CHAPTER-1
INTRODUCTION

1.1 Background of the Study

Due to globalization of economy and market, present word economy has been more competitive and complicated. Every sort of change occurring in one sector of the world affects the other. A healthy economy is dependent on efficient transfers of fund from people who are not severs to firms and individuals who need capital. Without efficient transfer, the economy simply impossible without good system for allocating capital within the economy.

Nepal is a landlocked country economically based on agriculture. It occupies an area of 147181km sq and bounded by India and China. Nepal is one of the least developed countries with about 25 million people but it is very rich in natural resources but the resource is unutilized. The geographical variation has been standing as a challenge for development of the country. About more than 80% people are dependent on agriculture traditional agriculture system is used till now. The current situation of Nepalese economy is not satisfactory due to poor infra-structure, unutilized natural resources miserable agriculture, deficit trade, illiteracy, political instability and so on.

Like blood is necessary for human beings, finance is for business organizations and industries. Each and every business organization should base their decision making in financial management. Financial management is mainly concerned with the acquisition and utilization of funds. For this, financial market plays vital role in utilizing financial resources for expanding productive sectors in the

country. It mobilizes unproductive and unutilized financial resources towards productive sectors and helps in expanding economic growth of the country.

Capital structure plays a vital role in accelerating the economic growth of nation, which in turns in basically determined, among others by saving and investment propensities. But the capacity of saving in the country is quite low with relatively higher marginal propensity of consumption. As a result developing countries are badly trapped into the vicious circle of poverty. The basic problem for the developing countries is raising the level of saving and investment. In order to collect the enough saving and put them into productive channels, financial institution like banks is necessary. It will either be diverted abroad or used for unproductive consumption or speculative activities.

Banks are among the most important financial institutions in the economy of the country. Bank is a business establishment that safeguards people's money and uses it to make loans and investments. A bank is an organization concerned with the accumulation of the idle money of the general public for the purpose of advancing to others for expenditure or investment. A bank is the institution, which accepts deposits from the public and in turn advances loans by creating credit.

Banks are the institutions that provide the funding required starting the business to those with skills and desire to operate the business collecting from those with the money but no skill or time to operate the business. Bank is a resource of mobilizing institution, which accepts deposit from various sources, and invests such accumulated resources in the fields of agriculture, commerce, trade and industry.

In other words, banks are the institutions offering deposits subject to withdrawal on demand and making loans of a business nature. Banks offers wide range of financial services like credit, savings, payments services etc.

Commercial Banks

Commercial banks means a bank which operates currency exchanges transactions, accept deposits, provides loan performs dealing relating to commerce except the banks which have been specified for the cooperative, agriculture, industry or other similar specific objectives. There are 25 commercial banks in Nepal.

1.2 History of Bank

When, where and how the modern banking actually came in existence cannot be pointed out. But from the different historical facts it reveals that some banking activities have been carried out since the time immemorial. At that time merchants, money lenders, goldsmiths, etc performed the banking transactions. Latter the transactions started increasing and they became the activities of money exchange securing the valuable goods, deposit money, lending money and so on. For all these types of activities written receipts began to be used and the modern banking started. In the historic age sources say that goldsmiths and money lenders contributed to large extent in the growth of banking system. They used to store peoples gold charging nominal charges issued receipts to the depositors, which was good for payments. Latter they started advancing money charging interest on it. So the goldsmiths and money lenders started performing the functions of modern banking i.e. accepting deposits and advancing loans. However, the modern banking originated in Italy. The word bank was derived from the Italian word “Banco” which means accumulation of money or stock. Bank as an institution was originated from Italy. The bank of Venice which was established in 1157 A.D was the first bank in the history of banking and it was established to finance the monarch in the wars. The Bank of Barcelona Spain

which was established in 1404A.D. was the second bank in the World and then. The Bank of Genoa was set up in 1407 AD.

The first central bank though was the bank of England which was established in 1844 A.D. Banking has come to the present advanced form through various stages. Some sorts of banking activities have been carried out since the time immemorial. Traditional forms of banking were traced during the civilization of Greek, Rome and Mesopotamia. With large banking firms established in Florence, Rome, Venice and other Italian cities the banking activities spread through out the Europe and it slowly spread through out the world.

1.3 Banking industry in Nepal

The specific date of beginning of money and banking transaction in Nepal is unknown. The banking functions were carried out in unorganized sectors. It is found that minted coins, copper coins, silver coins, and gold coins were introduced by different kings.

Institutional development of modern banking in Nepal had begun from early 1990s. With the establishment of Nepal Bank Limited in 1994 B.S, the new era of banking sector had started in Nepal. As a central bank, Nepal Rastra Bank was established in 2013 B.S. under the provision of Nepal Rastra Bank Act 2012, with the objectives of helping in the development of monetary and financial sector by undertaking various functions.

Another step was added when Rastriya Banijya Bank was established in 1966(2022BS) under the Banijya Bank Act 1965(2021BS). Likewise, Agriculture Development Bank was established in 1965(2024BS) with the

objective of increasing the life standard of those people who are involved in agriculture.

The banks opened before the decade of 1980s were by the government. No private sector was permitted to open banks in Nepal. The process of development adopted liberalized economic policies to develop the financial sector. As a pre-condition to economic liberalization, the Foreign Investment and Technology Transfer Act, 1981 came into existence. The government allowed private sectors to open banks. Joint venture projects were also allowed. Many joint venture commercial banks and financial institutions were established. As a result, Nepal Arab Bank Limited was established as a first joint venture commercial bank in 1985 under the provision of Commercial Bank Act, 1974 and Company Act 1965. Then, Nepal Indosuez Bank Limited was established in 1985 and Nepal Grindlays Bank Limited in 1986. In 2001, the name of Nepal Grindlays Bank Limited has been changed into Standard Chartered Bank Nepal Limited and Nepal Indosiez Bank Limited has been changed into Nepal Investment Bank in 2002, which has not foreign share now. After the restoration of multiparty democracy, the newly formed government adopted liberalized policies aimed at accelerating economic growth and considerably reducing state interference in business. The governments encouraged foreign and private investment by offering attractive incentives and facilities including 100% foreign ownership in all but few sectors. This help to create conductive business environment for banking. As a result, additional commercial banks came into existence. When the internal violence shows green signal to manage and Nepal Rastra Bank make ease for rules and regulations, many new commercial banks are coming existence and existing development

banks and financial institutions are upgrading them as commercial banks. At present there are 25 commercial banks registered and operated in Nepal.

Table no. 1.1

List of Commercial banks				
S.No	**Name**	**Operation Date(A.D.)**	**Head Office**	**Paid Up Capital (Rs.In Million)**
1	Nepal Bank Limited	1937/11/15	Kathmandu	380.4
2	Rastriya Banijya Bank	1966/01/23	Kathmandu	1172.3
3	Agriculture development Bank limited	1968/01/02	Kathmandu	9278.00
4	NABIL Bank Limited	1984/07/16	Kathmandu	689.2
5	Nepal Investment Bank Limited	1986/02/27	Kathmandu	1203.00
6	Standard Chartered Bank Nepal Ltd.	1987/01/30	Kathmandu	620.80
7	Himalayan Bank Limited	1993/01/18	Kathmandu	1013.50
8	Nepal SBI Bank Limited	1993/07/07	Kathmandu	874.50
9	Nepal Bangladesh Bank Limited	1993/0605	Kathmandu	744.10
10	Everest Bank Limited	1994/10/08	Kathmandu	831.40
11	Bank of Kathmandu Limited	1995/03/12	Kathmandu	603010
12	Nepal Credit & Commerce Bank Ltd.	1996/10/14	Rupendehi	1275.80
13	NMB Bank Limited	1996/11/26	Kathmandu	1000.00
14	Lumbini Bank Limited	1998/07/17	Chitwan	750.00
15	Nepal Industrial & Commercial Bank Limited	1998/07/21	morang	792.00
16	Machhapuchhre Bank Limited	2000/10/03	Kaski	821.00
17	Development Credit Bank Limited	2001/01/23	kathmandu	301.00
18	Kumari Bank Limited	2001/04/03	Kathamndu	900.00
19	Laxmi Bank Limited	2002/04/03	Parsa	732.00
20	Siddartha Bank Int. Limited.	2002/12/24	Kathmandu	790.00
21	Glibal Bank Limited	2007/06/21	Kathmandu	560.00
22	Citizens Bank Limited	2007/10/12	Kathmandu	700.00
23	Prime Bank Limited	2007/09/24	Kathmandu	700.00
24	Sunrise Bank Limited	2007/10/12	Kathmandu	700.00
25	Bank of Asia Nepal	2007/10/12	Kathmandu	700.00

Source: www.nrb.org.np

1.4 Function of Commercial Banks

The main functions of commercial banks include:

i. accepting deposits in the forms of current,
ii. saving and fixed deposits**,** providing short, medium and long term loans,
iii. acting as an agency in transfer of money, make payment on commission basis for the cheque, draft, bill of exchange etc. by the customer,
iv. buying and selling shares and debentures of any company and government bonds
v. collecting interests on debenture and government bonds, dividend on shares and funds from other banks for its customers
vi. making payments on insurance premium, rent, income tax, school fees, telephone bills to the concerned offices on behalf of customers
vii. carrying out the foreign currency exchange, and
viii. helping in foreign trade etc.

Moreover, other functions include: to protect the precious jewelleries; to provide travelers cheque, to underwrite the debentures; to issue credit card, debit card, master card, visa card etc.; to create credit on the specific basis and expand credit and so on

1.5 Introduction to Himalayan Bank Ltd. and Bank of Kathmandu Ltd.

Himalayan Bank Ltd.

Himalayan Bank Ltd., the first commercial bank of Nepal with maximum shareholding by the Nepalese private sector, was incorporated in 1992 by a few distinguished business personalities of Nepal in partnership with Employees Provident Fund and Habib Bank Limited, one of the largest commercial bank of Pakistan. Besides commercial activities, the bank also offers industrial and merchant banking. The bank started its operation with the Authorized capital of Rs. 100 million, issued capital of Rs. 65 million, and paid up capital of Rs. 53.63 million.

Bank of Kathmandu Ltd.

Incorporated in 1993, in collaboration with SIAM Commercial Bank PCC, Thailand, Bank of Kathmandu started operation in March 1995. Out of 30% holding diluted 25% holdings to the Nepalese citizens in 1998. It is a culmination of a comprehensive vision of the promoters to take the Nepalese economy to a newer realm in the global market. Promoters own 42% of total share of the bank and general public owns the other 58%.
The bank started its operation with the authorized capital of Rs. 100 million, issued capital of Rs. 50 million, and paid up capital of Rs. 46.35 million.

1.6 Capital Structure of Commercial Banks

Every business firm or Bank requires the initial funds for its sound operation. Capital is the blood of the business. A business firm or enterprises cannot run their business without capital. Enterprises whether they are government owned or privately owned have to make pertinent capital structure decision in identifying exactly how much capital is needed to run their operation smoothly.
The fund required are generated usually by two means: equity and debt, equity provides the ownership of the firm to the shareholders. On the other hand, debt is a fund borrowed with fixed charges to be paid periodically to the debtor, the term capital structure refers to the proportion of debt and equity capital or the

composition of long term sources of finance, such as preference capital debentures, long term debt and equity capital including services and surpluses (i.e. retained earning and excluding short term debts.)
The term capital structure refers to the mix of different types of funds a company uses to finance its activities. Capital structure varies greatly from one company to another. For example, some companies are financed mainly by shareholders finds whereas others make much greater use of borrowings.

Firstly, we must decide what we mean by a good capital structure. This would be a capital structure, which results in a low overall cost of capital for the company, that is, a low overall rate of return that needs to be paid on funds provided. If the cost of capital is low, then the discounted value of future cash flows generated by the company is high resulting in a high overall company value. The objective is therefore to find the capital structure that gives the lowest overall cost of capital and consequently, the highest company value.

The capital structure decision affects the total value of the firm. The proper balance between debt and equity is necessary to ensure a trade off between risk and return to the shareholders. The capital structure of the bank should be such that leads to the value maximization. The optimal capital structure, i.e. the capital structure with reasonable proportion of debt and equity minimizes the opportunity cost of capital and maximizes the shareholders' wealth.

1.7 Focus of the study

As we have stated above the meaning and importance of the capital structure of financial institution. The main purpose of this study is to evaluate the capital structure of the private banks. The capital structure decision is a major decision, which affects the overall cost of capital, total value of the firm and earning per share.

This study is based upon the study of overall cost of capital structure by using various relative measurement tools. It considered earning per share, dividend per share, return on total assets etc. Optimal capital structure plays vital role in every organization. So, this study tries to evaluate the optimality of their capital structure using various financial variables for the purpose of comparative evaluation.

Hence the focus of this study mainly deals with the effects of the capital structure on the growth of the firm and the extent to which the capital structure policy is followed by the commercial banks.

1.8 Statement of the problems

Bank plays a significant role in the economic development of the country by extending credit to the people. Although banking industry in Nepal is making remarkable progress and growth. It's not without the problems. At the present context, the main problem faced by the business sector as well as bank is the unstable political and economic condition of the country.

Another problem faced by the banking industry is the lack of optimal capital structure in the commercial banks. The success and prosperity of a bank relies heavily on maximization of the wealth of the shareholders or return on equity. Nepalese banks do not take the capital structure concept seriously. The combination of debt and equity used in the capital structure is not proportionate which in turn affects the value maximization of the bank

The present study will try to analyze and examine the practice of capital structure in the commercial banks in Nepal. This study specially deals with the following problems.

i) Whether the capital structure affects the growth of a bank or not?
ii) To what extent the capital structure policy is followed by the commercial banks.
iii) What are the main problems faced by the commercial banks in developing and implementing the capital structure policy.

Therefore this study deals with the problems in terms of capital structure formation and its overall effects and its difficulties in implementation and after its implementation.

1.9 Objectives of the study

The main objective of the study is to analyze the behaviour of the capital structure of the selected commercial banks. The study involves 5 yrs financial data of two commercial banks to evaluate, compare and examine their capital structure. The main objectives of selected commercial banks are given below:

i) To study and evaluate the role of capital structure on the growth of the commercial banks in Nepal.
ii) To analyze the capital structure of the commercial banks in Nepal.
iii) To examine the relationship of capital structure with variables such as earning per share, dividend per share and net worth.
iv) To provide suggestions on the basis of findings for future growth of the banks under study.

1.10 Significance of the study

First of all, it is the fact that this study is undertaken to apply the theoretical concept and knowledge of Financial Management to the practical aspect as a partial fulfillment of the requirement of Master of Business Study (MBS) under faculty of Management, Tribhuvan University. This study would contribute an overall look at the coming up new capital policies to be taken by the bank and the factors that should be taken in consideration while preparing the next year's policy. The bank which would be included in as sample would likely see the point of their weakness and significance of this study on their future plan.

This study is also important for owners, creditors and potential investors to make their attitude on investment. The study will also have significance for management, policy maker, stakeholder of the banks and others those having investment on capital structure decision.

The main significance of the study is:

1. It will be valuable property for the library use.
2. The study will be used as a pilot work for the future research.
3. It will be helpful to other Commercial Banks and others.

1.11 Limitations of the study

Each study is conducted under some constraints and limitations. Likewise this study is also limited by some common constraints. This study is prepared for partial fulfillment of MBS degree which has to be finished within a short span of time and under different strains. Some of the basic limitations are as follows:

i) This study is based on secondary data.
ii) It covers data of only five fiscal years.

iii) Only factors considering capital structure are taken into consideration.

iv) Only two banks are taken as the sample for the study among whole population.

1.12 Organization of the study

This study has been organized into five chapters. Each is developed to some aspect of the study to effect of capital structure.

The chapters are as follows:

1. Introduction
2. Review of literature
3. Research methodology
4. Presentation and analysis of data
5. Summary, conclusion and recommendation

- The first chapter contains the introduction part of the study. It gives some earlier history of concern title and some related term as will. It present systematically of objective of the research, problem of the study, significant of the study and limitation of the study.
- The second chapter is review of literature which presents some principles, theoretical aspects, some pilot studies had been made under some report, journals and some relevant studies on the topics of this thesis.
- Similarly, the third chapter explains the research methodology including research design, nature and resource of data, sample size, data collection

procedure, tabulation, analysis and interpretation of data, period covered of research and review of literature.

- The fourth chapter presents analysis and interpretation data. It particularly concentrated to trace out the fact by the given data through the primary and as well as secondary.
- The fifth chapter concerns summary, findings and suggestion for future improvement of corporation.

CHAPTER-2
REVIEW OF LITERATURE

2.1 Introduction

Literature review is basically a 'stock taking' works of available literature. To make the research more realistic review of literature is required. It provides significant knowledge in the field of research. Thus the review of various books, research studies and articles have been used to make clear about the concept of capital structure as well as to recall the previous studies made by various researches.

