationship between the total credit (loans and advances) and total liquid assets is also of great significance as the efficient and effective credit management requires an optimum level of liquidity. This is essential to ensure the long term survival and growth of the commercial bank. The following table shows the correlation coefficient between the total credit and total liquid assets is denoted by 'r'. '$R^{2'}$ indicates the coefficient of determination and P.E denotes the probable error in the correlation coefficient between the variables.

Table 4.17

Correlation coefficient between Total Credit and Total Liquid Assets

Banks	r	Direction	R^2	P.E.	6P.E.	Remarks

NIBL	0.9299	+ve	0.86471	0.03725	0.22351	Significant
NIC	0.7445	+ve	0.55428	0.12273	0.73640	Significant

Source: Appendix IV

The table 4.17 shown above pictures the relationship between the total credit given and the total liquid assets possessed by the banks. The positive direction shown by their correlation depicts the highly significant relationship between the two variables. This significant correlation indicates that the total credit granted is supported by the presence of significant volume of total liquid assets. This establishes the fact with the increase in total loans and advances, the banks have been carefully maintaining the volume of total liquid assets, so that the threats of acute liquidity crunch can be avoided.

4.2.2.4 Relationship between the Total loans and advances and Total Non-Performing Loans

The relationship between the total credit (loans and advances) and total non-performing loans indicates the volume of nonperforming loans raised from the total credit granted. This suggests the volume and chances of loans being default or not paid by the clients are of significant value or not. The following table shows the correlation coefficient between the total credit and total nonperforming loans denoted by 'r'. '$R^{2'}$ indicates the coefficient of determination and P.E denotes the probable error in the correlation coefficient between the variables.

Table 4.18

Correlation coefficient between Total Credit and Total Nonperforming Loans

Banks	**r**	**Direction**	**R^2**	**P.E.**	**6P.E.**	**Remarks**
NIBL	-0.4509	-ve	0.20331	0.219379	1.316274	Insignificant
NIC	-0.7704	-ve	0.59351	0.11193	0.67158	Insignificant

Source: Appendix IV

The above table 4.18 presents the correlation coefficient between total credit and total non-performing loans of the commercial banks. As depicted by the figures above, the correlation between these two variables is highly negative, which means, they are moving in the opposite direction. The negative relationship points out the fact that an increase in non-performing loans leads to a decrease in total volume of credit. This is bad news as the banks' capacity to provide loans would decline if more credits granted resulted in non-performing ones. This would result in a huge loss for the bank. However, if the volume of loans being default decreases with the increase in the volume of loan provided, this denotes the effective handling of loans and efficient handling of non-performing loans by the credit department. It also suggests that the staffs of the credit department have a quick learning curve when it comes to handing non-performing loans and credit. However, the table shows this relationship to be insignificant. It probably means that the volume of loan being default does not significantly depend upon the volume of the loan provided only. There may be several other reasons for the loans being default.

4.2.3. Testing of Hypothesis

Hypothesis test is usually used to find the dependency of one variable over another variable. It determines the validity of the assumption with a view to choose between two conflicting hypotheses about the value of the population parameter. It helps to decide on the basis of the sample data, whether a hypothesis about the population is likely to be true or false.

Here, we test the hypothesis of the relationship between the two variables of the bank as computed above.

4.2.3.1Test of hypothesis of the correlation between the total loans and advances and total liquid assets of both banks, NIBL and NIC.

The testing of the hypothesis of the correlation between the two variables is carried out in the following steps;

Hypothesis Setting:

Let H_0 be the null hypothesis and H_1 be the alternative hypothesis where,

Null Hypothesis: H_0: $\rho = 0$ i.e., the correlation between the total loans and advances and total liquid assets is not significant.

Alternative Hypothesis: H_1: $\rho \neq 0$ i.e., the correlation between the total loans and advances and total liquid assets is significant. (two tailed test)

Test Statistics under H_0 : Under H_0, the test statistic is

$$t = \frac{r}{\sqrt{1-r^2}} \times \sqrt{n-2}$$

Therefore, For NIBL, $t = 0.9299\sqrt{\frac{6-2}{1-0.9299^2}} = 5.05638$

And, For NIC, $t = 0.7445\sqrt{\frac{6-2}{1-0.7445^2}} = 2.2303$

Degree of freedom = n-2 = 6-2 = 4

Critical Value: The tabulated value of t at 5% level of significance for two tailed test and for 4 d.f. is 2.776(from t-table)

Decision: Since the calculated value of t is greater than the tabulated value of t for both banks, the null hypothesis H_0 is rejected and the alternative hypothesis H_1 is accepted. That is, the value of correlation coefficient between total credit and total liquid assets is significant.

4.2.3.2 Test of hypothesis of the correlation between the total loans and advances and total non-performing loans of both banks, NIBL and NIC.

