# CHAPTER - I
## INTRODUCTION

### 1.1    Background of the Study

Nepal is developing country in the world with 30.85% of its population living below the poverty line. Agriculture is the mainstay of the economy providing a livelihood for over 68% of the population and accounting for 40% of GDP. Industrial activity mainly involves the processing of agricultural products including jute, sugarcane, tobacco etc. Security concerns have led to decrease in tourism; a key source of foreign exchange. Areas of recent foreign investment on other sectors are remain poor, because of  the small size of the economy, its technological backwardness, remoteness, landlocked geographic location, civil strafe and susceptibility to natural disaster. Industrial growth rate is not sufficient for general growth of the national economy. But it can be said that Industrializations is the back-bone of the national economy and it is important factor for achieving the basic objective or country's economic and social progress. (*Joshi; 2058:08)*

In Nepal, industrialization started very late. It's completely new phenomenon in Nepal. Industrialization in Nepal had started only after the establishment of Council of Industry in 1936. Before that, there were cottage and unorganized small industry, operated to produce handicraft goods. The contributions of traditional entrepreneurs like gold smith, Black smith, etc. are also the source to industrialization. Biratnagar jute mill opened the door of the organized industry in the country. In the year that followed, Industrial growth was accelerated because some other industries were set up in Biratnagar with collaboration of Indian businessman.

After drown of democracy in 1951, Industrial development started getting regular attention of the government. Nepal started planning industrial development with the

launching of the first five-year development in 1956. After planed programs, several industries were established in the public sectors. Even after planned effort for industrialization, Nepal remained as a least industrialized country of the world.

The situation of industrial development growth was not satisfactory. Thus, the government changed its policy from lead economy to market-lead economy after mid 1980s. The HMG of Nepal took the privatization policy for contribution to the industrial development.

Among the SAARC countries, Nepal was the first country to formulate privatization act *(Dhungana; 1994:104)*. In the end of Ninth plan (1997-2002), 17 public industries were privatized.

The government encouraged the private industries by simplifying procedures and made industrial policy more liberal and effective for the investment as joint ventures and collaboration. The first industrial policy was announced in 1992, which encouraged private sector participation in business and expert with the objectives to increase the contribution of industrial sector, national economy, and to put emphasis on the development to industries utilizing local resources, to reduce pressure of employment and under underemployment and to adopt appropriate policy conductive to industrialization for all round balanced development of the country.

Due to the dampening effects of adverse weather on the agriculture production recent past years could not be a satisfactory form the standpoint of national economic performance. The major contributor to GDP, agricultural sector, which has shown declining trends in its growth. It grew by 3.9% in FY 2003/04 and slopped to 3% growth rate in 2004/05 and expected to grow by only 1.7% in FY 2005/06. However, despite the tough time in the country, some non-agricultural sector, Electricity, Gas, water, and construction are performing quite satisfactory. Its production grew by 4.8% in FY

2004/05 and expected to grow by 5.6% in FY 2005/06. But, performance of other major sector which occupying a significant share in GDP, non-agriculture sector is also deteriorating. It grew by 3.4%in FY 2003/04 which declined to 2.1% in FY 2004/05 and expected to improve marginally to 2.8%.

There are lots of government sectors; which provide many facilities to the private sector manufacturing industries by making provision industrial policy, foreign technology transfer act, industrial enterprise act etc. Many institutions, government agencies, chambers, and associations are facilitating or developing the industrial sectors. Federation of Nepal Cambers of Commerce and Industry, Industrial Promotion Board, Industrial Enterprise Development Institute and Nepal Transfer and Warehousing Company play crucial role in industrialization. There should be good relationship between government and industrial sector for industrialization. Industrial sector has to consider the interest of government, people and society. The government also should facilitate the industrial sector in many ways. The government is responsible for the formulation of appropriate policy, rules, regulations and providing facilities, which are needed to operate the industrial activities and solve the industrial problems.

Different analysis shows that the economic growth of industrial sector is not satisfactory. Instability of the government, unclear policies, security problems, undeveloped infrastructure, unhealthy competition and political crisis etc, these external problems are in one side and on the other side, they are suffering from the problems of internal operation. Thus, most of the industries are failure to achieve their target properly. It is necessary to solve the problems for rigid development of this sector. Although various efforts have been done for the industrialization, but the problems of industrial development is still there. Given on the overall focus of industrialization process, this is the selective study of manufacturing industry on comparative basis to see their capital structure and impacts of the maximization of shareholders' wealth.

It is already concerned that many types of problems are facing by industrial sector and among them some problems are related to the internal operation and management. In this way many industrial units are suffering from the problem of inappropriate capital structure. So this study tries to evaluate capital structure of some manufacturing units namely: Nepal Lube Oil Ltd., Dabur Nepal Pvt. Ltd. and Unilever Ltd. in comparative basis. Many manufacturing units are bearing many financial problems like high capitalization rate, high cost of capital low value of firm etc, because of the improper capital structure. Thus, understanding about capital structure is essential to protect form the mentioned problem of capital structure. In this regard, this study helps to preserve the organization in respect of capital structure problems to some extent.

The capital structure of the firm refers to the combination of debt and equity capital. Well financial performance depends on optimal capital structure of the firm. To describe about the capital structure of any firm, the long-term source of fund is essential. Optimal capital structure can be obtained by combining the financial mix at most. The mix of the capital structures, which maximizes the value of the firm and earning per share and minimize the cost of capital, is the optimal capital structure. Capital structure affects cost of capital, value of the firm and earning per share of the firm. If the firm does not have proper combination of debt and equity capital, the firm may fail to earn the expected profit or fail to achieve the targeted objectives.