The purpose of literature review is thus is find out what research studies have been conducted in ones field of study, and what remains to be done. Review of literature provides foundation to the study. The literature survey also minimizes the risk of pursuing the dead end in research. To make meaningful research study conceptual review has been done through the study of various books, journals and articles and researches conducted by the previous researches in the

field of capital structure ie research work, thesis and dissertation etc. so, this chapter ‘literature review’ has been divided into the following sections.

- Review of Books
- Review of Journals
- Review of Article
- Review of Thesis

2.2 Review of Books

In this section, various books are reviewed that are written by the different writers that make clear about the conceptual foundation of capital structure. It helps to assess new idea by examining views of different writers and scholars.

2.2.1 Conceptual Framework

Capital structure is the mix (or proportion) of a firm's permanent long term financing represented by debt, preferred stock and common stock equity. (Van Horne, 1997:240)

The financial manager is concerned with determining the best financial mix or capital structure where the optimal financing mix would exist, in which market price per share could be maximized. (Pandey, 1988:203)

Capital structure of the firm is the permanent financing represented by long term debt, preferred stock and shareholder's equity. Thus, a firm's capital structure is only part of its financial structure. (Weston and Brigham, 1978:565)

Capital structure analysis is the basis for analyzing the usefulness of accumulation from different sources of capital composition of capital is another factor, which affects the profitability. Loan capital dominant enterprises have less chance for prosperity despite of their huge profits. (Kuchhal, 1961:525)

Sound capital structure is required to operate Business smoothly and achieve the business goal. Capital structure is concerned with analyzing the capital composition of the company. (Weston & Brigham, 1978:555)
Capital structure is one of the most complex areas of financial decision making due to its interrelation with other financial decision variables. The success and failure of the enterprise depends on the ability of top management to make appropriate capital structure decision.

2.2.2 Theories of Capital Structure

Capital structure is an important subject, especially for firms. A bad capital structure is more expensive than a good capital structure.
Firms raise investment funds in a number of different ways. A firm's mix of these different sources of capital is referred to as its capital structure.
Basically, the theories of capital structure are distinguished into 6 different groups.

- Traditional theory
- Modigliani - Miller theorem
- Trade off theory
- Free Cash Flow theory
- Pecking Order theory
- Stakeholder theory

2.2.2.1. Traditional Theory

The first theory is called the "traditional theory". Supposrters of this theory believe that the lowest weighted average cost of capital (WACC) will maximize the firms" market value. This means the existence of an optimum relation between debts and equity but it is very difficult to reach that point.
Although it is cheaper to finance with debt, this theory certainly rejects to finance all with debt because after a certain level of debt the risk of non-payment increases. In this case shareholders and debt financiers demand a higher compensation.

2.2.2.2 Modigliani - Miller Theorem

The next theory is the most important theory, although it is not a realistic theory. The Modigliani -Miller theorem states that if the capital structure decision has no effect on the cash flows generated by a firm, the decision also will have no effect - in absence of transaction costs - on the total value of the firm's debt and equity. This means that there is no relationship between a firm's market value and the capital structure. Profitability of a firm's activities is the only factor that determines the market value.
This theory is based on a perfect capital market. The only market imperfections they admit are corporate taxes. In short, the assumptions of the Modigliani - miller theorem are (JC van Horne, 1995):

1. Capital markets are perfect
   - Information is free of costs and widely available.
   - No transaction cost.
   - Investors behave rational.
2. Every firm has perpetual flows of money with equal time values
3. Companies can be divided in homogeneous risk classes
4. There are no taxes.

2.2.2.3 Trade off Theory

The third theory is called the (static) trade off theory. The trade off between the costs and returns of debt financing determines the optimum debt ratio. Firms consider this ratio as a target debt ratio, because this ratio will maximize the market value of a corporation. Myers assumes that firms need to adapt their capital structure to reach that ratio. But an adaptation of the capital structure needs time and costs money. Therefore, it is possible that present temporary debt ratios differ from the target ratios.
Or, as Myers formulated it:
"A static trade off framework, in which the firm is viewed as setting a target debt-to-value ratio and moving gradually towards to it, in much the same way that a firm adjusts dividends to move towards a target payout ratio" (Myers, 1984:576)

2.2.2.4 Free Cash Flow Theory

In the contrary of the trade off theory, in which a firm strives after a maximization of the market value, the free cash flow theory presumes that there are enormous conflicts of interest between shareholders and stakeholders. This implies that manager's decisions don't always maximize the market value of the firm (Jensen, 1986:324)
A free cash flow is the balance of money, when all projects (with positive net present values) are financed. Debt reduces the agency costs of free cash flow by reducing the cash flow available for spending at the discretion of managers (Jensen, 1986:324). Debt also reduces the freedom of decisions, because of firm is forced to pay at certain times interest and payoffs. There will always be risk that a firm won't be able to pay interest and payoffs in future times. This risk causes managers to lead and organize a firm more efficient.

2.2.2.5 Pecking Order Theory

Myers also shows another view of capital structure, not the static trade off theory, but also the pecking order theory. This fifth theory assumes that firms have perforations by choosing a way to finance their projects. The sequence of investment resources is restricted by problems caused by asymmetrical information between managers and potential investors. The following assumptions are made by this theory. (Myers, 1984)

1. Firms prefer internal ways to finance projects
2. Firms adapt their target dividend payout ratios to available investment resources
3. Internal resources of a firm are fluctuating because of unpredictable fluctuations of profitability
4. When firms need extra resources, they prefer the safest way of getting funds; this means that firms prefer debt to convertible stocks and common stocks.

The result of this pecking order theory is that a firm doesn't have a certain target debt ratio. The target ration is dependant on the way a firm financed its projects in the past. This theory also pays attention to costs of asymmetrical information and costs of bankruptcy.

When these costs exist, a firm doesn't always choose to finance projects with a positive net present value. Not a positive net present value determines whether a firm finances a project or not, but the way in which a firm is able to finance their projects.

Baskin researched the validity of this theory in 1989. He made the following conclusion:

The accumulated evidence in favor of the Pecking order hypotheses is now substantial. Now it is possible to provide pecking order behavior with a rational theoretical basis, and there seems no longer any reason to ignore the manifest empirical evidence.

2.2.2.6 Stakeholder Theory

Cornell and Shapiro (1987) assume that not only investors have an interest in a firm. There are different groups of non-investor stakeholders, and some of them have a lot of influence in the financial policy of a firm. Or, as Cornel and Shapiro wrote: Financial structure may also depend on a firm's net organizational capital and on the nature of its stakeholders. Examples of non-investor stakeholders are customers, employees and suppliers.

Non-investor stakeholders hold implicit claims. Implicit claims are non-written promises and rights, such as the right t provide service to customers or job-security for employees.

2.2.3 Approaches to Capital Structure

- Traditional approach
- Net income approach
- Net operating income approach
- Modigliani-Miller's approach

All the above approaches are based on some common assumptions, which are as follows:

Basic assumptions and definitions: (Weston and Brigham, 1992:741)

1. Only two types of capital are employed, long term debt and common stock.
2. There is no tax on corporate income.
3. The firm's total assets are fixed, but its capital structure can be changed immediately by setting debt to repurchase common stock, or stock to retire debt.
4. All earnings are paid out as dividends.
5. All investors have the same subjective probability distributions of expected future operating earnings (EBIT) for a given firm: that is, investors have homogeneous expectations.
6. The operating earnings of the firm are not expected to grow, that is, the firm's expected EBIT is same in all future periods.

7. The firm's business risk is constant over time and is independent of its capital structure and financial risk
8. The firm is expected to continue indefinitely.

In addition to these assumptions, it uses the following basic definitions and symbols:

S = total market value of the stock. (Equity)

B = total market value of the bonds (Debt)

V = total market value of the firm =S+B

EBIT = earnings before interest and taxed= net operating income (NOI)

I = Interest payments

Debt

$$CostofDebt(Kd) = \frac{Interest}{Debt} = \frac{I}{B}$$

$$ValueofDebt(B) = \frac{Interest}{Kd} = \frac{I}{Kd}$$

Equity or common stock

$$CostOfEquityCapital(Ks) = \frac{d1}{P0} + g$$

where,

$d1 = NextDividend$

$P0 = Currentpricepershare$

$g = ExpectedGrowthRate$

Overall or Weighted Average cost of capital

$$K = Kd(B/V) + Ks(S/V) = \frac{Kd(B)}{B+S} + \frac{Ks(S)}{B+S}$$

The total value of the firm is thus,

$$V = B + S = \frac{I}{Kd} + \frac{EBIT - I}{Ks}$$

2.2.3.1. Traditional approach

The traditional view of capital structure, which is also known as an Intermediate approach, is a compromise between the Net Income Approach and the Net Operating Income Approach. It states that when a company starts to borrow, the advantages outweigh the disadvantages. The cheap cost of debt, combined with its tax advantage, will cause the WACC to fall as borrowing increases. However as gearing increases, the effect of financial leverage causes shareholders to increase their required return (i.e., the cost of equity rises). At high gearing the cost of debt also rises because the chance of the company defaulting on the debt is higher (i.e. bankruptcy risk). So at higher gearing, the WACC will increase.

According to this view, the value of firm can be increased or the cost of capital can be reduced by a judicious mix of debt and equity capital, and that an optimum capital structure exists for every firm. This approach very clearly implies that the cost of capital decreases within the reasonable limit of debt and then increases with leverage. Thus, an optimum capital structure exists, and it occurs when the cost of capital is minimum or the value of firm is maximum.

The statement that debt funds are cheaper than equity funds carries the clear implication that the interest rate of debt plus the increased yield on the common stock, together on the weighted basis will be less than yield (cost of equity) which existed on the common stock before debt financing (Barges, Alexander, 1963:11). That is the weighted average cost of capital will decrease with the use of debt up to a limit.

According to the traditional position, the manner in which the overall cost of capital reacts to changes in capital structure can be divided into three stages. (Soloman, Ezra, 1963:94)

First stage: Increasing Value

The first stage starts with the introduction of debt in the firm's capital structure. In this stage, the cost of equity (Ks) either remains constant or rises slightly with debt because of the added financial risk. But it does not increase fast enough to offset the advantage of low cost debt. In other words, the advantage arising out of the use of debt is so large that, even after allowing for higher cost of equity, the benefit of the use of the cheaper sources of funds are still available. As a result the value of the firm (V) increases as the overall cost of capital falls with increasing leverage.

During this stage cost of debt (Kd) remains constant or rises only modestly. The combined effect of all these will be reflected in increase in market value of the firm and decline in over all cost of capital (K)

Second stage: Optimum value

In the second stage, further application of debt will raise cost of debt and equity capital so sharply as to offset the gains in net income. Hence, the total market value of the firm would remain unchanged. While the firm has reached a certain degree of leverage, increase in it has a negligible effect on the value of the firm or overall cost of capital of the firm. The increase in the degree of leverage increases the cost of equity due to the added financial risk that offsets the advantage of low cost debt. Within the range of such debt level or at a specific point, the value of the firm will be maximum or the cost of capital will be minimum.

Third stage: Declining value

Beyond the acceptable limit of leverage, the value of the firm decreases with the increase of the leverage or the overall cost of capital increases with the additional leverage, this happens because investors perceive a high degree of financial risk, which increases the cost of equity by more than enough to offset the advantage of low cost debt.

The overall effect of these three stages is to suggest that the cost of capital is a function of leverage, i.e. first falling and after reaching minimum point or range it would start rising. The relation between cost of capital and leverage is graphically shown in figure below.

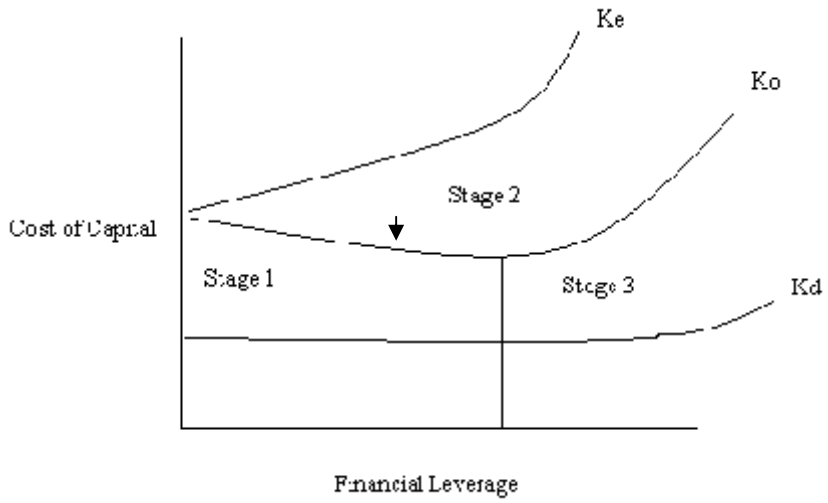

Figure 1:

Effect of leverage on cost of capital under traditional theory

In the above figure, it is assumed that Ks rise at an increasing rate with leverage, whereas Kd is assumed to rise only after significant leverage has occurred. At first, the weighted cost of capital, K declines with leverage because the rise in Ks does not entirely offset the use of cheaper debt funds. As a result, K declines with moderate use of leverage. After a pint, however the increase in Ks more than offset the use of cheaper debt funds in the capital structure, and K begins to rise. The rise in K is supported further once Kd begins to rise. The optimal capital structure is point X; thus the traditional position implies that the cost of capital is not independent of capital structure of the firm and that there is an optimal capital structure.

2.2.3.2. Net Income approach

David Durand proposed the Net Income Approach. This approach stated that firm can increase its value or lower the cost of capital by using the debt capital.

According to NI approach, there exists positive relationship between capital structure and valuation of firm and change in the pattern of capitalization bring abut corresponding change in the overall cost of capital and total value of the firm. Thus with an increase in the ratio of debt to equity, overall cost of capital will decline and market price of equity stock as well as value of firm will rise. (David Durand, 1959:91-116). The converse will hold true if ratio of debt to equity tends to decline. The approach assumes no change in the behavior of both stockholders and debt holders as to the required rate of return in response to a change in the debt-equity ratio of the firm. Thy want to invest since debt holder are exposed to lesser degree of risk, assumed of a fixed rate of interest and are given preferential claim over the profit and assets, the debt holders' required rate of return is relatively lower than that of equity holders. So, the debt financing is relatively cheaper than equity. For this reason, at constant cost of equity (Ks) and cost of debt (Kd), the overall cost of capital (K) declines with the increased proportion of the debt in the capital structure. This suggests that higher the level of debt, lower the overall cost of capital and higher the value of firm.

It means that a firm attends an optimal capital structure when it used 100% debt financing. Running a business with 100% debt financing, however, is quite uncommon in the real world. The firm can achieve optimal capital structure by making judicious use of debt and equity and attempt to maximize the market price of its stock.

In sum, as per NI approach, increase in ratio of debt to total capitalization brings about corresponding increase in total value of firm and decline in cost of capital. On the contrary, decrease in ratio of debt to total capitalization causes decline in total value of firm and increase cost of capital. Thus, this approach is appeared as relevancy theory. This approach is based on the following assumptions:

1. The cost of equity and debt remain constant to the acceptable range of leverage.
2. The corporate income taxes do not exist.
3. The cost of debt rate is less than the cost of equity.

4. The increasing leverage brings about no deterioration in the equity of net earnings so long as borrowing is consigned to the amount below the acceptable limits.

Graphically, the effect of leverage on the firm's cost of capital and the total market value of the firm is shown below.

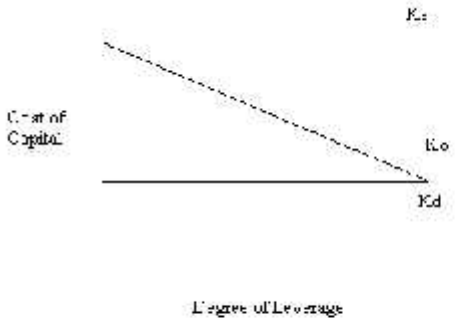

Figure 2: The Effect of Leverage On the Capital Structure

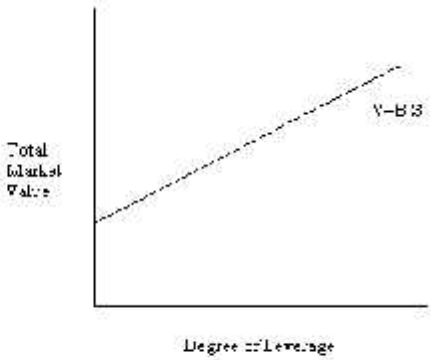

Figure 3: The Effect of Leverage on the Total Market Value of the Firm

Figure 2 shows a continuous decrease in K with the increase in debt-equity ratio, since any decrease in K directly contributes to the value of the firm, it increases with the increase in the debt-equity ratio (figure 3). Thus the financial leverage, according to the NI approach is an important variable in the capital structure decision of a firm. Under the NI approach, a firm can determine an optimal capital structure. If the firm is unleveled the overall cost of capital will be just equal to the equity capitalization rate.