Hypothesis Setting:

Let H_0 be the null hypothesis and H_1 be the alternative hypothesis where,

Null Hypothesis: H_0: $\rho = 0$ i.e., the correlation between the total loans and advances and total non-performing loans is not significant.

Alternative Hypothesis: H_1: $\rho \neq 0$ i.e., the correlation between the total loans and advances and total non-performing loans is significant. (two tailed test)

Test Statistics under H_0 : Under H_0, the test statistic is

$$t = \frac{r}{\sqrt{1-r^2}} \times \sqrt{n-2}$$

Therefore, For NIBL, $t = 0.4509\sqrt{\frac{6-2}{1-0.4509^2}} = 1.0103$

And, For NIC, $t = 0.7704\sqrt{\frac{6-2}{1-0.7704^2}} = 2.4167$

Degree of freedom = n-2 = 6-2 = 4

Critical Value: The tabulated value of t at 5% level of significance for two tailed test and for 4 d.f. is 2.776(from t-table)

Decision: Since the calculated value of t is lesser than the tabulated value of t for both banks, the null hypothesis H_0 is accepted. That is, the value of correlation coefficient between total credit and total non-performing loans is not significant. This shows that the volume non-performing loans do not significantly depend upon the volume of total credit given.

4.2.4. Findings of the Statistical Analysis

In conclusion to the analysis of above tables and hypothesis, following conclusions have been drawn from the statistical data:

- The analysis of the trend of liquid assets maintained by banks shows NIBL in a better position than NIC. The increasing regression equation of NIBL forecasts a steady increase in the volume of liquid assets maintained by the bank, while a

decreasing trend equation of NIC forecasts the decrease in the liquid assets. The downhill projection of NIC may suggest its inability to generate sufficient cash to remain liquid and to maintain the yearly obligations.

- The analysis of the credit management of the commercial banks shows the overall strength of the department in maintaining a healthy relationship between various variables in the credit sector. This includes the relationship of the total loans and advances with total deposits, net profit, total liquid assets and total non-performing loans. These relationships are measured by their correlation coefficients.
- The relationship between total credit and total deposit shows highly significant positive correlation. This indicates that the total deposit has increased with the increase in the total credit provided by the commercial banks, thus, strengthening their credit and liquidity positions.
- The relationship between total credit and net profit also shows a significant positive correlation. This indicates that the total credit provided has been contributing in increasing the net profit of the company. This, in turn, suggests the effective management of credit in earning high interest income and reducing the chances of credit defaults.
- The relationship between the total credit and total liquid assets also shows a highly significant positive correlation among them. This indicates that the banks have been effective in balancing the liquidity of the banks with their need to provide loans and advances.
- Finally, the relationship between the total credit and total non-performing loans shows a negative and insignificant correlation coefficient. This negative correlation indicates that the two variables are moving in opposite directions. Their insignificance reflects that the volume of credit provided does not necessarily result in the increase in non-performing loans. The increase in non-performing loans may be related to the decrease in total credit provided. However, it may also be due to other factors.

- The analysis of hypothesis testing done on the relationship of total credit with total liquid assets has shown to be of significant value while the testing done on the relationship between total credit and non-performing loans has shown to be of insignificant value.

CHAPTER V
SUMMARY, CONCLUSION & RECOMMENDATION

5.1 Summary

As the global financial sphere is struggling to revive its former glamour and affluence, the Nepalese counterpart is facing its worst liquidity crunch in decades. The recent news of many banks facing closure and financial irregularities has made the headlines in the corporate world. Many economists believe the bursting of overheated real estate bubble, capital flight, lack of effective corporate governance, and unregulated lending practices as the chief reasons behind the liquidity squeeze in the banking sector. The ripples created by the crunch have seeped into the daily lives of many Nepalese irrespective of the sector they work.

This domino effect seen in the banking institutions has intensified the need of effective corporate governance, clear and distinct government policies and the application of high ethical values among the top notch executives. Moreover, the crisis has stressed on the need for effective regulations in lending practices in order to maintain a healthy and sound liquidity positions of the banks. The need to balance the liquidity position with the credit practices has gained a louder voice in the past few years. Therefore, this research is a small step to understand the underlying relationship between the liquidity and credit management for the growth and survival of banking institutions. The research is based on the case study of two major banks, NIBL and NIC, over the period of past six financial years.

Liquidity and Credit management are the two most important dimensions of commercial banks. Liquidity management is the process of readily converting the assets and liabilities into cash immediately in a short span of time. Liquidity measures the current financial position of the company by measuring its capacity

to pay its dues on time. However, excessive liquidity leads to the loss of investment and profitability while its shortage will seriously impact the survival of bank by losing the goodwill and credibility from its depositors.

Credit is the term for the trust which allows one party to provide resources to another party where that second party does not reimburse the first party immediately, but instead arranges either to repay or return those resources at a later date. Most of the investment activities in modern banking are based on credit. Therefore, the credit policy of a bank provides the framework to determine whether or not to extend credit and how much credit to extend. Such policies recommend, analyzes and manages the credit risk, which is the possibility of borrower failing to meet its obligations in accordance to the agreed terms and conditions.