Concerned these three firms Nepal Lube Oil Ltd., Dabur Nepal Pvt. Ltd. and Unilever Nepal Ltd. have used debt as well equity capital structure. These firms are earning profit and Distributing Bonus to its shareholders. The net profit after tax and sales turnover of Dabur Nepal Pvt. Ltd. was fluctuating trend. It was in increasing trend till FY 2001/02 but it was decreased in following year and again increased in FY 2003/04 and again started to fall in FY 2004/05. Same as, the net profit after tax and sales turnover of Nepal Lube Oil Ltd was highly fluctuated, in year 2000/01 the net profit after tax shows negative figure but it was recovered in following years. The decreasing trend continued

again in FY 2003/04 and again started to recover in FY 2004/05. Likewise, Unlived Nepal Ltd. had decreasing trend till 2001/02 and it had increasing trend afterwards. Unlived Nepal Ltd was already un-levered since before the starting of sample year and Nepal Lube Oil Ltd was un-levered from 2002. They did not use any debt portion in their capital structure after having un-levered process. But these firms are in profit in the recent years. So, are these firms using optimal capital structure in respect to their cost of capital and maximizing share-holders wealth? Or if not how these companies can achieve? This will be the main trust of study. All this point are further elaborated or analyzed in the following chapters.

So the study is based on the comparative evaluation of capital structure have selected manufacturing companies namely: Nepal Lube Oil Ltd, Dabur Nepal Pvt. Ltd and Unilever Nepal Ltd This study tries to examine the appropriateness of capital structure employment by these firms. This comparative study uses some financial and some statistical tools to evaluate the capital structure, which makes easier to compare with each other.

## 1.2    Historical development of Industry in Nepal

Industrial development is the key to rapid economic development of a country like Nepal. So the attempt to develop modern industries is a recent phenomenon in Nepal. But, some historical facts indicate that Lichchhabi Kings tried to promote exports oriented industries like wood carving works, statues, paper, food products etc.

King Prithivi Narayan Shah has emphasized the industrial development to protect cottage industries by discouraging imports. In 1935 A.D. establishment of 'Udyog Parisad' with an attempt of producing goods for industrial development. After the establishment of the board, other specialized organization succeeded named Krishi Parisad, Khani Adda, Nepal Kapada Ra Gharelu Illam prachar Adda and enactment of

Company Law' in 1936 AD. Biratnagar Jute Mill was the first joint stock company and marked the beginning of the industry Development in Nepal. As a result, other public limited companies were started under the company act in initial period.

Planned development was started in 1956 A.D. and the program of industrial development was integrated for accelerating the economic development of country. So government initiated a periodical plan for industrialization.

During the first five (1956-61) year plan, Industrial policy of Nepal was declared in 1957. This policy was replaced by a new policy in 1961. The government had established a number of industries under the public sector. Industrial Development Center was established in 1957, which was turned into Nepal Industrial Development Corporation in 1959. The main objectives of the corporation were to provide financial and technical assistance to private industrialists and entrepreneurs.

During second three (1962-65) year plan, several industries like Sugar, Matches, Textiles, Metal, Hotels and Transport etc. were established by private sectors and in the public sector also various types of industries were started like Birgunj Sugar Factory, Bansbari Leather and Shoe Factory and Janakpur Cigarette Factory. The industrial Estate of Balaju and Patan was established in the second plan.

During third five (1970-76) year plan gave higher priority to the private sector as the previous plans. Industries established were a flour mill, a bee factory, a cement factory, and a ghee processing plant. The other achievement in this field of industrial development was the establishment of Industrial Services Center with a view of providing consultancy services, training and information. A new industrial policy was formulated in 1974.

The fifth five (1975-80) year plan was started in 1975, whose main objective was to

increase the production of mass consumer goods, maximum utilization of labour force and regional of labour force and regional allocation of development resources. Moreover, the plan shifted emphasis form infrastructure to directly production investments. Industry established in this infrastructure to directly production investment. Industry established in this plan period under the government sector was Hetauda Textiles Factory, Bhaktapur Brick Factory and Agriculture Lime Industry. In the private sector, very few small-scale industries like biscuit, flour, soap and sugar were established.

The objective of sixth plan was to increase production, increase output and to create more employment opportunities. In the private sector, biscuit, sweet, shoes and rice etc and in the public sector were Bhirkuti Paper Industries, Lumbini Sugar Factory, Nepal Paper Industries, Herbs Production and Processing Company Limited and Butwal Spinning Mills Ltd were established.

The objective of seventh five (1985-90) year plan was to focused on increase in industrial contribution to enhance gross domestic production to meet basic minimum needs of the people, to setup import substitution industries and to create employment opportunities. The policies were to promote industries based on local raw material, to increase contribution to GDP, emphasize the development of water resource, and promote export trade, control population and so on. In the public sector, the industries established were Udaypur Cement Factory, Industrial District Management Limited and Economic Services Center Limited while in the private sectors was readymade garments, beer, distillery, cement, soap and cigarette.

The Eight five (1992-97) year plan was launched in 1992 after the restoration of Multiparty Democracy in the country. The plan focused on promotion of export-oriented and import substitute Industries Act 1992 and Industrial Policy 1992 were introduced. The main objectives of this plan were to achieve sustainable economic growth to reduce

poverty and to regional imbalance. *(Joshi; 2058:194).*

The Ninth Plan had started form 1997. The current Plan has been implemented to continue liberal economy policy and strategy. This plan has focused the need of the country and the desire of the people. The objectives of the plan are:

- To increase the contribution of industrial sector in domestic reduction.
- To increase the earning and services of foreign exchange through the identification of comparative advantages.
- To increase the production of process goods through the arrangement of infrastructure.
- To increase the income and purchasing power of people residing in rural areas with contribution of industrial sector in domestic production, through cottage and small scale industries.

## 1.3    Focus of the Study

The main purpose of this study is to evaluate the capital structure of the private manufacturing firms. Capital structure refers to the mix of equity share capital and long-term source of fund such as: debenture, long-term debt and preference share capital. In the lack of proper planning of the capital structure, the organization may face difficulties in rising funds to finance their activities, thus the firm cannot achieve their goal. The capital structure decision is a major decision, which affects the overall cost of capital, total value of the firm and earning per share. The financial manager is responsible to plan on optimal capital structure. It's already stated that optimum capital structure maximize the total value of firm and earning per share and minimize the cost of capital. It does not affect the total operating earnings of the firm cannot achieve their goal. The capital structure decision is a major decision, which affects the overall cost of capital, total value of the firm and earning per share. The financial manager is responsible to plan an optimal capital structure. It's already stated that optimum capital structure

maximize the cost of capital. It does not affect the total operating earnings of the firm.