In brief, the essence of the net income approach is that the firm can lower its cost of capital by using debt. The approach is based on the assumption that the use of debt does not change the risk perception of the investor. Consequently, the interest rate of debt and the equity capitalization rate remain constant to debt. Therefore, the increased use of debt results in higher market value of shares and as a result, lower overall cost of capital (K).

2.2.3.3. Net Operating Income approach (NOI)

NOI approach is another behavioral approach suggested by Duran David. This approach is diametrically opposite from the NI approach with respect to the assumption of the behavior of equity holders and debt holders. The essence of this approach is that the leverage/capital structure decision of the firm is irrelevant. The overall cost of capital is independent of the degree of leverage; any change in leverage will lead to change in the value of the firm and the market price of the shares. Net operating approach is slightly different from NI approach, unlike the NI approach in NOI approach, the overall cost of capital and value of firm are independent of capital structure decision and change in degree of financing. Leverage does not bring about any change in the value of firm and cost of capital.

The main difference between NI and NOI approach is the base that investors use to value the firm. Under NOI approach, the Net operating income, i.e. the earning before interest and tax (EBIT), instead of net income is taken as the base. Like the NI approach, the NOI approach also assumes a constant rate of Kd, which means that the debt holders do not demand higher rate of interest for higher level of leverage risk. However, unlike the assumption of NI approach, NOI approach assumes that the equity holders do react to higher leverage risk and demand higher rate of return for higher debt-equity ratio. This approach says that the cost of equity increase with the debt level and the higher cost of equity offset the benefit of cheaper debt financing resulting no effect at all on overall cost of capital.

The NOI approach is based on following assumption:

1. The market capitalizes the value of the firm as a whole. Thus, the split between debt and equity is not important.
2. The market uses an overall capitalization rate, K to capitalize the net operating income. K depends on the business risk. If the business risk is assumed to remain unchanged, K is constant.
3. The use of less costly debt funds increases the risk of shareholders. This causes the equity-capitalization rate to increase. Thus, the

advantages of debt are offset exactly by the increase in the equity capitalization rate, Ks.

4. The debt capitalization rate, Kd is constant
5. The corporate income taxes do not exist.

The function of Ks under NOI approach can be expressed in equation as follows:

$$Ks \, X K \, \Gamma (K \, Z Kd) B / S$$

The relationship between financial leverage and K, Ks, and Kd has been graphically depicted in following figures.

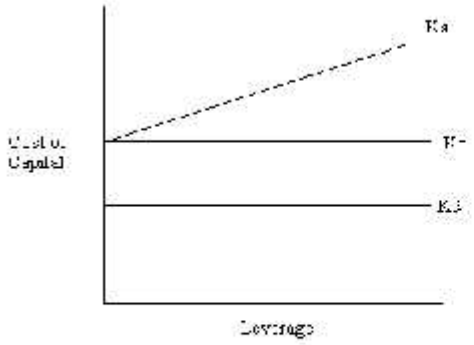

Figure 4: The Effect of Leverage on Cost of Capital

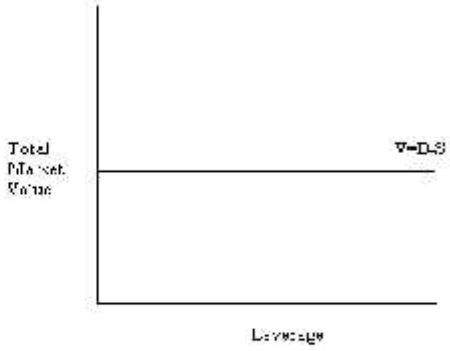

Figure 5: The Effect of Leverage on Total Market Value of the Firm

In the figure 4 above, it is shown that the curve K and Kd are parallel to the horizontal X-axis and Ks are increasing continuously. This is because K and Kd remain constant under all the circumstances but the Ks increases with the degree of increase in the leverage. Thus, there is no single point or range where the capital structure is optimum. We know obviously from the figure 4 that under the NOI approach, as low cost of debt is used, its advantage is exactly offset by increase in cost of equity in such a way that the cost of capital remains constant. By this, value of the firm also remains constant. At the extreme degree of financial leverage, hidden cost becomes very high hence the firm's cost of capital and its market value are not influenced by the use of additional cheap debt fund. (Gitman Lawrence, 1988:791)

2.2.3.4. Modigliani-Miller approach (MM approach)

The Modigliani-Miller thesis (Modigliani F and M.H. Miller, The Cost of Capital, Corporate Finance and The Theory of Investments", American Economic Review, XLVIII June 1958) relating to the relation is akin to net operating income approach. MM approach, supporting the net operating income approach argues that, in the firm remain invariant to the capital structure changes. They make a formidable attach on the transitional position by offering behavioral justification for having the cost of capital, K, remain constant through all degree of leverage. (Ibid, 272) MM contend that cost of capital is equal to the capitalization rate of a pure equity stream of income ant the market value is ascertained by capitalizing its expected income at the appropriate discount rate of its risk class. MM position is based on the idea that no matter how you divide up the capital structure of a firm among debt, equity and other claims, there is conversion of investment value. (Ibid, 273) However, the following assumption regarding the behavior of the investors and the capital market, the actions of the firms and the tax environment are crucial for the validity of the MM hypotheses.

1. Perfect capital markets: the implication of perfect capital market is that securities are infinitely divisible, investors are free to buy and sell securities, investors can borrow without restrictions on the same terms and conditions as firms can, there are no transaction costs and investors are rational and behave accordingly.
2. Firms can be grouped into homogenous risk classes. Firms would be considered to belong to a homogeneous risk class as their expected earnings, adjust for scale differences have identical risk characteristics. The share of the homogeneous firm would be perfect substitute for one another.
3. Firms distribute all net earning to the shareholders, i.e. divided payout ration is 100 percent.
4. There are no taxed. This assumption is removed later.

5. The assumption of perfect information and rationality, all investors has the same exception of firm's net operating income with which to evaluate the value of any firm.

The MM cost of capital hypotheses can be best expressed in terms of their proposition I and II. (Modigliani and Miller, 1969: 261-279)

Proposition I

Given the above assumption, MM argues that for the same risk class, the total market value is independent of the debt-equity mix and is given by capitalizing the expected net operating income by the rate appropriate to the risk class (Ibid, 268).. This is their proposition I. In equation this can be expressed as follows:

$$ValueOftheFirm = MarketValueofDebt(B) + MarketValueofEquity(S)$$
$$= \frac{ExpectedNetOperatingIncome}{ExpectedOverallCapitalizationRate} = \frac{EBIT}{EBT}$$

For an unlevered firm,

$$Vu = \frac{EBIT}{Ks}$$

Where K=Ks in case of unlevered firm.

Proposition I can be expressed in terms of the firm's overall capitalization rate, K, which is the ratio of Net operating income to the market value of all its securities. That is:

$$K = \frac{NOI}{S + B} = \frac{NOI}{V}$$

K can also be expressed as

$$K = \frac{Ks(S)}{S + B} + \frac{Kd(B)}{S + B}$$

It means K is the weighted average of the expected rate of return of equity and debt capital of the firm since the cost of capital is defined as the expected net operating income divided by the total market value of the firm and since MM

conclude that the total market value of the firm is unaffected by the financing mix, it follows that the cost of capital is independent of the capital structure and is equal to the capitalization rate of a pure equity stream of its class. (Pandey I.M, 1981:35)

The overall cost of capital function as hypotheses by MM is shown in figure below:

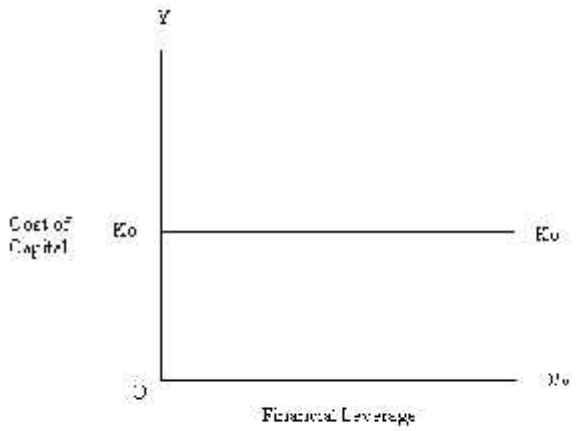

Figure 6: The Cost of Capital Under the MM Hypothesis

Thus two firms identical in all respects except for their capital structure cannot command different market values nor have different cost of capital. But if there is a discrepancy in the market values or the cost of capital, arbitrary will take place, which will enable investors to engage in personal leverage to restore equilibrium in the market. (I.M. Pandey, 1981:37)

Proposition II

MM proposition II, which defines the cost of equity, follows from their proposition me and shows the implications of the net operating approach. The proposition II states that the cost of equity rise proportionately with the increase in the financial leverage in order to compensate in the form of premium for bearing additional risk arising from the increasing leverage. (Pradhan S., 1992:362) The equation for the cost of equity can be derived from the definition of the average cost of capital.

$$K\ \mathrm{X}\frac{Ks(S)}{S\ \Gamma\ B}\ \Gamma\frac{Kd(B)}{S\ \Gamma\ B}$$

$$Ks\ \mathrm{X}\frac{K(B\ \Gamma\ S)}{S}\ \mathrm{Z}\frac{Kd(B)(B\ \Gamma\ S)}{(S\ \Gamma\ B)S}$$

$$Ks\ \mathrm{X}K(I\ \Gamma\frac{D}{S})\ \mathrm{Z}\frac{Kd(D)}{S}$$

$$Ks\ \mathrm{X}K\ \Gamma(K\ \mathrm{Z}Ks)\frac{B}{S}$$

The above equation states that for any firm in a given risk class the cost of equity, Ks, is equal to the constant average cost of capital, K, plus a premium for the financial risk, which is equal to debt-equity ration times the spread between the constant average cost of capital and the interest rate. As their proportion of debt increase, the cost of equity increases continuously even though K and KD are constant, the crucial part of the MM hypothesis is that K will not rise even if very excessive use of leverage is made. This conclusion could be valid if Kd remains constant for any degree of leverage. But in practice Ks increases with leverage beyond a certain acceptable level of leverage. However, MM maintains that even if Ks are a function of leverage. K will remain constant as Ks will increase at a decreasing rate to compensate. This can be shown as:

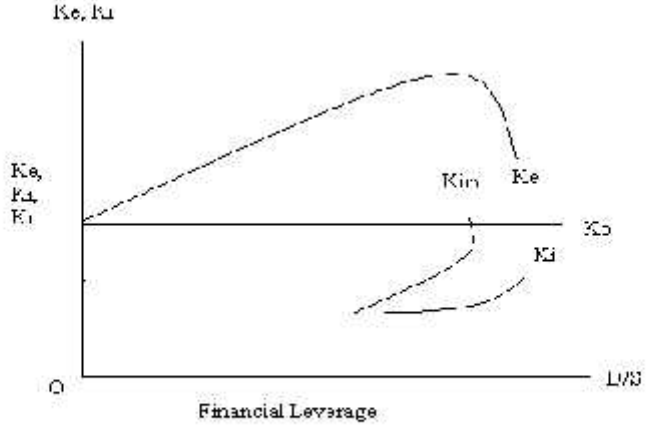

Figure 7: Behavior of Ko, Ki and Ke under MM Hypothesis

It is clear from the figure that Ks will increase till the marginal rate of interest (Kim) is below the cost of capital. As soon as the marginal rate of interest cuts the cost of capital, Ks will start falling.

2.2.4. Leverage

The term leverage may be defined as the use of that source of funds in the business for which the firm has to pay fixed charges, irrespective to the earnings of firm. There are two types of leverage: Financial leverage and operating leverage. Leverage associated with investment activities is called operating leverage and associated with financial activities is called financial leverage.

2.2.4.1. Financial leverage

Financial leverage is the ratio of total debt to total assets or the total value of the firm. (Weston and Brigham, 1981:555). The use of fixed sources of funds, such as debt and preference capital along with the owners' equity in the capital structure is described as financial leverage. (Waterman and Martin, 1963:7). Financial leverage refers to the response of shareholders income to change in earning before interest and tax and is created by debt or preferred stock financing with fixed interest and dividend payment. (Lawrence D. Schell and Haley, 1983:325).

The debt is risky as well as more advantageous in the context of earning. The use of debt and preferred stock financing provide the income advantage over the common stock financing of the firm under the favorable condition and they increase the risk too. Leverage is employed by the company to earn more. The surplus will increase the return on equity. Since the interest and principle payments are the contractual obligation to the firm. It is risky in the viewpoint of the shareholders.

2.3. Review of Journals

The Modigliani and Miller's Study: Modigliani F and Miller M.H., the cost of capital, corporation finance and the theory of investment. American economic review, XLVIII, June 1958:261-297)

In their first study, MM used the previous works of Allen and Smith in support of their independence hypothesis. Allen's study consisted of an analysis of the relation between security yields and financial structure for 43 large electric utilities, which is based on average figure for the years 1947 and 1948, while smith designed his study of 42 electric utilities.
In the first part of their work MM tested their proposition I, the cost of capital is irrelevant to the firm's capital structure by correlation after tax cost of capital with leverage B/V. they found that the correlation co-efficient is statistically insignificant and positive in sign.

In the second part of their study, they tested their proposition II the expected yield on common share is linear function of debt to equity ratio. The second part of their study is consistent with their views i.e. if the cost of borrowed funds increases, the cost of equity will decline to offset this increase.

MM conducted the second study in 1963, correcting their original hypothesis for corporate income taxes and expected cost of capital to be affected by leverage of its tax advantages or not. For this they conducted the mathematical analysis regarding the effect of leverage and other variable on the cost of capital, they found that the leverage factors are significant only because of the tax advantage involved. (Miller, M.H. and F. Modigliani, Estimates of the Capital to Electric Utility Industry, 1954-1957, American Economic Review, 56 June 1966:333-391)

Viet Anh Dang's study (Viet Anh Dang, "Testing the Trade-Off and Pecking Order Theories ", 2005)

Viet Anh Dang in the study, "Testing the Trade-Off and pecking Order Theories", 20 July 2005 examined the performance of two influential but contradicting theories of capital structure, known as the trade-off and pecking order theory. In general, our finding suggests that the trade-off theory holds well under both a partial adjustment and an error correction framework. In specifications that nest both theories, the former theory outperforms the latter theory. The introduction of the cash flow deficit variable has added little amount of additional explanatory power to the trade-off framework. Furthermore, the estimated coefficient on that variable is not fund to be statistically equal to unity as it would be if the strict interpretation of the pecking order theory were to hold. The results consistently show that the adjustment process prevails with the speed of adjustment coefficient significant and relatively high (above 50). There has been also some compelling evidence in favor of the relationships between gearing and the conventional determining factors except profitability, as predicted by trade-off framework. Non-debt tax shields and growth opportunities are reported to be inversely related to debt to the ratio, while collateral value of assets and size are found to have positive effects upon gearing.

In other respect, the study has posed serious questions on the empirical validity of the pecking order theory. However, given the simplicity of the empirical model it is impossible to reject the pecking order theory prediction completely.

Joshua Abor (Abor J, "The effect of capital structure on profitability", the journal of Risk Finance, 2005:438-445)

Joshua Abor in the study "The effect of capital structure on profitability" mentioned that the relationship between capital structure and firm value has been the subject of considerable debate. Throughout the literature, debate has centered on whether there is an optimal capital structure for an individual firm

or whether the proportion of debt usage is irrelevant to the individual firm's value. The capital structure of a firm concerns the mix of debt and equity the firm uses in its operation. Brealey and Myers contend that the choice of capital structure is fundamentally a marketing problem. According to Weston and Brigham, the optimal capital structure is the one that maximizes the market value of the firm's outstanding shares.

Other theories that have been advanced to explain the capital structure of firms include bankruptcy cost, agency theory, and the pecking order theory. These theories are discussed in turn.

Bankruptcy costs are the cost directly incurred when the perceived probability that the firm will default on financing is greater than zero. The bankruptcy probability increases with debt level since it increases the fear that the company might not be able to generate profits to pay back the interest and the loans. The potential costs of bankruptcy may be both direct and indirect. Examples of direct bankruptcy costs are the legal and administrative costs in the bankruptcy process. Examples of indirect bankruptcy costs are the loss in profits incurred by the firm as a result of the unwillingness of stakeholders to do business with them. The use of debt in capital structure of the firm also leads to agency costs. Agency costs arise as a result of the relationships between shareholders and managers and those between debt-holders and shareholders. The need to balance gains and costs of debt financing emerged as they known as the static trade-off theory by Myers. It values the company as the value of the firm if unleveled plus the present value of the tax shield minus the present value of bankruptcy and agency costs.