Therefore, this study is prepared to understand the underlying relationship between these two dimensions and to stress on the fact that the efficient and effective management of credit exposures require the same level of liquidity management, thus, ensuring long term survival and growth of commercial banks. This research study consists of five chapters namely introduction, review of literature, research design, data presentation and analysis and finally, summary, conclusion and recommendation.

The first chapter deals with the brief introduction of global and national financial situation that led to the study of credit and liquidity management in Nepal, taking two banks as samples as its main objective. This objective was supported by other specific objectives such as analyzing the trend of their liquid assets, evaluating the CRR maintained, analyzing the credits and advances provided and finding out the strengths of the credit management in handling credits through the analysis of the relationship between various variables.

The second chapter presented a review of literature, citing the major concepts and principles forwarded by well known economists and the previous studies done on the subject. A proper research methodology has been developed in the third chapter including the research design framework, mentioning the sources of data collected and data collecting procedures. A set of financial and statistical data analysis tools have also been determined for the analysis of data collected, such as liquidity ratio analysis, credit analysis, standard deviation tools, correlation coefficient, testing of hypothesis etc.

The final two chapters deal with the presentation and analysis of data and, summary and recommendations. The data interpretations have been well presented with tables and line graphs for easy perusal by readers. And appropriate recommendations have been provided based on the conclusion of above analyses.

5.2 Conclusions

In conclusion to the analysis of the comparative study between the two sampled banks NIBL and NIC on their liquidity and credit management, the study arrived at following conclusions:

Liquidity Position of Commercial Banks

The comparative analysis of liquidity situations of these two banks revealed NIBL to be stronger than NIC. The analysis of past six year financial statements of both banks reveal NIBL to have a higher current ratio than NIC with lower risk and variations in data. Similarly, NIBL have maintained a higher CRR than NRB requirements and hold a better liquidity risk ratio than NIC. Furthermore, the higher ratios of cash and bank balance to current assets and to current liabilities also indicate NIBL's dominance over NIC. Similarly, the high ratios of current deposits and lower fixed deposits of NIBL compared to its total deposits seem to reiterate the same fact.

These analyses conclude that NIBL has a better ability of meeting its obligations due in one year, and has a greater capacity of meeting its demand for cash as and when required. The higher maintenance of current deposit levels points to the NIBL's determination of strengthening its liquidity. Although the data of NIBL shows much fluctuation than NIC and a growing downward trend, the higher levels maintained by NIBL than compared to NIC has made it a more 'liquid-able' one.

Credit Management Practices of Commercial Banks

The comparative analysis of credit management practices of these two banks revealed NIC to be stronger than NIBL. The analysis of past six year financial statements of both banks reveal NIC to have a higher total loans and advances(credit) to total deposit ratio than NIBL with high risk and variations in data. Similarly, NIC have maintained a higher interest income to total credit ratio and a higher total credit to total assets ratio. However, the lower total loans and advances to total fixed deposits ratio of NIC seem to suggest NIC's less inclination of investing fixed deposits in granting credit than compared to NIBL. Similarly, the higher credit risk ratio and higher non performing loans of NIC reveal the high risk exposures of the credit provided by the bank and more chances of loan defaults. The six year average trend show both banks to have similar levels of loan loss provision to total loans and advances.

These analyses conclude that NIC grants a large proportion of its deposits to loans and advances than NIBL, thus earning higher interest incomes and confirming its dominance in lending activities. Its higher investment of total assets in providing credit also shows NIC's ability in utilizing the funds more effectively than NIBL. However, several factors place NIC's practices of managing credit as doubtful. The main reason for such doubt is the presence of high risks and high variability in

data. Although high risk shows the higher probability of earning higher returns, there is also an equal chance of loans being default. More investment in current deposits only shows NIC's ineffectiveness in earning high interest for a long term and less focus on liquidity. Moreover, the high credit risk ratio indicates NIC having to deal with more non performing loans. All of this points out the dubious credit management practices in NIC than in NIBL where the management has focused mainly on investing fixed deposits and has a lower credit risk exposure.

Statistical Analysis of the Commercial Banks

The comparative statistical analysis of these two banks involve the trend analysis of liquid assets maintained by both banks and the analysis of the credit department in handling the credit by measuring up its relationship with other variables. The trend analyses reveal NIBL having a better trend of maintaining liquid assets than NIC. The increasing regression equation of NIBL project an increase in the volume of liquid assets while the decreasing regression equation of NIC project a steady decrease in its liquid assets volume over the period of next 5years. Similarly, the relationship of total credit with other variables such as total deposits, net profit, total liquid assets and total non-performing loans was analyzed using correlation coefficient and their significance tested through hypothesis testing. It showed both banks having a significant correlation among the variables except the relationship of credit with nonperforming loans which was negatively correlated and the hypothesis tested the relationship as insignificant.