This study is based upon comparison of capital structure of the selected manufacturing companies i.e. Nepal lube Oil Ltd., Dabur Nepal Pvt. Ltd. and Unilever Nepal Ltd. NLOL and UNL is public limited companies and DNPL is private limited company. NLOL was established in 2041 B.S and DNPL was established in 2049 B.S as a joint venture of Dabur India ltd whereas UNL was established in 2051 B.S. as a joint venture of Hindustan Lever ltd. The nature of UNL was established in 2051 B.S as a joint venture of Hindustan lever ltd. The nature of UNL and DNPL are similar. These companies are in profit and distributing dividend although; there is difference between their capital structures.

NLOL is different in nature than UNL and DNPL. It is also in profit but trend is decreasing. So, this study is based upon the study of overall capital structure by using various relative measurement tools. It considered EPS, NP margin, return on capital employment, debt to equity ratio and other relative measures to find out similarities, dissimilarities and appropriateness of capital structure.

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. The study evaluates the capital structure based on various variables relating to the income statement, balance sheet and other related variables. Capital structure decision primarily affects to the overall cost of capital structure decision primarily affects to the overall cost of capital, structure? Does Capital Structure help to maximize the value of the firm in the context of Nepalese firms? These are the few questions to which the study tries to seek answers.

## 1.4    Statement of Problems

A company cannot achieve its target objectives and profit due to different sort of

problems, which is related to both external and internal environment. So, concerned companies are also suffering from different problems by external environment as well as internal environment. External environment that is uncontrollable but a company can control internal environment to some extent. Amount of internal problems keeping an optimal capital structure is a major challenge to the firm. It may a way for achieving targeted objectives because it effects in the overall cost of capital, earning per share and total value of the firm primarily. But in long run it effects assets structure, profitability, growth rate of operating leverage, tax liability, market and internal condition, control position, management attitude and performance financial flexibility, timing and solvency, cash flow and sales stability.

It is already stated that due to sound mix of capital structure a firm can achieve it target. But if the capital structure is inappropriate it can bear high cost of capital. If a company is earning profit without its optimal capital structure, it can increase the portion of profit while making its capital structure optimal. Some companies of private sector are also earning profit without optimal capital structure. It means all the profit earning companies may not have optimal capital structure. So this study includes three companies form private sector. This study tries to seek that they are utilizing their optimal financial mix or not? Change in its financial mix cause fluctuation in the profit margin or not?

The problem of the study lies on the issue related to the capital structure of slected manufacturing companies. In which comparative evaluation has been done among the companies: Nepal Lube Oil Ltd., Dabur Nepal Pvt. Ltd. and Unilever Nepal Ltd. It tries to ensure that these companies have employed appropriate capital structure or not? Whether listed companies employed the sound capital structure than unlisted company? Are these companies suffering by the problem of employing the appropriate capital structure? The study tries to seek the answer to following stated questions:

)  What is the cause of the financial inefficiency?

)     What was the existing capital structure position of these companies?

)   Is there a value maximizing capital structure?

)   Have sampled companies been able to maintain appropriate capital structure?

)   How far have these companies been able to utilize the debt efficiency for income generation?

)   What is the comparative position of these three firms in respect of their capital structure?

## 1.5     Objectives of the Study

The main objective of the study is to analyze the behavior of the capital structure of the selected manufacturing company of Nepal. The following are the specific objectives of this study:

)   To analyze the composition of capital structure of the sampled manufacturing companies.

)   To examine the relationship between ROE & Debt ratio, ROE & D/E Ratio, ROA & Debt ratio, NP & LTD, and NP & TD.

)   To analyze the impact of debt financing on profitability.

## 1.6     Significance of the Study

All Nepalese firms don't take the capital structure decision concept seriously that plays vital role in the firm despite appropriate capital structure some Nepalese firms are earning profit. But they are taking a burden to higher cost of capital and it may affect the value of the firm, earning per share, and the company resulting to fail to achieve its objectives. So this study believes that some manufacturing companies and also other companies will be benefited more hence the study is conducted on the basis of annual reports of these companies.

This study has conducted on the basis of three firms financial reports using various financial tools and statistical tools. The study is based on the comparison of concerned firm's financial performance in terms of capital structure, which helps to the companies to formulate strategies.

It is also believed that it will provide valuable inputs for future researchers. This study is also important for owners, creditors and potential investors to make their attitudes on investment. The study will also have significance for management, policy maker, stockholders of the firms and others those having interest on capital structure decision.

## 1.7    Limitation of the Study

Every study has its own limitations. This is the study of capital structure of selected manufacturing companies and selection of companies is based on the varieties and quick availability or data. It is a part of financial analysis, which considers only the aspects of capital structure. It does not consider other aspects of financial analysis like risk and return analysis, dividend policy analysis, short-term financing, long-term financing, capital budgeting etc. that are essential for the study of overall performance or the companies. Owing to the data availability, time and methodology constraint, all the areas of the study has not been covered. The study has other following limitations:

- ) This study is mainly conducted on the basis of secondary data.
- ) The data used in this study are modified as per need of the study.
- ) Calculation made by book value not made by market value.
- ) This study is based on seven fiscal years data ending with FY 2065/066.
- ) Time and resource constraints and availability of data.

## 1.8 Organization of the Study

This study has been comprised into five chapters, each devoted to some aspects of capital structure. The titles of each of these chapters are summarized and the contents of each of these chapters of this study are briefly mentioned here.

**Chapter I    : Introduction**

**Chapter II   : Review of Literature**

**Chapter III  : Research Methodology**

**Chapter IV   : Presentation and Analysis of Data**

**Chapter V     : Summary, Conclusion & Recommendations**

First chapter deals with the subject matter consisting introduction, statement of the problem, significance of the study, objectives, limitations and chapter scheme of the study.

Second chapter concerns with literature review that includes a discussion on the conceptual framework and review of major-studies relating to decision.

Third chapter describes the research methodology adopted in carrying out the present research. It deals with research design, sources of data, data processing procedures, population and sample, period of the study, method of analysis and financial and statistical tools.

Fourth chapter is concerned with analytical framework. It includes the analysis of financial indicators; analysis of mean, standard deviation, coefficient of variation, correlation coefficient and regression analysis.