In summary, there is no universal theory of the debt-equity choice. Different views have been put forward regarding the financing choice.

Rima Devi Shrestha (Shrestha Rima Devi, Focus on Capital structure, Pravaha Journal of Management, Nepal Commerce Campus, Kathmandu, 1993 Vol. 10:40)

Rima Devi Shrestha conducted a study on the topic "Focus on Capital Structure of selected and listed public companies". The study used data from 19 companies, which covered different sectors such as manufacturing, finance, utility service and other allied areas. It was found that most of these companies have debt capital relatively very higher than equity capital. Consequently most of them are operating at losses to the extent that payment of interest on loan has been serious issues. Most of the losses are after charging interest on loan. It has suggested that the government has to consider the public enterprises in evaluation the relationship between use of debt and its impact on overall earning of public enterprises. So government should be sure in knowing how using debt capital will maximize return. It should develop a suitable capital structure guideline to make public enterprise aware of its responsibility to repay the debt schedules. Government has to analyze cost and risk rerun trade off. Thus, capital structure needs to be made more determinate by realistic analysis of cost. Lastly, she concluded that policy makers have to be careful in developing the suitable capital structure guidelines in making public enterprises as well as listed companies to be aware of financial accountability.

2.4. Review of Articles

Sudhir Poudyal (Poudyal S, "Capital Structure: It's impact on value of a Firm, Seminar on Emerging Issues and Challenges in Corporate Finance in Nepal, Research Paper Submitted to Faculty of Management, TU, Kathmandu, Nepal, 2002)

"A study on Capital Structure: Its impact on value of a Firm," an article by Sudhir Poudyal concentrated to examine the interrelationship between the objective of achieving an optimal capital structure and to provide conceptual framework for the determination of the optimal capital structure.

For this, a hypothetical firm is constructed and different assumptions are laid down to analyze the effect of capital structure. Various statistical and financial tools like ratio analysis are used to extract reasonable figure for the hypothetical firm. It is observed that the minimum weighted average cost of capital, maximum value of the firm and price per share are attended at debt ratio of 30%. Furthermore, if there is flexibility to select capital structure in any proportion, optimal capital structure range from 30% to 40%. An optimal capital structure would fulfill the interest of equity shareholder and financing requirement of a company as well as other concerned groups.

Paul Marsh (Marsh P, "The choice between Equity and Debt". The Journal of Finance, vol XXVII No. 1, March 1982)

In the article, "the Choice between Equity and Debt", following issues are expressed

- Whether companies are having the targeted debt ratio.
- Whether they have similar targets form the composition of their debt.
- Whether debt ratio or the choice of the finance instrument are influenced by other factors.
- How accurately can we predict whether the company will issue equity or debt?

Then he suggested that

- While planning their issues, company should consider future as well as current debt ratio.
- If the companies are looking at book value debt ratio, there will change during the interest issuing period of retentions and bank loans.
- Any overall change in tax level could cause issuing companies to shift their performance towards either debt or equity.

- Small companies rely on bank loan rather than long-term debt because of location, cost and problems of access to capital market.
- Equity issues seem to be favorable as it provides strong share price and overall market performance.

2.5. Review of Thesis

Ms. Anjana Shah (Shah A, " A study On the Capital Structure of Selected Manufacturing Companies (Nepal Lever Ltd., Bottlers Nepal Ltd., Sriram Sugar Mills, Jyoti Spinning Mills, Arun Vanaspati Udhyog)", Unpublished Master's Thesis, TU, Kathmandu, 2004)

Ms. Anjana Shah made the study with a purpose to access the debt serving capacity of the mentioned manufacturing companies, examining the relation between Return on equity and total debt, Return on equity and debt ratio, earning after tax and total debt and interest and earning before interest and tax.
Both financial tools such as ratio analysis as well as statistical tools such as correlation coefficient and regression analysis have been used as the methodology.
The study revealed that Nepal Lever Ltd. Is fully equity based and has not been using long term debt. The Bottlers Nepal Ltd. is free of long term debt because of improved cash flows and effective management. The Sriram Spinning Mills has 66.33% of assets financed with debt and hence there is less flexibility to the owners. The degree of Financial Leverage analysis of Jyoti Spinning Mills shows the failure of the company to gain expected profits. And the Arum Vanaspati Udhyog has a fluctuating debt equity ratio. Its long term debt is decreasing and only creditors make a small share of finance.
Ms. Manju Kumari Pandey (Pandey M.K., "The Study on capital Structure of Standard Chartered Bank Ltd. and Nepal Bangladesh Bank Ltd." Unpublished Master's Thesis, YU, Kathmandu, 2003)

The basic objective of the study made by Ms. Manju Kumari Pandey was to analyze the interrelationship of capital structure with various important variables such as earning per share, dividend per share and net worth of the joint venture banks and to provide suggestions to overcome various issues and gaps.
The study has used financial tools such as Ratio Analysis, EBIT-EPS analysis, overall capitalization rate, equity capitalization rate, total value calculation etc and Statistical tools such as Karl Pearson's correlation and probable errors.
The study concluded that all the joint venture banks are using high percentage of total debt in raising the assets and all the banks are able to pay the interest. The study suggested that the bank must control total deposit and the bank must also control investment. The bank needs to reduce its expenses and control fluctuations in the earnings per share to improve its market price per share.

Mr. Kamal Bahadur Rajlawat (Rajlawat K.B., "The Capital Structure of Necon Air Limited", Unpublished Master's Thesis, TU, Kathmandu, 1999)

The main objective of the study is to analyze and examine the capital structure of Necon Air Limited, examine the financial position, highlight their growth and policies and review various previous studies relation to the study. The study used primary as well as secondary data for the analysis. The methodology used includes financial tools such as Ratio Analysis and statistical tools such as correlation coefficient and probable error. The study has found that Necon Air Limited has debt equity ratio higher than required. This higher debt capital is a serious implication form the firm's point of view. In this condition, the capital structure will lead to inflexibility in the operation of the firm as creditors would exercise pressure and interfere with management. Necon Air has raised debt from different commercial banks and has to pay heavy portion of profit as interest, so the payment of the interest will be hazardous when profit is declining. So it is suggested that Necon Air Ltd should decrease its debt capital as far as possible. It has added that the ration of 2:1 is the best ratio for optimal capital structure.

A study conducted by *Mr. Makar Bahadur Tamang* entitled "Financial Performance Analysis of commercial Banks of Nepal" with reference to NIB and NABIL in 2005, with the objective to measure the operating efficiency, stability and profitability of NIB and NABIL along with their financial strength and weakness concludes the findings such as,

- The liquidity position of NIB is better than that of NABIL,
- NABIL has utilized more debt than NIB,
- The profitability ratio of NABIL is better than that of NIB in terms of ROA,
- The EPS and DPS of NABIL are better than that of NIB,
- There is positive correlation between total debt and net profit for both the banks etc.

On the basis of his findings, he recommended that both the banks should review their overall capital structure and investment portfolio to make better mix in capital structure. Moreover, he also suggested that both the banks should also give due consideration in improving their liquidity position.

A study conducted by *Mr. Chutra Bahadur Gumanju* entitled "A Comparative Study of Financial Performance Analysis of HBL and NIB" in 2004, with the general objective of examining and evaluating the financial performance of HBL and NIB concludes the findings such as,

- The liquidity position of NIB is better than that of HBL,
- The analysis of leverage ratio shows that HBL has higher ability in utilizing debts than NIB in terms of total debt to total equity, total assets and total capital ratio,
- The profitability position of NIB is better than that of HBL in terms of ROA,
- The EPS and DPS of HBL are better than NIB,
- The correlation coefficient showed the positive relationship between total debt and net profit of HBL and NIB etc.

On the basis of analysis and evaluation of various financial and statistical tools, he recommended that both the banks should maintain standard current ratio. Moreover, he also suggested that both the banks should improve their capacity by improving effective organization structure and controlling capital structure and so on.

Mr. Kishor Poudel conducted a study entitled "A Study on Liquidity and Investment Position of Joint Venture Commercial Banks in Nepal" with reference to EBL and NABIL in 2002. The main objective of his study was to examine the investment liquidity policy of EBL and NABIL. His major findings from the study includes,

- In aggregate, the liquidity position of EBL is comparatively better than NABIL's. However, there are some instances where EBL has maintained more liquid funds than requirements,
- EBL has not been successful for mobilization of funds on investments in comparison with NABIL. However, EBL has been able to mobilize most of the investment in government securities than NABIL's,
- The growth rate of investment portfolio of NABIL is comparatively better than EBL. However, NABIL has given more priority to profitability than liquidity and so on.

CHAPTER-3
RESEARCH METHODOLOGY

3.1. Introduction

Researcher needs sequential steps to adopt realistic study or studying a problem with certain object/objects in view. Therefore, through research methodology researcher can get appropriate guidelines and knowledge about the various sequential steps to adopt a systematic analysis. Research methodology is the investigation tools of any certain area and it means clearly observation of certain object.

Research is the process of systematic and in depth study or search any particular topic, subject or area of investigation backed by collection presentation and interpretation of relevant details or data.

Research is a systematic and organized effort to investigate a specific problem that needs a solution. This process of investigation involves a series of well through out activities of gathering, recording, analysis and interpreting the data with the purpose of finding answers to the problem.

This chapter mainly deals with the research methodology used to ascertain the study objectives. Under this, research design, nature and sources of data, population and sample and method of data analysis technique have been described.

3.2. Research Design

Research design is the plan, structure and strategy of investigations conceived so as to obtain answers to research questions and to control variances. It included

an outline of what the investigator will do from writing the hypotheses and their operational implications to the final analysis of data. The structure of the research is more specific, it is the outline, the scheme, and the standard of the operation of the variables. When we draw diagrams that outline the variables and their relation and juxtaposition, we build structural schemes for accomplishing operational research purposes. Strategy, as used here, is also more specific than plan. In other words, strategy implies how the research objectives will be reached and how the problem encountered in the research will be tackled.

The method and definite technique, which guides to study and give ways to perform research wok is known as research design. It is most necessary to complete the research and fulfill the objective of the research.

First of all information and data are collected. The important information and data are selected. Then data is arranged in useful manner. After that, data are analyzed by using appropriate financial and statistical tools. In analysis part, interpretation and comments are also made wherever necessary. Result and conclusion are given after analysis of data, recommendation and suggestion is also given, the thesis has been adopted from previous research works. Previous thesis styles and formats have been followed.

The main objective of research work is to evaluate the capital structures of Himalayan Bank Limited and Bank of Kathmandu. To complete this study, following design and format has been adopted.

3.3. Data Collection Procedure

3.3.1 Nature and Sources of Data

Mainly, the study is conducted on the basis of secondary data. The required data are extracted from balance sheets, profit and loss accounts and different

financial schedules of concerned banks annual reports. Other supplementary data are collected from a number of institutions and regulation authorities like Nepal Rastra Bank, Nepal Stock Exchange Ltd., security exchange board, etc. and from different related websites. This study is bases in the historical data of 5 year period.

3.3.2 The Population and Sample

Population of this study includes all listed commercial banks in NEPSE. At present, there are 25 commercial banks have listed their shares in NEPSE. They have only been considered as population for the study, two leading private commercial banks are selected as sample. On the basis of establishment period and performances, samples are taken. The sampled commercial banks are Himalayan Bank Limited and Bank of Kathmandu Limited.

3.4 Tools for Analysis

For the purpose of data analysis, various financial and statistical tools will be used to achieve the objective of the study. The evaluation of data will be carried out to the pattern of data available.
Different tools have been selected according to the nature of data as well as subject matter. The major tool employed for the analysis of the data is ratio analysis, which established the numerical relationship between two variables of the financial statement. Besides financial tools, the statistical tools are also used.

3.4.1 Financial Tools

Financial analysis is the process of identifying the financial strength and weakness of the firm by properly establishing relationship between the items of the balance sheet. In this study ratio analysis is used as the financial tools for the data analysis.

The financial tools that will be used for data analysis are:

- Ratio analysis
- Leverage analysis
- Capital structure analysis
- Traditional analysis
- Modigliani-Miller's approach

3.4.1.1 Ratio Analysis

Ratio analysis is a technique of analyzing interpreting financial statements to evaluate the performance of an organization by creating the ratios from the figures of different accounts consisting in balance sheet and income statement. The qualitative judgment concerning financial performance of a firm can be carried out with the help of ratio analysis. Even though there are many ratios, only those ratios have been covered in this study, which are related to investment operation of the bank.
This study contains following ratios:

Long Term Debt to Total Debt

The long term debt to total debt ratio measure the percentage of long term debt to total debt used in the companies. So it is the percentage of long term debt among the total debt employed by the company.

The Long Term Debt to Total Debt is calculated as:

$$LongTermDebttoTotalDebtRatio\ \mathrm{X}\frac{LongTermDebt}{TotalDebt}X100$$

Long Term Debt to Capital Employed

This ratio is used to express the relationship between long term debt and capital employed by the firm. It shows the proportion of long term debt and shareholders" fund in the capital structure. This ratio is calculated as:

$$LongTermDebttoCapitalEmployed \text{ X} \frac{LongTermDebt}{CapitalEmployed}$$

The higher ratio of long term debt to capital employed ratio shows the higher contribution of long term debt to the capital structure and vice versa.

Debt to Total Assets

This ratio measure the extent to which borrowed funds have been used to finance the company's assets. It is related to calculate total debt to the total assets of the firm. The total debt included long term debt and current liabilities. The total assets consist of permanent assets and other assets. It is calculated as:

$$DebttoTotalAssetRatio \text{ X} \frac{TotalDebt}{TotalAssets} X100$$

The lower total debt to total assets ratio indicates that the creditors claim in the total assets of the company is lower than the owner's claim and vice versa.

Debt to Equity Ratio

The debt equity ratio measures the long term components of capital structure. Long term debt and shareholder's equity are used in financing assets of the companies. So, it reflects the relative claims of creditors and shareholders against the assets of the firm. Debt to equity ratio indicated the relative proportions of debt and equity. The relationship between outsiders claim and owners' capital can be shown by debt equity ratio. It is calculated as:

$$DebttoEquityRatio \text{ X} \frac{LongTermDebt}{Shareholder'sEquity} X100$$

This ratio is also known as debt to net worth ratio. A high debt equity ratio indicates that the claims of the creditors are greater than that of the shareholders or owners of the company.

Interest Coverage Ratio

This ratio indicates the ability of the company to meet its annual interest costs or it measures the debt servicing capacity of the firm. It is determined by using following formula:

$$InterestCoverageRatio\ \mathrm{X}\frac{EarningBeforeInteres\tan dTax}{Interest}$$

Hence, higher interest coverage ratio indicates the company's strong capacity to meet interest obligations. A firm always prefers interest coverage ratio because low interest coverage ratio is a danger signal. Lower interest coverage ratio means the firm is using excessive debt and does not have an ability to offer assured payment of interest to the creditors.

Return on Total Assets

Return on total assets ratio measures the profitability of bank that explains a firm to earn satisfactory return on all financial resources invested in the banks' assets. The ratio explains net income for each unit of assets.

The return on total assets ratio is calculated using the formula below:

$$\mathrm{Re}turnOnTotalAssets\ \mathrm{X}\frac{Net\ \mathrm{Pr}ofitAfterTax}{TotalAssets}$$

Higher ratio indicates efficiency in utilizing its overall resources and vice versa. From the point of view of judging operational efficiency, rate of return on total assets is more useful measure.

Return on Shareholders Equity

Shareholders are the owners of the company. To measure the return of shareholders, we use return on shareholders' equity. This ratio analyze whether the company has been able to provide higher return on investment to the owners or not. It is calculated as:

$$\mathrm{Re}turnOnShareholder'sEquity\ \mathrm{X}\frac{Net\ \mathrm{Pr}ofitAfterTax}{Shareholder'sEquity}$$

A company's owners always prefer higher ratio of return on shareholders' equity. And higher ratio represents the higher profitability of the firm and vice versa.