The analyses of above factors conclude an interesting picture of NIBL maintaining a better liquidity position than NIC while NIC utilizing its funds more effectively in granting credit than NIBL. Similarly, their credit management shows NIBL following a less risky credit approach by investing more fixed deposits as credit and advances for a long term while NIC is following a more risky credit approach by investing more current deposits in credit and advances. These approaches adopted

by both banks reveal their liquidity and credit management practices very distinctly. Due to the safe mode adopted by NIBL, it can be said that the bank is in a better position in terms of liquidity and less probability of having its loans being defaulted. Because of its investment in fixed deposits, NIBL is more able to earn high interest incomes for a longer period of time. On the other hand, this trend is exactly opposite in case of NIC. NIC has adopted a riskier approach in granting more credit from its total assets and current deposits while not maintaining sufficient liquidity. Its inclination towards utilizing current deposits as credit and advances reveal the short term profit gaining attitude of the credit department. This may prove to be harmful as already shown by the higher ratio of non-performing loans, and lesser liquidity position than compared to NIBL.

5.3 Recommendations

From the major findings of data analysis and conclusions gathered, following recommendations have been suggested:

- The better liquidity position of NIBL does not always suggest a good thing. It also refers to the large volume of cash strapped idle in forms of assets, bank balances and fixed deposits, thus blocking the way for investment. Therefore, it is suggested that NIBL slightly decrease their level of liquid assets and pave way for investment in government securities and for other credit and advances.
- Similarly, NIBL should attract more investors to increase its volume of fixed deposits. As NIBL utilize more fixed deposit funds for granting credit and advances, it is essential that the bank hike up the fixed deposit ratio. This may help the bank in earning a steady flow of high interest incomes for a longer period of time.
- In case of NIC, its deep inclination toward using current deposits for granting loans and advances should be slowed down and must take necessary steps in utilizing its fixed deposit level. This may help the bank earn high interest in-

come for a longer term and at the same time, maintain a reasonable liquidity level.

- Similarly, NIC should rethink its strategies and procedures in granting credit and advances so as to reduce the credit risk ratio. The credit provided by NIC is more risky than NIBL. Therefore, care must be taken to provide credit to those customers with sufficient credit-worthiness. For this, it is suggested that the bank take up frequent credit testing of their customers and often check the valuation of the collaterals provided.
- NIC should be taking more steps to decrease the rate of non-performing loans as the rise in such loans is hampering the loan recovery process and this is hurting its credit provision capacity. As already mentioned earlier, NIC should be taking necessary steps to ensure the loan borrowers are credit worthy and their collateral valuations is unlikely to decline soon.
- Both banks are recommended to improve their credit policy and formulate the legal provisions of credit extension in accordance to the NRB's rules and regulations. This may seriously discourage their short term earning attitude at the risk of the bank's liquidity and focus the management's attention in steering the company toward a sustainable growth and survival of the institution.
- The overall conclusion from this research study points to the fact that none of the banks have adopted a more balanced management of their liquidity and credit position. One is more liquid while the other provides more risky assets. Therefore, it is strongly recommended that both banks take a balanced approach in maintaining a healthy liquidity level with optimum investment in performing loans. Effective and efficient utilization of funds for investing in credit and advances should be encouraged, not just for short term gain, but must target a long term profit period.
- Apart from these, it is strongly recommended that the banks comply with the NRB's rules and regulations and adopt more effective corporate governance in its operations. In times of crisis, the banks should avoid risky projects and must

take necessary actions to safeguard the interests of its depositors and customers. The banks should regulate its lending practices more frequently and avoid high provision of risky loans. Moreover, the management must step up the practice of high ethical and moral values in its operations and behavior.

These are some of the recommendations that would definitely improve the lending and liquidity situation of the banks and encourage towards a more balanced approach in liquidity and credit management.

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APPENDIX –I

- **RATIO ANALYSIS OF NEPAL INVESTMENT BANK LTD(NIBL)**

Summary of the Financial Transactions of NIBL from FY 2004/05 to 2009/10

(NPR in millions)