Fifth and the final chapter are concerned with the suggestive framework that consists

with the overall findings, issues and gaps, conclusions and recommendations of the study. The bibliography and appendices are incorporated at the end of the study.

# CHAPTER - II
## REVIEW OF LITERATURE

### 2.1    Introduction

Literature review is basically a 'stock taking' work 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 researchers. This chapter is comprehensive study on the conceptual framework, review of books, journals and various researches regarding the capital structure of concerned manufacturing companies of Nepal.

### 2.2    Conceptual Framework

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    Concept of Capital Structure

Capital is an important factor of a new and existed company or capital is the lifeblood for the existence of company. A new business requires capital for production and expansion. Capital is a scarce source and much more essential to maintain smooth operation of any firm. The required funds can raise form different sources and many different firms. The available capital and financial resources should be utilized so effectively that it could generate maximum return. "However all capital can be classified into two basic types- debt and equity."*(Bringham, Gapenski and Ehrhardt; 2001: 579)*

Capital structure is concerned with the analyzing the capital composition of the company or firm by the ratio of equity and debt. Higher debt ratio is burden to a firm. If a firm has higher debt ratio, greater will be the risk. The firm has to pay high interest rate as well. If the firms operating income is insufficient to cover the interest charges, the firm cannot achieve its targeted goal. At last, the firm may be forced into bankruptcy. So, it is considered as the mix of long-term source of funds, which are debt, preference shares, and equity shares. Its essential factor is to concentrate in its proportion for a firm. There are various types of financial instruments to raise required funds. A firm can issue either debt capital or share capital. Raising capital as debt has several advantages and disadvantages. It's obligation of a firm to provide interest to Debt holders, which is also known as creditors. Creditors receive interest as their return from the company where they have invested capital. Interest is tax deductible which lower the effective cost of debt, debenture holders are limited to the fixed return, they do not have voting right, on the other hand, they have no voting right so they can control the business. These are the advantages of raising capital through debt.

Shareholders are the actual owners of the firm. But preference shareholders have also preference right to get return form the company than the equity shareholders. Preference shareholders have second priority to get return after debenture holders. So equity shareholders receive the remaining portion of net return after paying the preference dividend to preference shareholders, which is predetermined. So the company should make the appropriate financial mix while raising capital.

As mentioned above capital can be raised through debt or equity financing. Risk is associated in proportion of its uncertainty in being paid off. A firm should pay certain amount to debt holder according to cost of capital. Cost of capital, which is the required rate of return expected by investors according to their risk. Therefore a firm should always try to obtain necessary funds at lower cost. But a firm acquired fund form different resources and the firm should evaluate overall cost of capital according to the

proportion of debt and equity. This proportion is also known as financial leverage, which is actually the capital structure of the firm. So, overall cost of capital, value of the firm and earning per share are affected by the mix of components of capital structure. "One of the most perplexing issue facing financial managers is the relationship between capital structure, which is the mix of debt and equity financing, and the stock prices."

Capital structure policy involves a trade off between risk and return using more debt raises the risk of the firm's earning stream but a higher debt ratio generally leads to higher expected rate of return. Higher risk associated with greater debt trends to lower the stock's price but the higher expected rate of return arises it. *(Weston and Brigham; 1982:690)*

The capital structure of the firm, defined as the mix of financial instruments use to finance the firm, is simplified to include only long term interest bearing debt, common stock and preferred stock. "Capital structure is the combination of long term sources of financing i.e. debt preferred stock and common stock that are used to finance the firm." *(Steven and Robert; 1981:348)* The natures of capital structure vary form company to company, which is directly guided, regulated and controlled by the management of the company." However, a reasonable satisfactory capital structure can be determined by considering relevant factors and analyzing the impact of alternative financing proposals on the earning per share." *(Chandra; 1985:176)*

Capital structure refers to the combination of debt and equity capital, which a firm uses to finance its long-term operations. Capital in this context refers to the permanent or long-term financing arrangements of the firm. Debt capital therefore is the firm's long-term borrowings and equity capital is the long-term funds provided by the shareholders, the firm's owners. Capital structure is illustrated in following figure. *(MEMENAMIN; 1999:452)*

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                        │  Capital Structure  │
                        └─────────┬───────────┘
                 ┌────────────────┴────────────────┐
        ┌─────────────────┐              ┌─────────────────┐
        │  Debt Capital   │              │  Equity Capital │
        └─────────────────┘              └─────────────────┘
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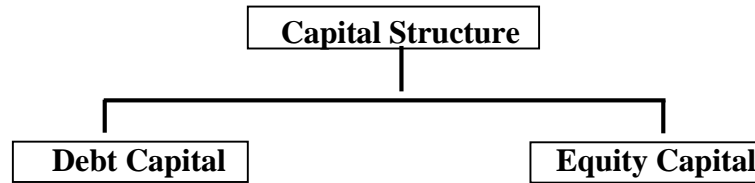
**Figure no. 2.1    Combination of Capital Structure.**

Therefore, capital structure can be defined as the combination of long-term source of funds i.e. preference share capital, equity share capital and long term debt capital. The capital structure mix affects the total value of the firm, its earning per share and overall or weighted average cost of capital. It should well plan. It should aim to maximize the value of the firm, earning per share by minimizing the overall cost of capital without affecting the operation earning of the firm. So, firms always tend to maintain the appropriate capital structure, which is advantageous for the firm. A sound or appropriate capital structure should have the following features.  (*Johnson and Pandey; 1973:45)*

) **Risk:**  The use of excessive debt threatens the solvency of the company. To the point, debt does not add significance risk it should be used, otherwise its use should be avoided.

) **Return:**  The capital structure of the company should be most advantageous. Subject to other considerations, it should generate maximum returns to the shareholders without adding additional cost to them.

) **Control:**  The capital structure should involve minimum risk of loss of control of the company. The company should use debt to avoid the loss of control. But  a very excessive amount of debt can also cause bankruptcy, which means a complete loss of control.

) **Flexibility:**  The Company should adapt its capital structure with a minimum cost and delay id warranted by changed situation. The company should be able to raise funds, without undue delay and cost, whenever needed to finance the profitable investments that's why capital structure of the company should be flexible.