Earning Per Share (EPS) Analysis

The profitability of bank from the point of view of the ordinary shareholders is earning per share. The ratio explains net income for each unit of share. Earning per share of an organization gives the strength of the share in the market. It shows how much of the total earnings belong to the ordinary shareholders. EPS is calculated as:

$$EPS\ \mathrm{X}\frac{NetIncome}{NoOfSharesOuts\tan ding}$$

Dividend Per Share (DPS) Analysis

Dividend per share is calculated to know the share of dividend that the shareholders receive in relation to the paid up value of the share. A large number of present and potential investors may be interested in the dividend per share, rather than the earning per share. Therefore, an institution offering a high dividend per share is regarded as efficient in fulfilling shareholders expectations, which will also enable to increase the value of an institution.

Dividend per share is the earning distribute to ordinary shareholders divided by the number of ordinary shares outstanding, i.e,

$$DPS\ \mathrm{X}\frac{TotalDividend}{NoOfOrdinaryShares}$$

3.4.1.2 Leverage Analysis

The degree of financial leverage as part of leverage analysis also reflects the leverage of the firm as similar as above ratios. The degree of financial leverage analyzes the burden of interest expenses and financial risk of the company. The degree of financial leverage (DFL) is defined as the percentage change EPS due to a given percentage change in EBIT or this is a relationship between EBIT and EBT. In this study the following relationship will be used. It is expressed as:

$$DFL\ \mathrm{X}\frac{\%ChangeinEPS}{\%ChangeinEBIT} or$$

$$DFL\ \mathrm{X}\frac{EBIT}{EBT}$$

The higher ratio of DFL indicates the higher financial risk as well as higher fixed charges of the company and vice versa.

3.4.2.1 Capital Structure Analysis

Various approaches have been developed under the relevancy of the capital structure, which helps to evaluate value of the firm, such as Net Income approach (NI), Net Operating Income approach (NOI), Traditional Method and MM approach. These all approaches are based on the market value. Practical usualness of other approaches is bit complex thus NI and NOI approaches are used in this study.

$$MarketValueofFirm(V)\ \mathrm{X}\ MarketValueOfDebt(B)\ \Gamma\ MarketValueofEquity(S)$$

$$CostofOverallCapitalizationRate(Ko)\ \mathrm{X}\frac{NetOperatingIncome(EBIT)}{TotalMarketValueofThefirm(V)}$$

$$CostofEquity(Ke)\ \mathrm{X}\frac{EarningAvailableToCommonStockHolders(NI)}{MarketValueofStock(S)}$$

3.5 Statistical Tools

To meet the objectives of the study statistical tools are equally important. It helps us to analyze the relationship between two or more variables. In this research, the following statistical tools are used.

The statistical tools that will be used for data analysis are:

- Mean
- Standard Deviation
- Karl Pearson's Coefficient of Correlation
- Probable Error

3.5.1 Mean

The arithmetic mean is the sum of total values to the number of values in the sample.

3.5.2. Standard Deviation (S.D.)

Standard deviation is an absolute measure of dispersion. The standard deviation is the square root of mean squared deviation from the arithmetic mean.

3.5.3. Corrélation Coefficient (r)

Correlation coefficient measures the relationship between two and more than two variable, when they are so related that the change in the value of one variable is accompanied by the change in the value of the other. Or it indicates the direction of relationship among variables.

A method of measuring correlation is called Pearson's coefficient of correlation. It is denoted by 'r'. The correlation coefficient can be calculated by using following formula:

$$r = \frac{N \quad XY - \quad X \quad Y}{\sqrt{N \quad X^2 - (\quad X)^2} \sqrt{N \quad Y^2 - (\quad Y)^2}}$$

Where,

N= number of observations

X and Y are variables.

The decision criteria:

When,

r = 0, there is no relationship between the variables.

r = 1, the variables have perfectly positive correlated.

r = -1, the variables have perfectly negative correlated.

3.5.4. Probable Error (P.E.)

P.E. interprets the value of correlation co-efficient. It helps to determine applicability for the measurement of reliability of computed value of the correlation coefficient 'r'. It can be calculated as:

$$P.E. \text{X6} \mid \frac{0.6745 \mid (1 \text{Z} r2)}{\sqrt{N}}$$

Where,

r = correlation coefficient

N = number of pairs of observations.

If the value of r is less than the probable error there is no evidence of correlation, i.e. the value of r is not significant.

If the value of r is more than 6 times of probable error the coefficient of correlation is practically certain, i.e. the value of r is significant.

CHAPTER -4
DATA PRESENTATION AND ANALYSIS

4.1 Introduction

This is the most important chapter of the study. In this chapter, collected data will be analyzed and presented mathematically. All the above-mentioned financial and statistical tools will be used to present the data.

The main objective of the study is to evaluate the capital structure of HBL and BOKL. To analyze the financial performance in respect to capital structure, various presentation and analysis have been presented in this chapter according to analytical research design mentioned in the third chapter using various financial and statistical tools.

It is already stated that capital structure refers to the combination of preference share, equity share capital including reserve and surplus as well as long-term debt. Optimal capital structure refers to that combination of funds, which maximizes the EPS, value of the firm and overall cost of capital. Thus this chapter emphasizes the position of capital structure of BOKL and HBL. The analysis in this chapter are divided into following section, which are directly and indirectly related to the capital structure.

- Ratio Analysis
- Analysis of Capital Structure

- Leverage Analysis
- Correlation Analysis

4.2 Ratio Analysis

4.2.1 Long Term Debt to Total Debt Ratio

The relationship between long term debt and total debt has a decisive impact on the financial structure of the companies. This relationship indicates what percentage of total debt is covered by long term debt of the firm. Normally firms use short term and long term debt. Current liabilities and provisions are also needed during the operation of the firm. Simply dividing long-term debt by the total debt can derive the relationship between the long term debt and total debt of the firm. The total debt includes all types of borrowed fund, current liabilities and provisions. If the firm used large amount of short term loans and over current liabilities and provision in the larger amount, the percentage of long term debt will be low and vice versa. The higher ratio of long term debt to total debt indicates the higher claim of long term debt holders upon the total debt and the lower ration indicates the higher portion of short term loans and current liabilities in the total debt of the firm. The amount of short term loans and current liabilities used depends upon the liquidity of that firm. This relationship of long term debt and total debt is presented in the following table along with the percentage change in that ratio to show the movement of trend individually. In addition the average (standard) ratios are also calculated to compare with each other. But the detailed calculation is shown in the appendix 2.

$$LongTermDebtToTotalDebtRatio = \frac{LongTermDebt}{TotalDebt} \times 100$$

Table No. 4.1

Long term Debt and Total Debt Position

Fiscal Years	Long Term Debt to Total Debt (%)

	HBL	BOKL
2002/03	2.77	6.37
2003/04	1.49	9.25
2004/05	1.85	0.06
2005/06	1.71	6.02
2006/07	1.78	6.25
Average	1.92	5.59

Source: Appendix 1

The above calculation shows that the ratio of long term debt to total debt of HBL constituted 2.77% in fiscal year 2002/03. This means of contribution of long term debt in total debt is 2.77% and remaining portion is contributed by the current liabilities. This ratio of HBL in FY 2003/04 is 1.49% which is decreased than previous year and then increased to 1.85% in FY 2004/05. The company has 1.71% in 2005/06 and 1.78% in 2006/07. and then increased to 0.36% in fiscal year 2003/04. The company has 1.92% of average long term debt to total debt ratio.

In the case of BOKL, it shows in the fiscal year 2002/03, the ratio is 6.37%, which indicates there is 6.37% contribution of long term debt in total debt and remaining portion is contributed by current liabilities, in the year 2003/04, the ratio is 9.25% which is decreased to 0.06% in 2004/05. Then it again is increased to 6.02%in 2005/06 and in the year 2006/07 the ratio is 6.25%. The average ratio is 5.59%

4.2.2 Long Term Debt to Capital Employed Ratio

The optimal capital structure has important relationship with the long term debt to capital employed ratio. This relationship suggests the portion of long term debt and capital employed used in the capital structure of the firm. This ratio highlights the need of long term debt in the capital employed but the firm. Long term debt includes the debt, which matures in more than one accounting period

whereas capital employed includes long term debt and shareholders equity of the firm. The relationship of long term debt and capital employed can be analyzed by establishing the ratio between them. This ratio is called the long term debt to capital debt ratio. Larger the ratio, larger the proportion of long term debt in the capital employed and vice versa. This ratio can be calculated by dividing the long term debt with capital employed by the firm. This ratio is also known as debt to permanent capital ratio, whereas permanent capital means total assets minus current liabilities. The long term debt to permanent capital ratio is presented in the following table:

$$LongTermDebtToCapitalEmployedRatio\ \mathrm{X}\frac{LongTermDebt}{CapitalEmployed}$$

Table No. 4.2

Comparative Long term Debt to Capital Employed Ratio

Fiscal Years	Long Term Debt to Capita Employed (times)	
	HBL	BOKL
2002/03	0.378	0.52
2003/04	0.218	0.86
2004/05	0.237	0.008
2005/06	0.222	0.47
2006/07	0.217	0.49
Average	0.254	0.47

Source: Appendix 2

The above table shows that the long term debt to capital employed ratios of HBL in fiscal year 2002/03, 2003/04, 2004/05, 2005/06,and 2006/07 are 37.8%, 21.8%, 23.7%, 22.20% and 21.7% respectively and from in the year 2004/05 and 2005/06 the . The average ratio is 25.4%.

Similarly BOKL has fluctuating trend of long term debt to capital employed ratio. In the FY 2002/03, the ratio is 52%. That means the contribution of long term debt in total capital employed is 52% and owner of the companies contributed remaining 48%. In the following year 2003/04, the ratio increases to 86%. In the FY 2004/05the ratio decreased to 0.8%. In the year 2005/06 & 2006/07 it is 47% & 49%. The average of five years data shows a ratio of 47%.

4.2.3 Debt to Total Assets Ratio

Debt to total assets ratio express the relationship between creditors fund and total assets. It is also the leverage ratio, which is generally called the debt ratio. This type of capital structure ratio is a variant of debt equity ratio. Calculating debt to total assets is one calculation approach of the debt to capital ratio. Debt includes all loans and total assets include all types of assets of the fir, it measures the percentage of total funds provided by creditors.

This ratio can be calculated by simply dividing long term debt by the total assets of the firm.

$$DebtTotalAssetsRatio\ \mathrm{X}\frac{TotalDebt}{TotalAssets}\ |100$$

Table No. 4.3

Comparative Debt to Asset Ratios

Fiscal Years	Debt to Asset (%)	
	HBL	BOKL
2002/03	0.028	0.064
2003/04	0.149	0.093
2004/05	0.018	0.0006
2005/06	0.017	0.06
2006/07	0.018	0.0625
Average	0.046	0.06

Source: Appendix 3

All the sample banks have negligible long term debt in comparison to total assets. Hence the debt ratio or debt to total assets ratio of BOK and HBL is negligible. Therefore the debt ratio is insignificant.

4.2.4 Debt Equity Ratio

Debt equity ratio is used to show the relationship between borrowed funds and owners' capital. It reflects the relative claims of creditors and shareholders against the assets of the firm. It is an important tool for the financial analysis to appraise the financial structure of a firm. The ratio reflects the relative contribution of owners and creditors capital of business in its financing. In other word, this ratio exhibits the relative proportions of capital contributed by owners and creditors. Debt equity ratio can be calculated in the basis of shareholders' equity and long tem debt. Shareholders' equity includes reserve and accumulated profit, preference share and equity share capital. Where long term debt includes total debt minus short term debt or current liabilities, here debt equity ratio is also computed by simply dividing long term debt of the firm by shareholders' equity. The high D/E ratio shows the large share of financing in the capital by the creditors then the owners or it also reflects that the creditors claim is higher against the assets of firm and vice versa. D/E rations of concerned companies are shown in the following table that is referred from the appendix 1.

$$DebtEquityRatio\ \mathrm{X}\frac{LongTermDebt}{Shareholder'sEquity}\ |100$$

Table No. 4.4

Comparative Debt - Equity Ratios

Fiscal Years	Debt to Equity (%)	
	HBL	BOKL
2002/03	0.607	1.07
2003/04	0.279	0.93

2004/05	0.328	0.008
2005/06	0.286	0.89
2006/07	0.278	1.11
Average	0.356	0.80

Source: Appendix 4

The debt equity ratio and average ratio has been calculated in the above table. Five years data have been presented here.

The table shows that D/E ratios of HBL are 0.607, 0.279, 0.328, 0.286, and 0.278 in fiscal years 2002/03, 2003/04, 2004/05, 2005/06 and 2006/07 respectively. The average D/E ratio of HBL is 0.356.

Calculated value of BOKL shows that the D/E ratios of BOKL have fluctuating trend. In the fiscal year 2002/03, D/E ratio is 1.07 which decreases to 0.93 in the fiscal year 2003/04.Again it decreased to 0.008 in FY 2004/05.The ratio increases to 0.89 and 1.11 in the following year 2005/06 and 2006/07 respectively. The average D/E ratio of BOKL is 0.80.

4.2.5 Interest Coverage Ratio

The interest coverage ratio is useful tool to measure long term debt serving capacity of the firm. It is also called interest earned ratio. Interest is fixed charges of the companies, which is charged in long term and short term loans. Generally, interest coverage ratio measured the debt serving capacity of a firm and it is concerned with long term loans. It shows how many times the interest charges are covered by EBIT out of which they will be paid. This ratio uses the concept of net profit before tax because interest is tax deductible or tax is calculated after paying interest on loan. This ratio examines the interest paying capacity of the firm by how many times the interest charges are covered by EBIT.

Interest coverage ratio is calculated dividing EBIT by interest. So, it is necessary to analyze EBIT and interest. This ratio is useful to measure long term debt serving capacity of the firm. The high ratio shows that the firm may imply unused debt capacity and the firm has greater capacity to handle fixed charges liabilities of creditors. Whereas, low ratio is a signal that the firm is using excessive debt and does not have the ability to offer assured payment of interest to the creditors. The calculated interest coverage ratios of two companies are pres0ented in the following table.

$$Interest Coverage Ratio \text{ X} \frac{EBIT}{Interest}$$

Table No. 4.5

Comparative Interest Coverage Ratio

Fiscal Years	Interest Coverage Ratio (times)	
	HBL	BOKL
2002/03	1.58	1.29
2003/04	1.85	1.45
2004/05	1.93	1.85
2005/06	2.04	1.98
2006/07	1.93	2.13
Average	1.87	1.74

Source: Appendix 5

In the above table, the average ratio of HBL is 1.87, which implies the number of times the interest covered by its EBIT. The interest coverage ratio of HBL shows a fluctuating trend. The interest coverage of HBL in FY 2002/03,

2003/04, 2004/05, 2005/06 and 2006/07 is 1.58, 1.85, 1.93, 2.04 and 1.93 respectively.

In case of BOKL, the interest coverage ratio is 1.29, 1.45, 1.85, 1.98 and 2.13 in the FY 2002/03, 2003/04, 2004/05, 2005/06 and 2006/07 respectively.

4.2.6 Return on Total Assets

Return on total assets ratio measures the profitability of bank that explains a firm to earn satisfactory return on all financial resources invested in the banks assets. The ratio explains net income for each unit of assets.

Higher ratio indicates efficiency in utilizing its overall resources and vice versa. From the point of view of judging operational efficiency, rate of return on total assets is more useful measure.

The return on total assets ratio is calculated using the formula below:

$$\mathrm{Re}\,turnonTotalAssets\ \mathrm{X}\frac{Net\ \mathrm{Pr}\,ofitAfterTax}{TotalAssets}$$

Table No. 4.6

Position of comparative Return on Total Assets

Fiscal Years	Return on Total Assets	
	HBL	BOKL
2002/03	0.91	1.1
2003/04	1.06	1.3
2004/05	1.11	1.37
2005/06	1.55	1.62
2006/07	1.47	1.76
Average	1.22	1.43

Source: Appendix 6

The above table shows the comparative position of return on total assets of the two commercial banks. From the table, the ROA of HBL in the years 2002/03, 2003/04, 2004/05, 2005/06 and 2006/07 are 0.91, 1.06, 1.11, 1.55 and 1.47 respectively. The average ratio is 1.22.

Similarly, the ROA of BOKL in the years 2002/03, 2003/04, 2004/05, 2005/06 and 2006/07 is 1.1, 1.3, 1.37, 1.62 and 1.76. Respectively and the average return is 1.43.

4.2.7 Return on Shareholders' Equity

Shareholders' fund represents that part of long term source of funds, which is collected by issuing equity shares and preference shares. Shareholders are actually the owners of the company. Shareholders have ultimate claim in the return of the company. To measure the return earned by shareholders, return on shareholders equity is used or this ratio is calculated to find out the profitability on the owners' capital or investment.

If the company's earning is good, shareholders' earning is greater than outside investors because they are ultimate owners and they are bearing high risk as well. But outside investors return before the owners that is fixed. Shareholders get the return after paying the fixed interest charge to the creditors and tax to the government. Earning after tax (EAT) is the profit of the shareholders. Therefore this ratio is calculated on the basis of EAT. In this study, the sampled companies have not employed the preference share thus it includes only return on shareholders' equity.