Details	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Current Deposits	Rs.1,583	Rs.1,706.00	Rs.2,175.0	Rs.3,139.0	Rs.3,757.0	Rs.4026
Fixed Deposits	Rs.3,212	Rs.5413.00	Rs.7,517.0	Rs.7,944.0	Rs.11,633	Rs.16,825
Total Deposit	Rs.14,255	Rs.18,927	Rs.24,489	Rs.34,451	Rs.46,698	Rs.50,094
Cash Reserve ratio	9.78%	13.61%	10.47%	10.91%	10.32%	7.77%
Total Loans &Advances	Rs.10,453	Rs.13,178	Rs.17,769	Rs.27,529	Rs.36,827	Rs.40,948
Cash and Bank balance	Rs.1340.0	Rs.2337.00	Rs.2,442.0	Rs.3,755.0	Rs.7,918	Rs.6816
Current Assets	Rs.15,741	Rs.20,987	Rs.26,830	Rs.37,902	Rs.51,949	Rs.56,168
Current Liabilities	Rs.14,533	Rs.19,365	Rs.24,913	Rs.35,136	Rs.48,013	Rs.51,632
Interest Income	Rs.887.00	Rs.1,173.00	Rs.1,585.0	Rs.2,194.0	Rs.3,267	Rs.4653
Non Performing loan	Rs.281.00	Rs.272.00	Rs.422.00	Rs.309.00	Rs.214.00	Rs.254.00
Total assets	Rs.16,063	Rs.21,330	Rs.27,591	Rs.38,873	Rs.53,010	Rs.57,305
Total Loan loss provision	Rs.327.00	Rs.402.00	Rs.483.00	Rs.533.00	Rs.586.00	Rs.630.00
Net Profit	Rs.232.00	Rs.350.00	Rs.501.00	Rs.697.00	Rs.901.00	Rs.1,265
Liquid Funds (Assets)	1095	1097.5	858.8	1352.3	1461.1	1506.8

Source: Annual Reports of NIBL

Calculation of the various Liquidity and Credit Analysis Ratios of NIBL

Fiscal year	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Current Ratio	1.08	1.08	1.08	1.08	1.082	1.09
CRR (%)	9.78	13.61	10.47	10.91	10.32	7.77
Cash & Bank balance to Total deposit Ratio	0.094	0.123	0.100	0.109	0.170	0.136
Cash & Bank balance to Current Assets Ratio	0.085	0.111	0.091	0.099	0.152	0.121
Cash & Bank balance to Current Liabilities Ratio	0.092	0.121	0.098	0.107	0.165	0.132
Fixed Deposit to Total Deposit Ratio	0.225	0.286	0.307	0.231	0.249	0.336
Current Deposit to Total Deposit Ratio	0.111	0.090	0.089	0.091	0.080	0.080
Total loan to Total Deposit Ratio	0.733	0.696	0.726	0.800	0.788	0.817
Interest income to Total loan Ratio	0.089	0.089	0.089	0.080	0.089	0.114
Total loans to Total Assets Ratio	0.651	0.618	0.644	0.708	0.695	0.715
Total loans to Fixed Deposit Ratio	3.254	2.435	2.364	3.465	3.166	2.434
Total LLP to Total loans Ratio	0.031	0.031	0.027	0.019	0.016	0.015
Credit Risk Ratio	0.027	0.021	0.024	0.011	0.006	0.006

- **RATIO ANALYSIS OF NEPAL INDUSTRIAL AND COMMERCIAL BANK LTD (NIC)**

Summary of the Financial Transactions of NIC from FY 2004/05 to 2009/10

(In millions)

Details	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Current Deposits	Rs.233.0	Rs.392.00	Rs.510.00	Rs.654.0	Rs.835.0	Rs.1,220
Fixed Deposits	Rs.2,931	Rs.4,065	Rs.4,075	Rs.5,876	Rs.7,580	Rs.7,554
Total Deposits	Rs.6,241	Rs.8,766	Rs.10,068	Rs.13,085	Rs.15,580	Rs.15,969
Cash Reserve Ratio	11.07	6.10	5.02	5.09	6.50	37.61
Total Loans &Advances	Rs.4,909	Rs.6,902	Rs.9,129	Rs.11,465	Rs.13,916	Rs.12,930
Cash and Bank balance	Rs.1,010	Rs.749.00	Rs.600.00	Rs.1,192	Rs.1,461	Rs.2,086
Current Assets	7447.00	10,342	Rs.11,524	Rs.15,043	Rs.18,490	Rs.20,012
Current Liabilities	Rs.6375	Rs.8959	Rs.10,208	Rs.13,401	Rs.16,230	Rs.16,622
Interest income	Rs.458.0	Rs.580.00	Rs.726.00	Rs.931.00	1,284.00	1,777
Non Performing loan	Rs.185.0	Rs.180.00	101.00	98.00	129.00	92.00
Total Assets	Rs.7,508	Rs.10,383.6	Rs.11,678.8	15,238.70	1,8751.00	20,309
Total Loan loss provision	198.00	246.00	187.00	201.00	236.00	197.00
Net Profit	114.00	97.00	159.00	243.00	317.00	450.00
Liquid Funds (Assets)	1095.0	1097.5	858.5	1352.3	1461.1	1506.8