**ꜰ Capacity:** The capital structure should be determined within the debt capacity of the company and its capacity should not be exceeded. The debt capacity of the company depends on its ability to generate future cash flows. It should have enough cash to pay creditors' fixed charges and principle sum.

## 2.2.2     The Optimal Capital Structure

Capital structure is the composition of debt and equity securities that make up the firm's financing of its assets. Both debt and equity securities are used in large companies. The choice of amount of debt and equity are made after the comparison on certain characters of each kind of security of internal factors related to the firms' operation and external factors that can affect the firm. (*Hampton; 1989:33*)

Thus capital structure decision affects the value of firm, earning per share and cost of capital .The objectives of the company are always related to maximizing the value of firm, earning per share and minimizing the overall cost of capital. To achieve this objective, company should make the appropriate composition of capital structure, which also known as optimal capital structure. An optimal capital structure would be obtained at the combination of debt and equity that maximize the total value of the firm or minimize the weighted average cost of capital. *(Pandey; 675:77).*

A firm's optimal capital structure is that mix of debt and equity, which specific target capital structure to make presumably the optimal on although this target may change over time*. (Brigham and Houston; 1986:55)*

The optimal capital structure is one that strikes the optimal balance between risk and returns and thereby maximizes the price of the stock. *(Weston and Brigham; 1982:690)* Optimal capital structure can be defined as that mix of debt and equity, which will maximize the market value of the company. If such an optimal does exist, it maximizes

the value of the company and hence the wealth of its owners: it minimizes the companies cost of capital which in turn increase its ability to find new wealth creating investing opportunities. *(Ezra; 1969:101)* So, the optimal capital structure is that combination of capital structure, which maximizes the value of the firm, earning per share, and minimizes the weighted average or overall cost of capital. Therefore, the firm should determine appropriate capital structure. To achieve this targeted objective of maximizing the shareholders wealth. Although it is theoretically possible to determine the optimal capital structure as a practical manner, we cannot estimate this structure with precision. The relationship of optimal capital structure with other elements of financial management and the capital structure decision process can be shown with the help of following figure.
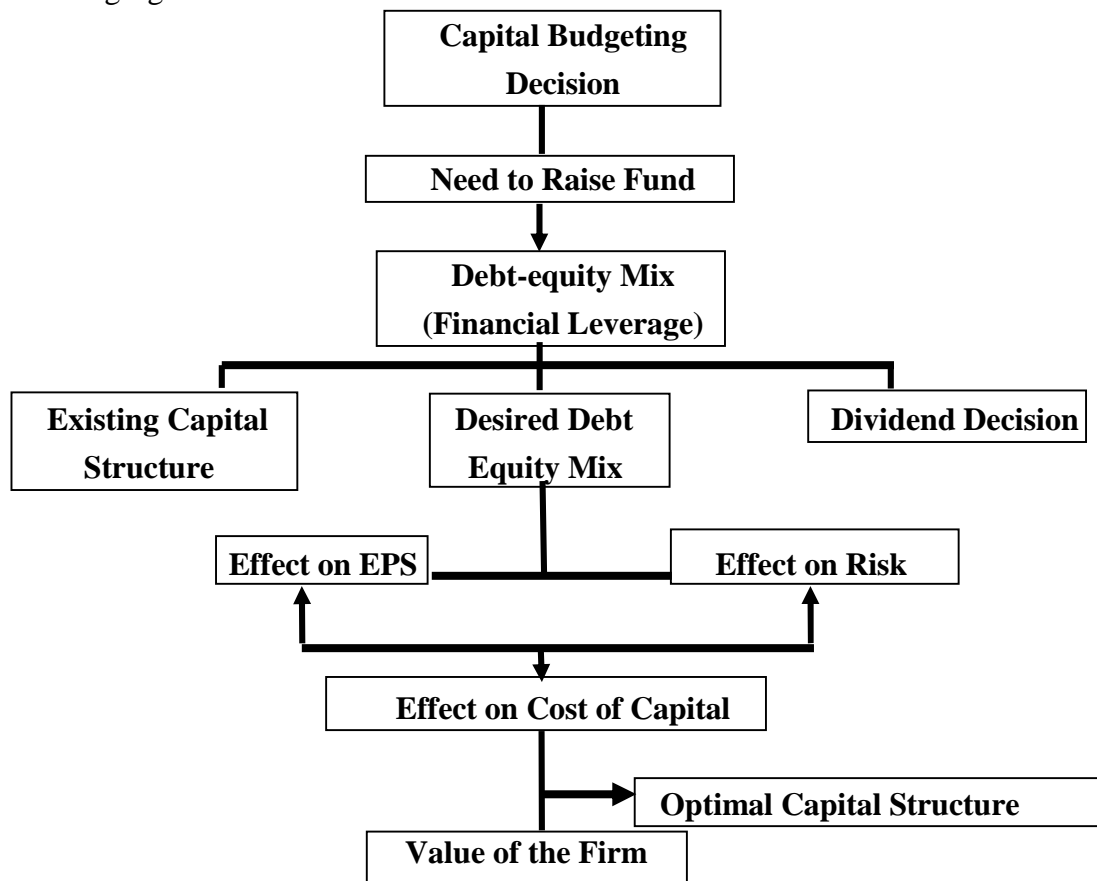
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          ┌─────────────────────┐
          │  Capital Budgeting  │
          │      Decision       │
          └─────────────────────┘
                    │
          ┌─────────────────────┐
          │  Need to Raise Fund │
          └─────────────────────┘
                    │
          ┌─────────────────────┐
          │    Debt-equity Mix  │
          │ (Financial Leverage)│
          └─────────────────────┘
         ┌──────────┼───────────────┐
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│Existing Capital│ │Desired Debt│ │ Dividend Decision│
│  Structure   │ │ Equity Mix │ └──────────────────┘
└──────────────┘ └────────────┘
      ┌─────────────┐     ┌──────────────┐
      │Effect on EPS│     │Effect on Risk│
      └─────────────┘     └──────────────┘
          ┌───────────────────────┐
          │Effect on Cost of Capital│
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          │Optimal Capital Structure│
          └─────────────────────────┘
          ┌──────────────────┐
          │ Value of the Firm│
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**Figure No. 2.2 the Capital Structure Decision** *(Pandey; 1998:634)*

The Capital Structure Decision consists various types of decisions, such as Expansion Decision, Replacement Decision, Modernization Decision, diversification Decision etc. and the firm can raise it's found through internal fund, debt and external fund.