The high ROSHE represents the high profitability of the firm and vice versa. So, high ROSHE is desirable from the point of view of the owners of the firm. This ratio can be calculated simply by dividing earning after tax by shareholders' equity, which is presented in the following table.

$$\mathrm{Re}\,turnonShareholder'sEquity\ \mathrm{X}\frac{Net\ \mathrm{Pr}\,ofitAfterTax}{Shareholders'Equity}$$

Table No. 4.7

Position of comparative ROSHE

Fiscal Years	Return on Shareholder's Equity	
	HBL	BOKL
2002/03	20.00	17.80
2003/04	20.00	16.30
2004/05	20.00	19.40
2005/06	26.00	24.10
2006/07	23.00	26.70
Average	22.00	21.00

Source: Appendix 7

Above table exhibits ROSHE of sampled companies. In case of HBL, in the fiscal year 2002/03, the ratio is 20% that implies that one rupee investment by shareholders' equity earned 20.00 paisa in one year. In the fiscal year 2002/03 and 2004/05 it is remained constant. But in FY 2005/06 it is increased to 26.00% and in 2006/07 it is 23.00%. The average ratio is 22.00%.

Similarly in the case of BOKL, in the fiscal year 2002/03, 2003/04, 2004/05, 2005/06 and 2006/07 are 17.8%, 16.3%, 19.4%, 24.1% and 26.7% respectively. Average ratio is 21.0%.

4.2.8 Earning per share

The profitability of bank from the point of view of the ordinary shareholders' is earning per share. The ratio explains net income for each unit of share. Earning per share of an organization gives the strength of the share in the market. It shows how much theoretically belongs to the ordinary shareholders. The EPS is calculated as below:

$$EarningPerShare\ X \frac{NetIncome}{No.OfSharesOuts\tan ding}$$

Table No. 4.8

Position of comparative EPS

Fiscal Years	Earning Per Share	
	HBL	BOKL
2002/03	49.45	17.71
2003/04	49.05	27.50
2004/05	47.90	30.10
2005/06	59.24	43.67
2006/07	60.66	43.55
Average	53.26	32.50

Source: Appendix 8

The earnings per share of HBL are 49.45, 49.05, 47.90, 59.24 and 60.66 in the years 2002/03, 2003/04, 2004/05, 2005/06 and 2006/07 respectively. The average EPS is 53.26. The overall trend is increasing. The highest EPS is 60.66 in the year 2006/07

Similarly, the earnings per share of BOKL in the years 2002/03, 2003/04, 2004/05, 2005/06 and 2006/07 are 17.71, 27.50, 30.10, 43.67 and 43.55 respectively. And the average EPS is 32.50. Here, the overall trend is fluctuating.

4.3 Capital Structure

4.3.1 Net Income (NI) Approach

Net income (NI) approach is known as dependent hypothesis of capital structure. The essence of this approach is that the firm can reduce its cost of capital by using debt and total valuation of the firm through the reduction in the cost of capital leading to an increase in the cost of capital thus leading to an increase in the degree of leverage. This theory assumes that the cost of debt and cost of equity remain

constant as change in the firm's capital structure. In other words, the firm can increase its value or lower the overall cost of capital by increasing the proportion of debt in the capital structure. It gives attention on overall capitalization rate. According to this theory, optimum capital structure is that, where the total value of the company is highest and the overall capitalization rate is lowest. The overall capitalization rate can be calculated simply by dividing EBIT by the value of the company. Calculated rates are presented below that is referred from appendix 10.

Table No. 4.9

Comparative Position of Overall Capitalization Rate

	HBL		BOKL	
Fiscal Years	Cost of Capital (Ko)	Value of Firm (in million Rs)	Cost of Capital (Ko)	Value of Firm (in million Rs)
2002/03	5.90	14916.26	25.30	1416.10
2003/04	18.70	4873.50	18.10	2279.80
2004/05	16.80	6426.20	22.00	1999.40
2005/06	14.70	8999.20	12.90	4693.60
2006/07	9.90	14866.26	7.80	9223.40
Average	13.20	10016.18	17.22	3922.46

Source: Appendix 9

Above computed overall capitalization rate of HBL shows that the costs are 5.9%, 18.7%, 16.80%, 14.70 and 9.90% in the fiscal years 2002/03, 2003/04, 2004/05, 2005/06 and 2006/07 when the values of the firm are Rs. 14916.26, 4873.50, 6426.20, 8999.20 and 14866.26 million respectively. The average cost is 13.2% at an average value of Rs. 10016.18 million.

Similarly, in the case of BOKL, the costs are the costs are 25.30%, 18.1%, 22.0%, 12.90% and 7.8% in the fiscal years 2002/03, 2003/04, 2004/05, 2005/06 and 2006/07 respectively. And the values of the firm are Rs. 1416.10, 2279.80, 1999.40, 4693.60 and 9223.40 million respectively. The average cost is 17.22% at an average value of Rs. 3922.46 million.

4.3.2 Net Operating Income (NOI) Approach

It is an independent hypothesis of capital structure decision of the firm and which is irrelevant to the value of firm an overall cost of capital. Change in leverage will not lead to any change in the total value of the firm and market price of share, as the overall cost of capital is independent of the degree of leverage. The increase in leverage leads to an increase in financial risk of the ordinary shareholders. To minimize the financial risk, the shareholders want a higher return on their investment. Increases in Ko are exactly offset by using cheaper debt fund keeping Ko constant. So equity capitalization rate Ke is calculated here by simply dividing EBT by the market value of common equity, which is presented in the following table. Detail calculation of Ke is presented in the appendix.

Table No. 4.10

Comparative Position of Effect of Debt on Equity Capitalization Rate

	HBL		BOKL	
Fiscal Years	Cost of Equity (Ke)	Long Term Debt (in million Rs)	Cost of Equity (Ke)	Long Term Debt (in million Rs)
2002/03	9.10	646.00	8.90	498.20
2003/04	9.30	369.00	9.30	912.20

2004/05	8.80	506.00	10.20	6.00
2005/06	7.90	505.00	7.60	753.20
2006/07	5.03	596.00	4.60	930.20
Average	8.02	524.40	8.12	619.96

Source: Appendix 10

The equity capitalization rates of HBL in the fiscal years 2002/03, 2003/04, 2004/05, 2005/06 and 2006/07 are 9.1%, 9.3%, 8.8%, 7.9% and 5.03% respectively. And their respective long term debts are Rs. 646.0 369.0 506.0 505.0 596.0 million respectively. The average cost is 8.02% at an average long term debt of Rs. 524.4 million.

The equity capitalization rates of BOKL are 8.9%, 9.3%, 10.2%, 7.6% and 7.6% in the fiscal years 2002/03, 2003/04, 2004/05, 2005/06 and 2006/07 respectively. And the long term debts are Rs. 498.20, 912.2, 6.0, 753.2 and 930.2 million respectively. The average cost is 8.12% at an average long term debt of Rs. 619.96 million.

4.4 Leverage Analysis

Leverage and capital structure are closely related concepts linked to cost of capital and therefore capital budgeting decision. Leverage results from the use of fixed cost assets or tends to magnify return to the firm's owners. Changes in leverage result in changes in level of return and associated risk. Generally, increase in leverage result in increase in return and risk, where as decrease in leverage result in decreased return and risk. The amounts of leverage in the firm's capital structure the mix of long term debt and equity maintained b the firm can significantly affect its value by affecting return and risk. Because of its

effect on value, the financial manager must understand how to measure and evaluate leverage when attempting to create the best capital structure.

Generally, leverage refers tot he use of special force of power to have more than normal results from a particular action. Similarly in financial term it is used to describe about utilization of funds for which the firm has to pay fixed cost and to have more return than normal having more risk as well. Leverage may be used to boost owners' returns, but it is used at the risk of increasing losses, if the firm's economics fortune declines. Thus gain and losses are magnified by leverage, and the higher the leverage employed by a firm, the greater will be the volatility of its returns. There are three types of leverages: operating leverage, financial leverage and combine leverage. Operating leverage is the function of fixed cost, contribution margin and sales volume. Financial leverage is the relationship between EBIT and EBT and combined leverage is the combined effect of operating leverage and financial leverage. The operating leverage indicates the impact of changes sales an operating income and financial leverage exist when the capital structure if the firm composed debt capital. Financial leverage is related to the capital structure of the firm. So, financial leverage is the relevant issue of this study, which is explained in this section.

4.4.1 Analysis of Financial Leverage

When the company employs debt or other fund carrying fixed charges i.e. interest in the capital structure, financial leverage exists. If the financial charge is high the company can have advantage of tax shield but it will affect to owners' return i.e. net profit as well. Financial leverage explains the relationship between earning before interest and taxes and net profit of the company.

Two methods: either dividing percentage change into EPS by percentage change into EBIT or dividing percentage change into EBT by EBIT can calculate degree of financial leverage. In this analysis of financial leverage second method is chosen. High the financial leverage, high will be the financial risk and also high

will be the shareholders' return. The degree of financial leverage of sampled companies is presented in the following table.

$$DFL \text{ X} \frac{\%ChangeInEPS}{\%ChangeInEBIT} \text{ X} \frac{EBIT}{EBT}$$

Table No. 4.11

Comparative Degree of Financial Leverage

Fiscal Years	Degree of Financial Leverage	
	HBL	BOKL
2002/03	2.70	4.37
2003/04	2.17	3.25
2004/05	2.07	2.18
2005/06	1.96	2.02
2006/07	2.07	1.88
Average	2.19	2.74

Source: Appendix 11

Above calculated DFL of HBL indicates fluctuation trend. In the fiscal year 2002/03 the DFL is 2.7 times. In the second year i.e. 2003/04 the DFL is 2.17 times. In the fiscal years 2004/05, 2005/06 and 2006/07 the DFL is 2.07, 1.96 and 2.07 times respectively.

The trend of BOKL is decreasing trend. The DFL of BOKL in the fiscal year 2002/03, 2003/04, 2004/05, 2005/06 and 2006/07 is 4.37, 3.25, 2.18, 2.02 and 1.88 respectively. The average DFL of BOKL is 2.74 times.

4.5 Correlation Analysis

Correlation analysis enables us to have an idea about the degree and direction of the relationship between the two or more variables. The correlation is a

statistical tool which studies the relationship between two or more variables and correlation analysis involves various methods and techniques used for studying and measuring the extent of the relationship between the two or more variables. It is denoted by 'r'. However, it fails to reflect upon the cause and effect relationship between the variables. Although there are three types of correlation i.e. simple, partial and multiple but here we focus on simple correlation based on 'Pearson's coefficient of correlation'. In the following section correlation between different variables are calculated and presented of the sampled companies.

- Total debt and shareholders equity
- Long term debt and earning per share
- EBIT and interest
- EBIT and DPS

4.5.1 Total Debt and Shareholders Equity

The relationship between total debt (TD) and shareholders equity (SHE) have been shown in the following table below. The total debt includes all types of long term borrowed funds, current liabilities and provisions. Whereas shareholders' equity includes share capital reserve and surplus. This correlation indicat4es whether there is positive or negative correlation between TD and SHE and their respective probable error is also presented. P.E. interprets the value of correlation co-efficient. It helps to determine applicability for the measurement of reliability of the computed value of the correlation coefficient (r). Detail calculations are presented in the appendix 13.

Table No. 4.12

Comparative Coefficient between TD and SHE with Probable Error

HBL		BOKL	
Correlation Coefficient (r)	Probable Error 6(P.E.)	Correlation Coefficient (r)	Probable Error 6(P.E.)

0.996	0.015	0.93	0.245

Source: Appendix 12

Karl Pearson's correlation coefficient between total debt and shareholders equity of HBL is 0.996. There is positive correlation between TD and SHE. The probable error 6(PE) of HBL is 0.015. PE is less than correlation coefficient (r). Similarly, the correlation coefficient of BOKL is 0.93, which is positive. The probable error is 0.245, which is less than r.

4.5.2 Long term Debt and Earning Per Share

Long term debt is the source of long term financing or long term finds. Company should pay interest for this debt capital. Where as earning per share (EPS) is earning of a share of a firm form one year business. EPS has positive relationship with company's earning. In this section the relationship between these two variables has been shown using Karl Pearson's correlation coefficient method. It tries to analyze that the increment in LTD leads to increment in the EPS or not. The calculated correlation coefficient and their respective probable error have been shown in the following table referred form appendix.

Table No. 4.13

Correlation Coefficient between Long Term Debt (LTD) and Earning Per Share (EPS) and their respective Probable Error

HBL		BOKL	
Correlation Coefficient (r)	Probable Error (P.E.)	Correlation Coefficient (r)	Probable Error (P.E.)
0.27	1.68	0.93	1.53

Source: Appendix 13

In the basis of above table, correlation coefficient between long term debt and earning per share of HBL is 0.27, which implies that there is positive correlation between LTD and EPS. The Probable error (PE) of HBL is 1.53PE is greater than correlation coefficient (r).

In the case of BOKL, the correlation coefficient is 0.93, which implies that there is positive correlation between LTD and EPS. The Probable error (PE) of BOKL is 1.697. PE is greater than correlation coefficient (r).

4.5.3 EBIT and Interest

Long term debt holders get the interest as return and EBIT is operating profit of the company. Here correlation coefficient of interest and EBIT has presented of concerned companies to analyze whether there is positive or negative correlation between interests and operating profit, those are calculated on the basis of Karl Pearson's correlation coefficient. Following table shows the relationship between these variables of sampled companies. And to check the significance of these calculated correlations. PE is also presented, which is referred from appendix:

Table No. 4.14

Correlation Coefficient between EBIT and Interest, and their respective Probable Error

HBL		BOKL	
Correlation Coefficient (r)	Probable Error (P.E.)	Correlation Coefficient (r)	Probable Error (P.E.)
0.94	0.21	0.807	0.63

Source: Appendix 14

In the above table, correlation coefficient of HBL is found to be 0.94 i.e. there is positive correlation between Interest and EBIT. PE of respected correlation is 0.21, which is less than correlation coefficient (r).

Similarly, in the case of BOKL, the correlation coefficient between Interest and operating profit is 0.807. It is positive. The Probable error of respected correlation is 0.63, which is greater than correlation coefficient (r).

4.5.4 EBIT and DPS

Shareholders get the dividend as return and EBIT is operating profit of the company. Here, correlation coefficient of EBIT and DPS has been presented of concerned companies to analyze whether there is positive or negative correlation between dividends and operating profit. Following table shows the relationship between these variables of sampled companies. And to check the significance of these calculated correlations. PE is also presented, which is referred from appendix:

Table No. 4.15

Correlation Coefficient between EBIT and DPS and their respective Probable Error

HBL		BOKL	
Correlation Coefficient (r)	Probable Error 6(P.E.)	Correlation Coefficient (r)	Probable Error 6(P.E.)
0.91	0.31	0.77	0.74

Source: Appendix 15

In the above table, correlation coefficient of HBL is found to be 091, i.e. there is positive correlation between EBIT and DPS. 6PE of respected correlation is 0.31, which is less than correlation coefficient (r).

Similarly, in case of BOKL, the correlation coefficient between operating profit and dividend is 0.77. It is positive. The 6PE of respected correlation is 0.74, which is less than correlation coefficient (r).

4.6 Major findings of the Study

The percentage of total debt of the firm covered by long term debt is indicated by long term debt to total debt ratio. HBL has 1.92% of average long term debt to total debt ratio. Similarly BOKL has average ratio of 5.59%. In two cases, the total debt is contributed by current liabilities to a large extent. The analysis of two companies reveals the fluctuating trend of long term debt to total debt ratio. Among the two, BOK has used maximum long term debt in comparison to HBL.

The analysis shows that among the two banks, HBL has least and BOKL has the highest long term debt to capital employed ratio of 0.254 and 0.47 respectively. This indicates that BOKL is using more long term debt financing as its capital. It can be said that long term debt to capital employed ratio of both companies are inappropriate.

The long term debt for financing used by both sample companies is very minimum or negligible. Hence, the debt to total assets ratio of HBL and BOKL is negligible.

The debt equity ratio shows the claim of creditors on the total asset of the company. The trend analysis shows fluctuating trend in two sample banks. The average debt equity ratio of HBL is 0.356, which shows that the creditors have 35.6% claims on the assets of HBL. It also indicates that the company has used less amount of debt as financing and has lesser amount to be paid as interest on debt. BOKL has the highest debt equity ratio among the two with the average ratio of 0.80. It implies that the claim of creditors is 80.0% which is higher than that of owners of the company. The ratio shows that BOKL has used almost equal amount of debt and equity for financing where as in case of HBL the contribution of debt is low in comparison to the equity.