Source: Annual Reports of NIC

Calculation of the various Liquidity and Credit Analysis Ratios of NIC

Fiscal year	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Current Ratio	1.17	1.15	1.13	1.12	1.14	1.20
CRR (%)	11.07	6.10	5.02	5.09	6.50	37.61
Cash & Bank balance to Total deposit Ratio	0.162	0.085	0.060	0.091	0.094	0.131
Cash & Bank balance to Current Assets Ratio	0.136	0.072	0.052	0.079	0.079	0.104
Cash & Bank balance to Current Liabilities Ratio	0.158	0.084	0.059	0.089	0.090	0.125
Fixed Deposit to Total Deposit Ratio	0.470	0.464	0.405	0.450	0.487	0.473
Current Deposit to Total Deposit Ratio	0.037	0.045	0.051	0.050	0.054	0.076
Total loan to Total Deposit Ratio	0.787	0.787	0.907	0.876	0.893	0.890
Interest income to Total loan Ratio	0.093	0.084	0.079	0.081	0.092	0.137
Total loans to Total Assets Ratio	0.654	0.665	0.782	0.752	0.742	0.637
Total loans to Fixed Deposit Ratio	1.675	1.698	2.240	1.951	1.836	1.714
Total LLP to Total loans Ratio	0.040	0.036	0.020	0.018	0.017	0.015
Credit Risk Ratio	0.038	0.026	0.011	0.009	0.009	0.007

Notes:

Current assets include: Cash Balance, Balance with NRB, Balance with Banks, Money at Call and Short notice, investments, loan, advances and bills purchased and other assets.

Current liabilities include: Bills payable, other liabilities, proposed dividend, income tax liabilities and deposit liabilities.

Liquid funds include: cash balance in both Nepalese and foreign currency, bank balance in NRB, commercial banks, other licensed institutions and in foreign banks.

APPENDIX –II

- **Calculation of Mean, Standard Deviation and Coefficient of Variation of various ratios**

1. Current Ratio

Banks	NIBL			NIC		
Fiscal Year	X_1	$X_1 - \bar{X}_1$	$(X_1 - \bar{X}_1)^2$	X_2	$X_2 - \bar{X}_2$	$(X_2 - \bar{X}_2)^2$
2004/05	1.08	-0.002	0.000004	1.17	0.018	0.000324
2005/06	1.08	-0.002	0.000004	1.15	-0.002	0.000004
2006/07	1.08	-0.002	0.000004	1.13	-0.022	0.000484
2007/08	1.08	-0.002	0.000004	1.12	-0.032	0.001024
2008/09	1.082	0	0	1.14	-0.012	0.000144
2009/10	1.09	0.008	0.000064	1.20	0.048	0.002304
Total	6.492	0	0.00008	6.91		0.004284
Mean	1.082	-	-	1.152	-	-

Source: Appendix I

Where, X_1 = Current Ratio of NIBL
X_2 = Current Ratio of NIC

Calculation:

Bank	Arithmetic Mean $(\bar{X}) = \frac{\sum X}{N}$	Standard Deviation $(\sigma) = \sqrt{\frac{\sum (x-\bar{x})^2}{n}}$	Coefficient of Variation $(C.V.) = \sigma/\bar{x} \times 100$
NIBL	$\bar{X}_1 = \frac{\sum X_1}{N_1} = \frac{6.492}{6} = 1.082\%$	$\sigma_1 = \sqrt{\frac{\sum (X_1 - \bar{X}_1)^2}{n_1}} = \sqrt{\frac{0.00008}{6}}$ = 0.00365%	$C.V. = \frac{\sigma_1}{\bar{X}_1} \times 100 = \frac{0.00365}{1.082} \times 100$ = 0.337
NIC	$\bar{X}_2 = \frac{\sum X_2}{N_2} = \frac{6.91}{6} = 1.152\%$	$\sigma_2 = \sqrt{\frac{\sum (X_2 - \bar{X}_2)^2}{n_2}} = \sqrt{\frac{0.004284}{6}} =$ 0.0267%	$C.V. = \frac{\sigma_2}{\bar{X}_2} \times 100 = \frac{0.0267}{1.152} \times 100 =$ 2.32

2. Total Loan to Total Deposit Ratio

Banks	NIBL			NIC		
Fiscal Year	X_1	$X_1 - \bar{X}_1$	$(X_1 - \bar{X}_1)^2$	X_2	$X_2 - \bar{X}_2$	$(X_2 - \bar{X}_2)^2$
2004/05	0.733	-0.027	0.000729	0.787	-0.07	0.0049
2005/06	0.696	-0.064	0.004096	0.787	-0.07	0.0049
2006/07	0.726	-0.034	0.001156	0.907	0.05	0.0025
2007/08	0.800	0.04	0.0016	0.876	0.019	0.000361
2008/09	0.788	0.028	0.000784	0.893	0.036	0.001296
2009/10	0.817	0.057	0.003249	0.890	0.033	0.001089
Total	4.56	-	0.011614	5.14		0.015046
Mean(%)	0.76	-	-	0.857	-	-

Source: Appendix I

Where, X_1 = Total Loan to Total Deposit Ratio of NIBL
X_2 = Total Loan to Total Deposit Ratio of NIC

Calculation:

Bank	Arithmetic Mean $(\bar{X}) = \frac{\sum X}{N}$	Standard Deviation $(\sigma) = \sqrt{\frac{\sum(x-\bar{x})^2}{n}}$	Coefficient of Variation $(C.V.) = \sigma/\bar{x} \times 100$
NIBL	$\bar{X}_1 = \frac{\sum X_1}{N_1} = \frac{4.56}{6} = 0.76 = 76\%$	$\sigma_1 = \sqrt{\frac{\sum(X_1 - \bar{X}_1)^2}{n_1}} = \sqrt{\frac{0.011614}{6}} = 0.044 = 4.4\%$	$C.V. = \frac{\sigma_1}{\bar{X}_1} \times 100 = \frac{4.4}{76} \times 100 = 5.79$
NIC	$\bar{X}_2 = \frac{\sum X_2}{N_2} = \frac{5.14}{6} = 0.857 = 85.7\%$	$\sigma_2 = \sqrt{\frac{\sum(X_2 - \bar{X}_2)^2}{n_2}} = \sqrt{\frac{0.015046}{6}} = 0.005 = 5\%$	$C.V. = \frac{\sigma_2}{\bar{X}_2} \times 10 = \frac{5}{85.7} \times 100 = 5.8$

#Note:

Same process was used to calculate the mean, standard deviation and coefficient of variation of other different ratios.

APPENDIX –III

Calculation of the Trend of Liquid Assets of Commercial Banks

NPR in millions

Banks	**NIBL**				**NIC**			
Fiscal Year	**Liquid assets(Y_1)**	**X_1 = x - 2007/08**	**X_1^2**	**X_1Y_1**	**Liquid assets(Y_2)**	**X_2 = x - 2007/08**	**X_2^2**	**X_2Y_2**
2004/05	1340.4	-3	9	-4021.2	1095.0	-3	9	-3285
2005/06	2354.9	-2	4	-4709.8	1097.5	-2	4	-2195
2006/07	2791.5	-1	1	-2791.5	858.8	-1	1	-858.8
2007/08	3755.0	0	0	0	1352.3	0	0	0
2008/09	7918.0	1	1	7918.0	1461.1	1	1	1461.1
2009/10	6185.9	2	4	12,371.8	1506.8	2	4	3013.6
Total(n)=6	24,345.7	0	19	8767.3	7,371.5	0	19	-1864.1

Source: Banking and Financial Statistics, Table No.10 and 19

Let the middle year be assumed as 2007/08. Then,

The trend line equation is given by:

$y = a + bx$ Where,

y = the regression line of dependent variable

a = constant

b = slope of the trend line or regression coefficient

x = independent variable

Here, $a = \frac{\sum Y}{N}$

And $b = \frac{\sum XY}{\sum X^2}$ where, X = x – middle year and N = No. of years

Now, the value of a and b can be calculated as follows:

We know:

For NIBL:

$a = \frac{\sum Y_1}{N} = \frac{\text{Rs.24,345.7million}}{6}$ = Rs. 4057.62

$b = \frac{\sum X_1 Y_1}{\sum X_1^2} = \frac{8767.3}{19} = 461.43$

Hence, the required trend equation for NIBL becomes;

y=Rs.4057.62 + 461.43x …… (i)

Similarly, in case of NIC:

$a = \frac{\sum Y_2}{N} = \frac{\text{Rs.7371.5million}}{6}$ = Rs. 1228.58million

$b = \frac{\sum X_2 Y_2}{\sum {X_2}^2} = \frac{-1864.1}{19}$ = -98.11

Hence, the required trend equation for NIBL becomes;

y=Rs.1228.58 – 98.11x …… (ii)

The above equations imply that if the value of independent variable is 0, the dependent value will be equal to the average value. Therefore, in the case of NIBL, when x=0, the liquid asset for that year will always be Rs.4057.62 million; and for every additional year, the yearly liquid asset will increase by Rs.461.43 units. The same can be said about NIC's trend line.

APPENDIX –IV

- **Calculation of Coefficient of Correlation between different variables**

1. Relationship(correlation coefficient) between Total loans and Advances and Total deposit

Let the Total loans and advances of NIBL and NIC be denoted by X_1 and X_2 respectively,

And the Total deposits of NIBL and NIC are denoted by Y_1 and Y_2 respectively.