### 2.2.3    Factor Affecting Capital Structure

Firms generally consider the following factors when making capital structure decisions: *(Weston and Brigham; 1982:106)*

- ) **Sales Stability:**  A firm whose sales are relatively stable can safely take on more debt and incur higher fixed charges than a company with unstable sales. Utility companies, because of their stable demand, have historically been able to use more financial leverage than industrial firms.

- ) **Asset Structure:**  Firms whose assets are suitable as security for loans tend to use debt rather heavily. General-purpose assets, which can be used by much business, make good collateral, whereas special-purpose assets do not. Thus, real estate companies are usually highly leveraged.

- ) **Operating Leverage:**  A firm with less operating leverage is better able to employ  financial leverage because it will have less business risk.

- ) **Growth Rate:**  Faster-growing firms must rely more heavily on external capital. Further, the flotation costs involved in selling common stock exceeds those incurred  when selling debt, which encourages them to rely more heavily on debt. At the same time, however, rapidly growing firms often face greater uncertainty, with tends to reduce their willingness to use debt.

- ) **Profitability:**  Generally high profitable firms that have very high rates of return on investment do not need to do much debt financing. Their high rates of return enable them to do most of their financing with internally generated funds.

- ) **Taxes:** Interest is a deductible expense and deductions are the most valuable to firms with high tax rates. Therefore, the higher the firms tax rate, the greater the advantage of debt.

- ) **Control:** The effect of debt versus stock on a management's control position can influence capitals structure. If the company may decide to use debt, the firm's financial situation become week and the use of debt might be the subject for

serious risk of default.

However, if too little debt is used, management runs the risk of a takeover. Control considerations could lead to the use of either debt or equity, because the type of capital that protects management will vary form situation to situation. In any event, if management is at all insecure, it will consider the control situation.

ʃ **Management Attitudes:** Since no one can prove that one capital structure will lead to higher stock prices than another, management can exercise its won judgment about the proper capital structure, Portion of debt used in a firm largely depends on management attitudes.

ʃ **Market Condition:** Conditions in the stock and bond markets undergo both long and short-run changes that can have an important bearing on a firm's optimal capital  structure.

ʃ **The Firm's Internal Condition:** A firm's own internal condition can also have a bearing on its target capital structure. Although it is theoretically possible to determine the optimal capital structure, as a practical matter we cannot estimate this structure with precision. Accordingly, financial executive generally treat the optimal  capital structure as a range for example: 40 to 50 percentage debts rather than as a  precise point such as 45 percent *(Weston and Brigham; 1982; 719)*

**2.2.4     Assumptions and Definitions of Capital Structure:**

The theories of capital structure make certain assumptions to imply its theories clearly for a better understanding of the relationship between financial leverage and the value of the firm and to present the analysis as simply as possible we have the following assumptions . *(Van Horne; 1996:252)*

ʃ There are no corporate or personal taxes and bankruptcy cost (Latter, we remove these assumptions)

⟩ The ratio of debt to equity for the firm is changed by issuing debt to repurchase stock, or issuing stock to payoff debt. In other words, a change in capital stock is affected immediately. In this regard, we assume no transaction costs.

⟩ The firm has a policy of paying 100 percent of its earning in dividends. Thus, we abstract form the dividend decision.

⟩ The expected values of the subjective probability distribution of expected future operating earning for each company are the same for all invertors in the market.

⟩ The operating earning of the firm is not expected to grow. The expected value of probability distribution of expected operating earning for all future periods are same as present operating earning.

⟩ Two types of capital are employed: long term debt and shareholders equity.

⟩ The firm is expected to continue indefinitely.

In the theoretical analysis one shall use the following symbols to make clear basic definitions of capital structure.

S = Total Market Value of Stock

B = Total Market Value of Debt

V = Total market Value of The firm (S+B)

$K_e$ = Equity Capitalization Rte

$K_o$ = Overall Capitalization Rare

$K_d$ = Cost of Debt Capital

I = Total Amount of Capital Interest

EBIT/NOI = Earning Before Interest and Taxes or Net Operating Income.

EBIT = Earning Before taxes

By using the above symbols, cost of capital and their respected values can be calculated by using the following formulas.

$$\text{Cost of Debt } (K_d) = \frac{\text{intrest}}{\text{debt}} \, X \frac{I}{B}$$

$$\text{Cost of Equity } (K_e) \; X \frac{EBIT \; ZI}{S} \; X \frac{NOI \; ZI}{S}$$

$$\text{Value of Debt (B)} = \frac{Interest}{Kd} \; X \frac{I}{Kd}$$

$$\text{Overall cost of Capital } (K_o) = \frac{NOI}{v}$$

$$\ldots K_o \; X K_d (B/V) \; \Gamma \, Ke(S/V)$$

The value of the firm is combined value of debt capital and share capital

So,

$$v \; XB \; \Gamma \, S, or, v \; X \frac{NOI}{K_o}$$

## 2.2.5 Business and Financial Risk:

In capital structure analysis, we can introduce two new dimensions of risk: business risk and financial risk. Business risk is the risk of the firm's stock; if the firm uses no debt; financial risk bears additional risk placed on common stockholders as a result of firm's decision to use debt. (Brigham and Houston) In addition to the common stock, preferred stock also adds to financial risk of the company. "Conceptually, the firm has a certain amount of risk inherent in its operation: this is its business risk. If it uses debt, then in effect, it partitions its investors into two groups and concentrates most of its business risk on one class of investors – the common stockholder. However the common stockholders generally demand compensation for assuming more risk and thus acquire a higher rate of return. *(Brigham, Gapenski and Ehrhardt; 2001:80)*

**A) Business Risk**

Business risk is defined as the uncertainty inherent in projections of future returns on assets (ROA), and it is the single most important determinate of capital structure. It occurs due to the operation of the firm, if it uses no debt capital. It is an important determinant of capital structure. Business risk can be defined as following.

$$ROIC \; X \frac{NOPAT}{CAPITAL}$$

Where, ROIC = Return on Invested Capital

NOPAT = Net Operating Profit After Tax i.e. Net Income to Equity Shareholders + After Tax Interest Payment. If the firm uses no debt, then its interest payment will be zero, its capital will be all equity and its ROIC will be equal to ROE (Return on Equity)

ROIC= ROE = Net Income to common shareholders / Common Equity. Therefore the business risk of un-levered firm can be measured by standard deviation of its ROE. Thus, business risk of un-levered firm = $\dagger ROE$

Business risk varies form one industry to another, and also among firms in a given industry. It can change over time because it is depends upon various factors. It depends on a number of factors, including following: *(Brigham and Houston; 2000:495)*

1   **Demand variability:** The more stable a firm's unit is sales, other thing remain constant that lower its business risk the amount of competition of firms faces are
   a   factor here.