The analysis shows that both the sample companies HBL and BOKL are able to pay the interest amount. Among the two, BOK has the lowest interest coverage

ratio of 1.74, which shows that the firm is able to pay the interest amount. In case of HBL, the average interest coverage ratio is 1.87.

In comparison, HBL and BOKL have the average return on asset of 1.22 and 1.43 respectively. The overall return on asset of HBL is fluctuating in trend and of BOKL is increasing trend.

The returns on shareholder's equity of both banks are fluctuating over the period of five years. The average return of HBL is Rs. 22.0% which indicates that the shareholders earned Rs. 22.00 paisa investing rupee one. By analyzing the average return, we can conclude that return earned by the shareholders equity of HBL is highest among two companies i.e. 22.0%

The earning per share explains net income for each unit of share. It shows the market position of the market. The average earning per share of HBL is Rs. 53.26. The average earning per share of BOKL is Rs.32.50. Among the two, HBL has the highest earning per share.

Under the NI approach, the interest rate and the cost of equity are dependent of the capital structure. With the increased use of leverage, overall cost of capital declines and the total value of firm rise. From the calculations, HBL has the optimum capital structure because it has the least cost of capital and the highest value of the firm.

Net operating income (NOI) approach is an independent hypothesis of capital structure. Any changes in leverage will not lead to any change in the total value of the firm and market price of share. From the position of average cost of equity, it is found that HBL has an average cost of equity of 8.02% with an average long-term debt of Rs. 524.0 million, which in comparison to BOK is higher, where BOK has average cost of equity of 8.12% at long term debts of

Rs. 619.96 million. So we can say that HBL has the optimum capital structure compared to BOK.

The financial leverage analysis helps to evaluate the financial risk of the firm. The average degree of financial leverage of HBL and BOKL are 2.19 and 2.74 respectively, which concludes that BOK is bearing the highest risk and HBL is bearing the least financial risk among the two.

HBL has positive correlation between TD and SHE of 0.996 that is they deviate in the same direction. Likewise, the probable error is 0.015, less than correlation coefficient, i.e. relationship between TD and SHE is significant. In case of BOKL the correlation coefficient is 0.93. The 6(PE) of BOKL is 0.245 which shows that the value of r is significant.

Correlation coefficient and PE ratio between long term debt and earning per share of HBL and BOKL shows that there is positive correlation and insignificant relationship in HBL and significant in BOKL as PE is greater than correlation coefficient of HBL and less than correlation coefficient of BOKL.

The correlation coefficient between EBIT and interest of both banks are positive. In case of both banks the value are significant that PE are less than correlation coefficient.

The correlation coefficient between EBIT and DPS of HBL is 0.91 and 6PE is 0.31 indicating positive and insignificant correlation. In case of BOKL the correlation is positive and less than probable error indicating insignificant correlation.

CHAPTER- 5

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This is the concluding chapter of the study. This chapter is divided into three sections: Summary, Conclusions and Recommendations. In this chapter, we summarize the study in brief. In the last section of this chapter some recommendations have given, which are useful to stakeholders and to concerned companies as well. They can use these recommendations to take some corrective actions to draw decisions.

Summary

In this study, to analyze about capital structure, two commercial banks have been chosen. These banks are Himalayan Bank and Bank of Kathmandu Ltd. Both banks are listed in NEPSE. To make the study more reliable, the whole study has been divided into five chapters. The summaries of each chapter are presented following.

First chapter: First chapter starts with historical background of the study. In this chapter an introduction to banking industry in Nepal, introduction of the banks selected for the study, description of the capital structure is presented briefly. This study endeavors to evaluate capital structure of commercial banks with reference to Himalayan Bank Ltd and Bank of Kathmandu Ltd.s The main questions presented as the 'focus of the study" are what are the condition of capital structure of the commercial banks of Nepal? Whether they are using an appropriate financial mix or not? If not, what may be the suggested to improve or to make appropriate capital structure? Does capital structure help to maximize the value of the firm in the context of Nepalese firms? The statement of the problems deals with the effect of the capital structure on the growth of the firm, the extent to which the capital structure policy is followed by the commercial

banks, and the main problems faced by the commercial banks in developing and implementing the capital structure.

The main objectives of the study presented are to evaluate the role of capital structure on the growth of the commercial banks in Nepal, to analyze the effectiveness and efficiency of capital structure of the commercial banks in Nepal and to analyze the relationship of capital structure with variables such as earning per share, dividend per share and net worth.

Finally, "significance of the study" and "limitations of the study" are also presented in the first chapter.

Second chapter: In this chapter various books, research studies and articles concerned with the capital structure have been reviewed and presented as the review of literature to make the concept of capital structure more clear. Capital structure theories such as NI approach, NOI approach, MM model and other theoretical approaches to establish appropriate capital structure are described in this chapter. Review of different management journals, articles as well as related Nepalese studies have been presented as well.

Third chapter: In this chapter the steps to adopt realistic study needed for the researchers have been presented. The methodology, researcher can use to get appropriate guidelines and knowledge about the various sequential steps to adopt a systematic analysis has been explained in this chapter. Most of data used in this study are secondary in nature that is annual reports provided by concerned companies. Five years data are taken as sample years and are analyzed by using financial and statistical tools such as ratio analysis, leverage analysis, capital structure analysis, correlation analysis, probable error etc. Methods, which the study is going to use, are exhibited in this chapter.

Fourth chapter: The data mentioned in the third chapter are presented and analyzed in this chapter using methods mentioned in the chapter third above such as ratios, leverage analysis, correlations, and probable errors and capital

structure analysis. Detail calculations presented in this chapter are shown in appendix, which is presented after fifth chapter.

Fifth chapter: In this chapter, summary of the study are presented in brief to understand the whole to get about of the study instantly after which conclusion of the study with recommendation are presented.

Conclusion

In this study, comparison among concerned banks has been done taking data of these banks. To evaluate the capital structure, different types of tools and technique are used. The following conclusion can be drawn.

Long term debt to total debt ratio shows that all of the sample banks have fluctuating trend of long term debt to total debt ratio. In average HBL has 1.92% of average long term debt to total debt ratio, which means that about 98.08% of the total debt is contributed by current liabilities. Similarly BOKL has the average ratio of 5.59%.

Long term debt to capital employed ratio highlights the portion of fund financed by long term debt in the capital employed by the firm. The data shows HBL has the average ratio of 25.4%. Similarly BOKL has the average of 47%. We can conclude that two companies do not have appropriate ratio of long term debt to capital employed and among the two in average HBL has employed more of the long term debt in the capital than the BOK.

Debt to total assets ratio express the relationship between creditors fund and total assets. The debt ratio or debt to total assets ratio of BOKL and HBL is negligible which concludes that the debt used as the capital are negligible.

Debt equity ratio of HBL shows the creditors have 35.6% claims on the assets, which is very lowest among the two banks. It also indicates that the company has lesser amount to be paid as interest on debt. In case of BOKL, the claim of creditors is 80.0%, which is higher than that of owners of the company.

Interest coverage ratio shows how many times the interest charges are covered by EBIT out of which they will be paid. The conclusion drawn by the study is the average interest coverage ratio of HBL is 1.87 and BOKL is 1.74, which shows that both banks are able to cover the interest but as the higher interest coverage ratio is better. HBL seems to have higher ratio than BOKL.

In regards of the comparative position of return on total assets of the two commercial banks BOKL seems to have the highest return of 1.43 in comparison of 1.22 of HBL.

The return on shareholder's return of HBL shows the average ratio of 22.0% and it has fluctuating trend. The data indicates that HBL has instable return. Similarly BOKL has also fluctuating trend and the ratio of 21.0%. By analyzing the average ROSHE, we can conclude that return earned by the shareholders equity of BOKL is least i.e. 21.0% and the return of HBL is highest i.e. 22.0%. So we can conclude that both companies should apply suitable action to increase ROSHE.

Earning per share of an organization shows the strength of the share in the market. The average earning per share of HBL is Rs. 53.26. Similarly, the average earning per share of BOKL is Rs. 32.50. Among the two, HBL has the highest earning per share.

Net income approach is the dependent hypotheses of capital structure, which states with the increased use of leverage, overall cost of capital declines and the total value of the firm rise. According to this hypothesis the firm with the highest value and the least cost of capitalization rate is considered to have the best capital structure. The average value of firm of HBL and BOKL are 178541.412 and 19612.30 respectively and the average cost of capitalization rate

is 13.2% and 17.2% respectively. From the calculation it can be concluded that HBL has the better capital structure in comparison with BOKL.

Net operating income is the independent hypothesis of the capital structure decision of the firm. According to this hypothesis, any change in the leverage will not lead to any change in the total value of the firm and market price of the share, as the overall cost of capital is independent of the degree of leverage. From the position of average Ke we can conclude that HBL has lesser Ke i.e. 8.02% than BOKL i.e. 8.12%.

When the company employs debt or other fund carrying fixed charges in the capital structure, financial leverage exists. From the calculations, we can conclude that BOK is using high long term debt and so is bearing the highest risk among the two. But it can also be concluded it is taking corrective actions to decrease its risk since the trend is decreasing. HBL has moderate financial risk.

Considering the correlation coefficient and probability error calculated the correlation coefficients are positive and PE are less than the correlation coefficient which concluded that the total debt and shareholder's equity deviate in the same direction and relationship between total debt and correlation coefficient are insignificant. Likewise in the case of EBIT and interest the correlation coefficient are positive and significant in relationship.

In the case of long term debt and earning per share, the correlation coefficients of both are positive which concluded that the positive correlation exists between the two variables. Since PE in all cases is greater than correlation, the relationship between LTD and EPS is insignificant.

In the case of EBIT and DPS, BOK shows positive correlation and PE is less than correlation coefficient which shows significant relationship in both banks.

Recommendations

In this section of study, few points that can be helpful to stakeholders as well as to the company are recommended based upon above calculations and drawn conclusions. These recommendations are guidelines, which would be helpful in taking prompt and appropriate decision about capital structure. These recommendations are given below:

First of all, the companies lack the theoretical knowledge regarding the capital structure. They have not given significant attention to the capital structure matter. Capital structure is a serious matter. It affects EPS, Value of the firm, cost of capital etc. So it is recommended that these companies should follow the theoretical aspects of the capital structure management or give bit more attention in this matter and try to manage their activated accordingly.

Observing the return on shareholders' equity, earning per share, dividend per share, return on assets, BOKL seems to have better capital structure but with greater financial risk than the HBL. The companies along with the return should also consider the risk associated. The companies' shareholders not only seek the high return from their investment but also consider the risk of the investment. So it is recommended to all these companies to plan their capital structure well by analyzing the possible financial alternatives considering high return and least risk.

The companies are also recommended to minimize the financial and other expenses so the interest coverage ratio could be increased. They are recommended to use less cost debt, improve strategy of promotion activities, analyze and evaluate before making investments etc to increase the return and decreases risk.

APPENDICES

APPENDIX 1 : Long Term Debt to Total Debt

$$Long\,Term\,Debt\,to\,Total\,Debt\,Ratio = \frac{Long\,Term\,Debt}{Total\,Debt} X100$$

Long Term Debt to Total Debt of HBL

F/Y	Long Term Debt	Total Debt	(LTD/TD)%
2002/03	646	23279.34	2.77
2003/04	369	24817.36	1.49
2004/05	506	27418.15	1.85
2005/06	505	29460.39	1.71
2006/07	596	33519.14	1.78
Average			1.92

Long Term Debt to Total Debt of BOKL

F/Y	Long Term Debt	Total Debt	(LTD/TD)%
2002/03	498.20	7814.80	6.37
2003/04	912.20	9858.00	9.25
2004/05	6.00	10126.5	0.06
2005/06	753.20	12511.3	6.02
2006/07	930.00	14867.6	6.25
Average			5.59

APPENDIX 2 : Long Term Debt to Capital Employed

$$LongTermDebtToCapitalEmployed \text{ X} \frac{LongTermDebt}{CapitalEmployed}$$

Long Term Debt to Capital Employed HBL

F/Y	Long Term Debt	Capital Employed	LTD/CE
2002/03	646.00	1709.13	0.378
2003/04	369.00	1693.25	0.218
2004/05	506.00	2138.75	0.237
2005/06	505.00	2271.20	0.222
2006/07	596.00	2742.50	0.217
Average			0.254

Long Term Debt to Capital Employed BOKL

F/Y	Long Term Debt	Capital Employed	LTD/CE
2002/03	498.2	961.8	0.52
2003/04	912.2	1055.2	0.86
2004/05	6.00	726.73	0.008
2005/06	753.2	1592.91	0.47
2006/07	930.00	1911.94	0.49
Average			0.47

Appendix 3 : Debt to Total Asset Ratio

Long Term Debt-Total Asset Ratio HBL

F/Y	Long Term Debt	Total Asset	LTD/TA
2002/03	646.00	23355.22	0.28
2003/04	369.00	24762.02	0.149
2004/05	506.00	27844.69	0.018
2005/06	505.00	29460.39	0.017
2006/07	596.00	33519.14	0.018
Average			0.046

Long Term Debt-Total Asset Ratio BOKL

F/Y	Long Term Debt	Total Asset	LTD/TA
2002/03	498.20	7814.80	0.064
2003/04	912.20	9858.00	0.093
2004/05	6.00	10126.50	0.0006
2005/06	753.2	12511.3	0.060
2006/07	930.00	14867.6	0.0625
Average			0.060

Appendix 4 : Debt-Equity Ratio

Debt to Equity Ratio of HBL

F/Y	Long Term Debt	Total Equity	D/E Ratio
2002/03	646.00	1063.13	0.607
2003/04	369.00	1324.25	0.279
2004/05	506.00	1541.75	0.328
2005/06	505.00	1766.20	0.286
2006/07	596.00	2146.50	0.356
Average			0.80

Debt to Equity Ratio of BOKL

F/Y	Long Term Debt	Total Equity	D/E Ratio
2002/03	498.20	463.60	1.07
2003/04	912.20	981.98	0.93
2004/05	6.00	720.73	0.008
2005/06	753.20	839.73	0.89
2006/07	930.20	839.73	1.11
Average			0.80

Appendix 5 : Interest Coverage Ratio

Interest Coverage Ratio of HBL

F/Y	EBIT	Interest	I/C Ratio
2002/03	880.28	554.13	1.58
2003/04	912.11	491.54	1.85
2004/05	1084.50	561.96	1.93
2005/06	1321.25	648.84	2.04
2006/07	1484.81	767.41	1.93
Average			1.87

Interest Coverage Ratio of BOKL

F/Y	EBIT	Interest	I/C Ratio
2002/03	358.8	276.70	1.29
2003/04	413.77	286.30	1.45
2004/05	445.93	241.64	1.85
2005/06	609.37	308.16	1.98
2006/07	722.58	339.18	2.13
Average			1.74

Appendix 6 : Return on Total Assets

$$Return\ On\ Total\ Assets = \frac{Net\ Profit\ After\ Tax}{Total\ Assets}$$

Return on Total Assets of HBL

F/Y	Net Profit	Total Assets	ROA
2002/03	212.13	23355.22	0.91
2003/04	263.05	24762.02	1.06
2004/05	308.28	27844.69	1.11
2005/06	457.46	29460.39	1.55
2006/07	491.82	33519.14	1.47
Average			1.22

Return on Total Assets of BOKL

F/Y	Net Profit	Total Assets	ROA
2002/03	82.10	7814.80	1.10
2003/04	127.47	9858.00	1.30
2004/05	139.53	10126.50	1.37
2005/06	202.44	12511.30	1.62
2006/07	262.38	14867.60	1.76
Average			1.43

Appendix 7 : Return on Shareholders' Equity

$$Return On Shareholder's Equity \; X \frac{Net \; Profit After Tax}{Shareholder's Equity}$$

Return on Shareholders' Equity of HBL

F/Y	Net Profit	S.E.	ROE
2002/03	212.13	1063.13	0.20
2003/04	263.05	1324.25	0.20
2004/05	308.28	1541.75	0.20
2005/06	457.46	1766.20	0.25
2006/07	491.82	2146.48	0.23
Average			0.22

Return on Shareholders' Equity of BOKL

F/Y	Net Profit	S.E.	ROE
2002/03	82.10	463.60	0.178
2003/04	127.47	782.88	0.163
2004/05	139.53	720.73	0.194
2005/06	202.44	839.73	0.241
2006/07	262.38	981.94	0.267
Average			0.21