Calculation of correlation coefficient of NIBL

Fiscal Year	NIBL(NPR in millions)				
	X_1	Y_1	X_1^2	Y_1^2	$X_1 Y_1$
2004/05	10,453	14,255	109265209	203205025	149007515
2005/06	13,178	18,927	173659684	358231329	249420006
2006/07	17,769	24,489	315737361	599711121	435145041
2007/08	27,529	34,451	757845841	1186871401	948401579
2008/09	36,827	46,698	1356227929	2180703204	1719747246
2009/10	40,948	50,094	1676738704	2509408836	2051249112
Total	146,704	188,914	4389474728	7038130916	5552970499

Source: Appendix I

We have,

$$\text{Coefficient of correlation}(r) = \frac{n\sum XY - \sum X.\sum Y}{\sqrt{\{n\sum X^2 - (\sum X)^2\}.\{n\sum Y^2 - (\sum Y)^2\}}}$$

Where,

n = No. of observations

$$\text{For NIBL, } r = \frac{6 \text{ x } 5552970499 - 146{,}704 \text{ x } 188{,}914}{\sqrt{\{6 \text{ x } 4389474728 - (146{,}704)^2\}.\{6 \text{ x } 7038130916 - (188{,}914)^2\}}}$$

Therefore, r = 0.9985.

The probable Error of correlation coefficient is calculated as:

$$\text{P.E.} = \frac{0.6745(1-0.9985^2)}{\sqrt{6}} = 0.00082$$

6PE = 0.004953

Calculation of correlation coefficient of NIC

Fiscal Year	NIC(NPR in millions)				
	X_2	Y_2	X_2^2	Y_2^2	X_2Y_2
2004/05	4,909	6,241	24098281	38950081	30637069
2005/06	6,902	8,766	47637604	76842756	60502932
2006/07	9,129	10,068	83338641	101364624	91910772
2007/08	11,465	13,085	131446225	171217225	150019525
2008/09	13,916	15,580	193655056	242736400	216811280
2009/10	12,930	15,969	167184900	255008961	206479170
Total	59,251	69,709	647360707	886120047	756360748

Source: Appendix I

Again,

$$r = \frac{6 \times 756360748 - 59{,}251 \times 69{,}709}{\sqrt{\{6 \times 647360707 - (59{,}251)^2\}.\{6 \times 886120047 - (69{,}709)^2\}}}$$

Therefore, r = 0.9867

The probable Error of correlation coefficient is calculated as:

$$P.E. = \frac{0.6745(1-0.9867^2)}{\sqrt{6}} = 0.007257$$

6PE = 0.043545

Conclusion: Since r > 6P.E for both banks, the correlation coefficient is significant.

2. <u>Relationship between total loans and advances and Net profit</u>

Let the Total loans and advances of NIBL and NIC be denoted by X_1 and X_2 respectively,

And the Net Profit of NIBL and NIC are denoted by Y_1 and Y_2 respectively.

Calculation of correlation coefficient of NIBL

Banks	**NIBL(NPR in millions)**				
Fiscal Year	X_1	Y_1	X_1^2	Y_1^2	$X_1 Y_1$
2004/05	10,453	232	109265209	53824	2425096
2005/06	13,178	350	173659684	122500	4612300
2006/07	17,769	501	315737361	251001	8902269
2007/08	27,529	697	757845841	485809	19187713
2008/09	36,827	901	135622792	811801	33181127
2009/10	40,948	1,265	167673870	1600225	51799220
Total	146,70	3946	438947472	3325160	120107725

Source: Appendix I

We have,

$$\text{Coefficient of correlation}(r) = \frac{n\sum XY - \sum X.\sum Y}{\sqrt{\{n\sum X^2-(\sum X)^2\}.\{n\sum Y^2-(\sum Y)^2\}}}$$

Where,

n = No. of observations

$$\text{For NIBL, } r = \frac{6 \text{ x } 120107725 - 146{,}704 \text{ x } 3946}{\sqrt{\{6 \text{ x } 4389474728 - (146{,}704)^2\}.\{6 \text{ x } 3325160 - (3946)^2\}}}$$

Therefore, r = 0.9761

The probable Error of correlation coefficient is calculated as:

$$P.E. = \frac{0.6745\,(1-0.9761^2)}{\sqrt{6}} = 0.013005$$

6PE = 0.07803

Calculation of correlation coefficient of NIC

Banks	NIC(NPR in millions)				
Fiscal Year	X_2	Y_2	X_2^2	Y_2^2	X_2Y_2
2004/05	4,909	114	24098281	12996	559626
2005/06	6,902	97	47637604	9409	669494
2006/07	9,129	159	83338641	25281	1451511
2007/08	11,465	243	131446225	59049	2785995
2008/09	13,916	317	193655056	100489	4411372
2009/10	12,930	450	167184900	202500	5818500
Total	59,251	1380	647360707	409724	15696498

Source: Appendix I

Again,

For NIC, $r = \frac{6 \times 15696498 - 59,251 \times 1380}{\sqrt{\{6 \times 647360707 - (59,251)^2\}.\{6 \times 409724 - (1380)^2\}}}$

Therefore, r = 0.8629

The probable Error of correlation coefficient is calculated as:

$$P.E. = \frac{0.6745\,(1 - 0.8629^2)}{\sqrt{6}} = 0.070328$$

6PE = 0.421968.

Conclusion: Since r > 6 P.E. for both banks, the correlation coefficient is significant.

 # Notes:

Other correlation coefficients of other variables are calculated using the same process**.**