2   **Sales Price Variability:** Firms whose products are sold in highly volatile markets

are exposed to more business risk than similar firms whose output prices are relatively stable.

3   **Input Price Variability:**  Firms who's input costs, including product development costs, are highly uncertain are exposed to high

4   **Ability to adjust output prices for changes in input Price:**  some firms have little difficulty in raising their own output prices when input costs rise and the greater the ability to adjust output prices, the lower the business risk.

5   **The extent to which cost are fixed: operating leverage:**  if a high percentage of cost are fixed, hence do not decline when demand decreases, this increases the company's business risk.

**Operating Leverage:**

Fixed cost of any firm affects on its business risk. If fixed costs are high, even a small decline in sales can lead to a large decline on return on equity (other things remains constant). So, the higher the firm's fixed cost, the higher its business risk. If the high percentage of total costs is fixed, then the firm is said to have a high degree of operating leverage. "In business terminology, a high degree of operating leverage, other factor held constant, implies that a relatively small change in sales results in the large change in ROE.

Leverage is that portion of fixed cost, which represents a risk to the firm. Other thing held constant, although higher the operating leverage, the higher business risk. Or higher the degree of operating leverages, higher the operating risk. Where, "degree of operating leverage defines as the percentage change in operating income (EBIT) associated with a given percentage change in sales." *(Weston and Brigham; 705)*

$$\text{Degree of operating leverage (DOL)} = \frac{\text{Degree of operating leverage (DOL)}}{\text{Percentage change in sales}}$$

Operating leverage is the ratio between percentage change in EBIT and percentage change in sales. It refers to the use of fixed costs in the operation of the firm. If the firm has fixed costs, it would have operating leverage and percentage change in the operating profit would be more for the given change in sales. A firm will have higher operating leverage, if the total costs have grater percentage of fixed costs. "The concept of operating leverage was originally developed for use on capital budgeting. Still once a corporation's operating leverage has been established, this exacts a major influence on its capital structure decision." *(Bringham, Gapenski and Ehrhardt; 2001:585)*

**Financial Risk**

If the companies use debt capital while financing, they have to bear financial risk instead of business risk. If the company is un-levered, that company bears the business risk but that should bear the financial risk as a result of decision to finance with debt. So, financial risk is the additional risk placed on common stockholders as a result of decision to finance with debt. Financial leverage refers to the use of fixed income securities – debt and preferred stock – and financial risk is the additional risk placed on the common stockholders as a result of using financial leverage. Conceptually, the firm has a certain amount of risk inherent in its operation; this is business risk, which is defined as an uncertainty inherent in projection of future ROE. By using debt and preferred stock (Financial leverage) the firm concentrates its business risk on common stockholders. Financial risk thus is an avoidable risk if the firm decides not to use any debt in its capital structure.

**Financial Leverage:**

Financial risk of the firm depends upon the financial leverage. If the financial leverage exists financial risk will occur. Operating leverage affects the business risk. The use of fixed charges sources of funds, such as debt and preference capital along with the owners' equity in the capital structure, is described as financial leverage. Financial leverage can be defined as "the extent to which fixed income securities (debt and preferred stock) are used in the firm's capital structure. *(Pandey; 1999:658)* Financial leverage can be measured by using various tools. The most commonly used measures of financial leverage are *(Bierman, McMillan and Pandey; 1970:636)*

**1    Debt ratio (The ratio of debt to total capital)**

$$L_1 = \frac{B}{v} X \frac{B}{B \Gamma V}$$

Where, B= Value of debt

S= Value of equity

V= Value of total capital

**2    Debt to equity ratio (The ratio of debt to equity)**
$$L_2 = \frac{B}{S}$$

**3    Interest Coverage ratio**

$$L_3 = \frac{EBIT}{Interest}$$

The first two measures of financial leverage can be expressed in terms of books or market value. They measure the financial leverage that is static in nature as they show

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the borrowing position of the company at a point of time. Thus, these measures fail to reflect the level of financial risk, which is inherent in the possible failure of the company to pay interest and repayment debt. The third measure of financial leverage, commonly known as coverage ratio that indicates the capacity of the company of the company to meet fixed financial charges.

Financial leverage generally affects the EPS. EBIT is increased when the economic conditions are good and its EPS increases faster with more debt in the capital structure. The degree of financial leverage (DFL) is defined as the percentage change in EPS due to given percentage change in EBIT.

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The degree of financial leverage is defined as the percentage change in earning per share that is associated with given percentage change in earning before Interest and Taxes (EBIT). *(Weston and Brigham: 707)* DFL may be calculated by using any one of the following formulas:

$$DFL = \frac{Percentage\,change\,in\,EPS}{Percentage\,change\,in\,EBIT} \; X \; \frac{\dfrac{EPS}{EPS}}{\dfrac{EBIT}{EBIT}} = \frac{EBIT}{EBIT\;Z\,Interest} \; X \frac{EBIT}{EBT}$$

DFL shows that to what extent the firm is able to bear its fixed charges. DFL of un-levered firm will be 1 and it will be greater than 1 in case of levered Firm.