Appendix 8 : Earning Per Share

$$EPS\ X \frac{NetIncome}{NoOfSharesOutstanding}$$

Earning Per Share of HBL

F/Y	EBIT	Interest	Tax	EAT	No. of Shares(N)	EPS
2002/03	880.28	554.13	114.02	212.13	4290000	49.45
2003/04	912.11	491.54	157.52	263.05	5362500	49.05
2004/05	1084.50	561.96	214.26	308.28	6435000	47.90
2005/06	1321.25	648.84	214.95	457.46	7722000	59.24
2006/07	1484.81	767.41	225.58	491.82	8108100	60.66
Average						53.26

Earning Per Share of BOKL

F/Y	EBIT	Interest	Tax	EAT	No. of Shares(N)	EPS
2002/03	358.80	276.70	-	82.10	4635800	17.71
2003/04	413.77	286.30	-	127.47	4635800	27.50
2004/05	445.93	241.64	64.76	139.53	4635800	30.10
2005/06	609.37	308.16	98.77	202.44	4635800	43.67
2006/07	722.58	339.18	121.02	262.38	6031400	43.55
Average						32.50

Appendix 9 : Calculation of NI Approach

$$MarketValueofEquity(S) \text{ X } NoofShares\,Outstanding \mid Closing\,MPS$$

$$MarketValueofFirm(V) \text{ X } MarketValueOfDebt(B) \Gamma MarketValueofEquity(S)$$

Value of firm of HBL

F/Y	No. of Shares(N)	Closing MPS	Market Value of Share (S)	Market Value of Debt (B)	V=S+B
2002/03	4290000	836	3586.44	646.00	149160.256
2003/04	5362500	840	4504.50	369.00	4873.50
2005/06	6435000	920	5920.20	506.00	642.20
2005/06	7722000	1100	8494.20	505.00	8999.20
2006/07	8108100	1760	14270.256	596.00	14866.256
Average					178541.412

Value of firm of BOKL

F/Y	No. of Shares(N)	Closing MPS	Market Value of Share (S)	Market Value of Debt (B)	V=S+B
2002/03	4635800	198	917.89	498.20	1416.10
2003/04	4635800	295	1367.56	912.20	2279.80
2004/05	4635800	430	1993.40	6.00	1999.40
2005/06	4635800	850	3940.43	753.20	4693.60
2006/07	6031400	1375	8293.18	930.20	9223.40
Average					19612.30

Calculation of Overall Capitalization rate (Ko)

$$CostOfOverallCapitalization(Ko) \; X \frac{NetOperatingEarning(EBIT)}{TotalMarketValueofTheFirm(V)}$$

Calculation of Overall Capitalization rate (Ko) of HBL

F/Y	EBIT	Value of Firm	Ko
2002/03	880.28	14916.26	0.059
2003/04	912.11	4873.50	0.187
2004/05	1084.50	6426.20	0.168
2005/06	1321.25	8999.20	0.147
2006/07	1484.81	14866.26	0.099
Average			0.132

Calculation of Overall Capitalization rate (Ko) of BOKL

F/Y	EBIT	Value of Firm	Ko
2002/03	358.8	1416.10	0.253
2003/04	413.77	2279.80	0.181
2004/05	445.93	1999.40	0.22
2005/06	609.37	4693.60	0.129
2006/07	722.58	9223.40	0.078
Average			0.172

Appendix 10: Calculation of NOI Approach

$$Costofequity(Ke)\ \mathrm{X}\frac{EquityAvailableToCommonStockholders(NI)}{MarketValueOfStock(S)}$$

Calculation of Equity Capitalization rate of HBL

F/Y	EBT	Market Value of Equity, S	Ke
2002/03	326.15	3586.44	0.091
2003/04	420.57	4504.50	0.093
2004/05	522.54	5920.20	0.088
2005/06	672.36	8494.20	0.079
2006/07	717.40	14270.256	0.050
Average			0.080

Calculation of Equity Capitalization rate of BOKL

F/Y	EBT	Market Value of Equity, S	Ke
2002/03	82.10	917.89	0.089
2003/04	127.47	1367.56	0.093
2004/05	204.29	1993.40	0.102
2005/06	301.21	3940.43	0.076
2006/07	383.40	8293.17	0.046
Average			0.0812

Appendix 11: Degree of Financial Leverage

$$DFL \quad X \frac{\%\,Change\,in\,EP \quad S}{\%\,Change\,in\,EB \quad IT} \; or$$

$$DFL \quad X \frac{EBIT}{EBT}$$

Degree of Financial Leverage of HBL

F/Y	EBIT	EBT	DFL	Change (%)
2002/03	880.28	326.15	2.70	0.00
2003/04	912.11	420.57	2.17	(19.63)
2004/05	1084.50	522.54	2.07	(4.60)
2005/06	1321.25	672.36	1.96	(5.31)
2006/07	1484.81	717.40	2.07	5.60
Average			2.194	(4.79)

Degree of Financial Leverage of BOKL

F/Y	EBIT	EBT	DFL	Change (%)
2002/03	358.80	82.10	4.37	0.00
2003/04	413.77	127.47	3.25	(25.63)
2004/05	445.93	204.29	2.18	(32.92)
2005/06	609.37	301.21	2.02	(7.39)
2006/07	722.58	383.40	1.88	(6.93)
Average			2.74	(14.56)

Appendix 12: Correlation Coefficient Between Total Debt and Shareholders Equity with Probable Error

$$r = \frac{N \sum XY - \sum X \sum Y}{\sqrt{N \sum X^2 - (\sum X)^2} \times \sqrt{N \sum Y^2 - (\sum Y)^2}}$$

Where,

N= number of observations

X and Y are variables.

$$P.E. = 0.6745 \times \frac{(1 - r^2)}{\sqrt{N}}$$

Where,

r = correlation coefficient

N = number of pairs of observations.

Correlation Coefficient Between TD and SHE of HBL

F/Y	TD(X)	SHE(Y)	XY	X2	Y2
2002/03	23279.34	1063.13	24748964.73	541927670.80	1130245.39
2003/04	24817.36	1324.25	32864388.98	615901357.40	1753638.06
2004/05	27418.15	154.75	42271932.76	751754949.40	2376993.06
2005/06	29460.39	1766.20	52032940.82	867914579.00	3119462.44
2006/07	33519.14	2146.48	71948163.63	1123532746.00	4607376.39
Total	138494.38	7841.81	223866390.90	3901031303.0	12987715.34

$$r = \frac{N \sum XY - \sum X \sum Y}{\sqrt{N \sum X^2 - (\sum X)^2} \times \sqrt{N \sum Y^2 - (\sum Y)^2}}$$

$$= \frac{5 \times 223866390.90 - 138494.38 \times 7841.81}{\sqrt{5 \times 3901031303.0 - (138494.38)^2} \times \sqrt{5 \times 12987715.34 - (7841.81)^2}}$$

$$= 0.996$$

$$P.E. = 0.6745 \times \frac{(1 - r^2)}{\sqrt{N}}$$

$$= 0.6745 \times \frac{(1 - 0.996)}{\sqrt{5}}$$

$$= 0.0145$$

Correlation Coefficient Between TD and SHE of BOKL

F/Y	TD(X)	SHE(Y)	XY	X2	Y2
2002/03	7814.80	463.60	3622941.28	61071099.04	214924.96
2003/04	9858.00	782.88	7717631.04	97180164.00	612901.09
2004/05	10126.50	720.73	7298472.35	102546002.30	519451.73
2005/06	14867.60	839.73	10506113.95	156532627.70	705146.46
2006/07	14867.60	981.94	14599091.14	221045529.80	964206.16
Total	55178.20	3788.88	43744249.76	638375422.70	301660.42

$$r = \frac{N \sum XY - \sum X \sum Y}{\sqrt{N \sum X^2 - (\sum X)^2} \times \sqrt{N \sum Y^2 - (\sum Y)^2}}$$

$$= \frac{5 \times 43744249.76 - 55178.2 \times 3788.88}{\sqrt{5 \times 638375422.7 - (55178.2)^2} \times \sqrt{5 \times 3016630.42 - (3788.88)^2}}$$

$$= 0.93$$

$$P.E. = 0.6745 \times \frac{(1 - r^2)}{\sqrt{N}}$$

$$= 0.6745 \times \frac{(1 - 0.8649)}{\sqrt{5}}$$

$$= 0.245$$

Appendix 13: Correlation Coefficient Between Long Term Debt and Earning Per Share with Probable Error

Correlation Coefficient Between LTD and EPS of HBL

F/Y	LTD(X)	EPS(Y)	XY	X2	Y2
2002/03	646.00	49.45	31944.70	417316	2445.30
2003/04	369.00	49.05	18099.45	136161	2405.90
2004/05	506.00	47.90	24237.40	256036	2294.41
2005/06	505.00	59.24	29916.20	255025	3509.38
2006/07	596.00	60.66	36153.36	355216	3679.64
Total	2622.00	266.30	140351.11	1419754	14334.63

$$r \mathrm{X} \frac{N \quad XY \mathrm{Z} \quad X \quad Y}{\sqrt{N \quad X 2 \mathrm{Z}(\quad X)2 \mid \sqrt{N \quad Y 2 \mathrm{Z}(\quad Y)2}}}$$

$$\mathrm{X} \frac{5 \mid 140351.11 \mathrm{Z} 2622.0 \mid 266.3}{\sqrt{5 \mid 1419754.0 \mathrm{Z}(2622)2 \mid \sqrt{5 \mid 14334.63 \mathrm{Z}(266.3)2}}}$$

$\mathrm{X}0.27$

$$P.E. \mathrm{X}6 \mid \frac{0.6745 \mid (1 \mathrm{Z} r 2)}{\sqrt{N}}$$

$$\mathrm{X}6 \mid \frac{0.6745 \mid (1 \mathrm{Z} 0.0729)}{\sqrt{5}}$$

$\mathrm{X}1.68$

Correlation Coefficient Between LTD and EPS of BOKL

F/Y	LTD(X)	EPS(Y)	XY	X2	Y2

2002/03	498.20	17.71	8823.12	248203.24	313.64
2003/04	912.20	27.50	25085.50	832108.84	756.25
2004/05	6.00	30.10	180.60	36.00	906.01
2005/06	753.20	43.67	32892.24	567310.24	1907.06
2006/07	930.20	43.55	40510.21	865272.04	1896.6
Total	3099.80	162.53	107491.67	2512930.36	5779.56

$$r \mathrm{X} \frac{N \quad XY \mathrm{Z} \quad X \quad Y}{\sqrt{N \quad X 2 \mathrm{Z}(\quad X)2 \mid \sqrt{N \quad Y 2 \mathrm{Z}(\quad Y)2}}}$$

$$\mathrm{X} \frac{5 \mid 107491.67 \mathrm{Z} 3099.8 \mid 162.53}{\sqrt{5 \mid 2512930.36 \mathrm{Z}(3099.8)2 \mid \sqrt{5 \mid 5779.56 \mathrm{Z}(162.53)2}}}$$

$$\mathrm{X} 0.393$$

$$P.E. \mathrm{X} 6 \mid \frac{0.6745 \mid (1 \mathrm{Z} r 2)}{\sqrt{N}}$$

$$\mathrm{X} 6 \mid \frac{0.6745 \mid (1 \mathrm{Z} 0.154)}{\sqrt{5}}$$

$$= 1.53$$

Appendix 14: Correlation Coefficient Between EBIT and Interest with Probable Error

Correlation Coefficient Between EBIT and Interest of HBL

F/Y	EBIT(X)	Interest(Y)	XY	X2	Y2
2002/03	880.28	554.13	487789.55	774892.88	307060.05
2003/04	912.11	491.54	448338.55	831944.65	241611.57
2004/05	1084.50	561.96	609445.62	1176140.25	315799.04
2005/06	1321.25	648.84	857279.85	1745701.56	420993.35
2006/07	1484.81	3023.88	1139458.04	2204660.74	588918.11
Total	5682.95	3023.88	3542311.61	6733340.74	1874382.12

$$r = \frac{N \sum XY - \sum X \sum Y}{\sqrt{N \sum X^2 - (\sum X)^2} \times \sqrt{N \sum Y^2 - (\sum Y)^2}}$$

$$= \frac{5 \times 3542311.61 - 5682.95 \times 3023.88}{\sqrt{5 \times 6733340.08 - (5682.95)^2} \times \sqrt{5 \times 1874382.12 - (3023.88)^2}}$$

$$= 0.94$$

$$P.E. = 0.6745 \times \frac{(1 - r^2)}{\sqrt{N}}$$

$$= 0.6745 \times \frac{(1 - 0.8836)}{\sqrt{5}}$$

$$= 0.21$$

Correlation Coefficient Between EBIT and Interest of BOKL

F/Y	EBIT(X)	Interest(Y)	XY	X2	Y2
2002/03	358.80	276.70	99279.96	128737.44	76562.89
2003/04	413.77	286.30	118462.35	171205.61	81967.69
2004/05	445.93	241.64	107754.52	198853.56	58389.89
2005/06	609.37	308.16	187783.46	371331.79	94962.58
2006/07	722.58	339.18	245084.68	522121.85	115043.07
Total	2550.45	1451.98	758364.97	1392250.27	426926.12

$$r = \frac{N \sum XY - \sum X \sum Y}{\sqrt{N \sum X^2 - (\sum X)^2} \times \sqrt{N \sum Y^2 - (\sum Y)^2}}$$

$$= \frac{5 \times 758364.97 - 2550.45 \times 1451.98}{\sqrt{5 \times 1392250.27 - (2550.45)^2} \times \sqrt{5 \times 4269626.12 - (1451.98)^2}}$$

$$= 0.807$$

$$P.E. = 6 \times \frac{0.6745 \times (1 - r^2)}{\sqrt{N}}$$

$$= 6 \times \frac{0.6745 \times (1 - 0.6512)}{\sqrt{5}}$$

$$= 0.63$$

Appendix 15: Correlation Coefficient Between EBIT and DPS with Probable Error

Correlation Coefficient Between EBIT and DPS of HBL

F/Y	EBIT(X)	DPS(Y)	XY	X2	Y2
2002/03	880.28	1.32	1161.96	774892.88	1.742
2003/04	912.11	0.00	0.00	831944.65	0.00
2004/05	1084.50	11.50	12471.75	1176140.25	132.25
2005/06	1321.25	30.0	39637.50	1745701.56	900.00
2006/07	1484.81	15.00	22272.15	2204660.74	225.00
Total	5682.95	57.82	75543.36	6733340.08	1258.99

$$r \mathrm{X} \frac{N \quad XY \mathrm{Z} \quad X \quad Y}{\sqrt{N \quad X2 \mathrm{Z}(\quad X)2 \mid \sqrt{N \quad Y2 \mathrm{Z}(\quad Y)2}}}$$

$$\mathrm{X} \frac{5 \mid 75543.36 \mathrm{Z}5682.95 \mid 57.82}{\sqrt{5 \mid 6733340.08 \Gamma (5682.95)2 \mid \sqrt{5 \mid 1258.99 \mathrm{Z}(57.82)2}}}$$

X0.77

$$P.E. \mathrm{X}6 \mid \frac{0.6745 \mid (1 \mathrm{Z} r2)}{\sqrt{N}}$$

$$\mathrm{X}6 \mid \frac{0.6745 \mid (1 \mathrm{Z}(\mathrm{Z}0.5929)}{\sqrt{5}}$$

X0.74

Correlation Coefficient Between EBIT and DPS of BOKL

F/Y	EBIT(X)	DPS(Y)	XY	X2	Y2
2002/03	358.80	5.00	1794.00	128737.44	25.00
2003/04	413.77	10.00	4137.70	171205.61	100.00
2004/05	445.93	15.00	6688.95	198853.56	225.00
2005/06	609.37	18.00	10968.66	371331.79	324.00
2006/07	722.58	20.00	14451.6	522121.85	400.00
Total	2550.45	68.0	38040.91	1392250.27	1074.00

$$r \; \mathrm{X} \frac{N \quad XY \; \mathrm{Z} \quad X \quad Y}{\sqrt{N \quad X2 \; \mathrm{Z}(\quad X)2 \mid \sqrt{N \quad Y2 \; \mathrm{Z}(\quad Y)2}}}$$

$$\mathrm{X} \frac{5 \mid 38040.91 \; \mathrm{Z} 2550.45 \mid 68.0}{\sqrt{5 \mid 1392250.25 \; \Gamma (2550.45)2 \mid \sqrt{5 \mid 1074.0 \; \mathrm{Z}(68.0)2}}}$$

$$\mathrm{X}0.91$$

$$P.E. \; \mathrm{X}6 \mid \frac{0.6745 \mid (1 \; \mathrm{Z} r2)}{\sqrt{N}}$$

$$\mathrm{X}6 \mid \frac{0.6745 \mid (1 \; \mathrm{Z}0.8265)}{\sqrt{5}}$$

$$\mathrm{X}0.31$$

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