## 2.2.6    Theories of Capital Structure

The theory of capital structure is closely related to the firm's cost of capital. About optimal capital structure, many debates are found in financial literature. Argument between those who believe there is an optimal 'capital structure' for each firm and those who do not believe in such an optimal capital structure that began in late 1950's and there is yet no resolution of the conflict. Modigliani and Miller logically explain that the value of firm or cost of capital is independent of capital structure decision of the firm. On the other hand, traditionalists view the value of the firm of the cost of capital is affected by capital structure change. In order to understand how firms should a there the optimal capital structure decision, it is important to know some basic assumptions that are following*:*

1    Firm employ only tow types of capital: debt and equity

2    There are no corporate or personal income taxes and no bankruptcy cost.

3    The total assets of the firm are given. The degree of leverage can be changed by selling debt to repurchase of shares or selling shares to retire debt.

4    Investors have the same subjective probability distributions of expected future operating earnings of a given firm

5    The firm has policy of paying 100 percent dividends.

6    The operating earnings of the firm are not expected to grow.

7    The business risk is assumed to be constant and independent of capital structure and financial risk.

Capital structure policy involves trade off between risk and return: using more debt raises the risk of the firm's earning stream; however, a higher debt ratio generally leads to a higher expected rate of return. *(Pandey; 1999:673)*

To understand about the capital structure decision and concept under different theories,

May theories about the capital structure have been developed in the field of financial management. Among them, the following theories have been considered:

1   Net Income (NI) Approach

2   Net operating income (NOI) approach

3   Traditional theory

4   Modigliani and Miller model

5   Miller model

## 1.   Net Income (NI) Approach

Net Income Approach focuses the increase in total valuation of the firm through the reduction in the cost of capital leading to increase in the cost of capital leading to an increase in the degree of leverage. It is also 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. According to I. M. Pandey "the approach is based on the crucial assumption that the use of debt does not change the risk perception of the investors. Consequently, the interest rate on debt (Kd) and the equity capitalization rate (Ke) remains constant to debt. Importance of net income approach is that the firm can increase its value or lower the overall cost of capital by increasing the proportion of debt in the capital structure. It supports the traditional theory of capital structure. This theory assumes that the cost of debt and cost of equity remain constant as change in the firm's capital structure. A change in the capital structure will lead to the corresponding changes in the overall cost of capital as well as total value of the firm. If the firm adds cheaper debt to its capital structure, its cost of capital declines because debt is less risky than equity. On the other hand, the overall value of the firm increases. Thus, if the firm increases its leverage by increasing debt in capital structure, the overall cost of capital will decline which ultimately increases the value of firm. The crucial assumptions of this approach are: *(Horne; 1996:380)*

⌋ The use of debt does not change the risk perception of investor; as a result the equity-capitalization rate, $K_e$, and the debt capitalization rate, $k_d$, remains constant with change in leverage.

⌋ The debt-capitalization rate, $K_d$, is less than equity-capitalization rate, Ke, (i.e., $K_d < K_e$)

⌋ The corporate income taxes do not exist.

According to the concerned assumption $K_e$ and $K_d$ are constant. Increased use of debt will result in the higher value of the firm via higher value of equity. Consequently, the overall cost of capital, $K_o$, will decrease. The overall cost of capital is measured by following formula:

$$\text{Over all Cost of Capital } (K_O) \, X \frac{\text{Net Operating Income}}{\text{Total Value of the firm}} X$$

$$Ko \, X \frac{EBIT}{V}$$

The overall cost of capital can also be measured by using the following equation:

$$K_o = K_e - (K_e - K_d) \times \frac{B}{V}$$

As per assumptions of NI Approach, $K_e$ and $K_d$ are consistent and $K_d$ is less than $K_e$. Therefore, $K_o$ will decrease as D/V increase. It also implies that the overall cost of capital, $K_o$, will be equal to $K_e$ if the firm does not employ any debt. The effects of leverage on the cost of capital under NI approach can be shown by the following figure.
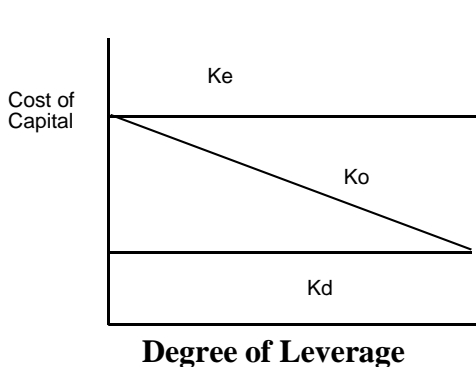


**Degree of Leverage**          **Degree of Leverage**

Figure No. 2.3 the Effect of Leverage     Figure No. 2.4: The Market Value under

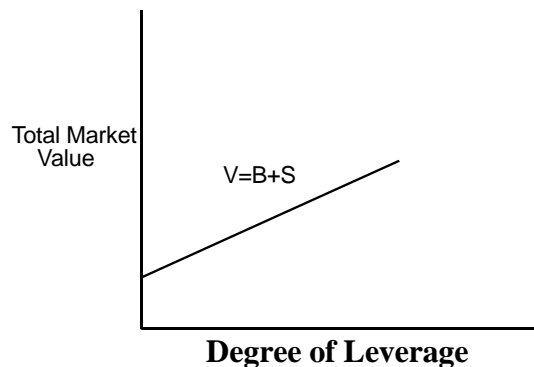On cost of Capital under NI approach           NI approach

In the above figures, the degree of financial leverage is shown in the horizontal axis and cost of capital (Ke and Kd) in the vertical axis. Under NI approach Ke and Kd are assumed not to change with leverage. As the portion of debt is increased in the capitals structure, it causes weighted average cost of capital to decrease and approach to cost of debt. The optimal capital would occur at the point where the value of the firm is maximum and overall cost of capital is minimum. Under this approach, the firm will have a maximum value and lower cost of capital when it is almost debt financing.

## 2. Net Operating Income (NOI) Approach

The second behavioral approach to capital structure is the Net Operating Income Approach, which is slightly different form the NI approach. It is an independent hypothesis of capital structure decision of the firm is irrelevant. Any 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. *(Khan and Jain; 1990:495)* The NOI approach assumes that the equity holders feel higher degree of financial risk and demand higher rate of return for higher debt to equity ratio. Further more, this approach says that the cost of equity increases with the level of debt, and the higher cost of equity offsets the benefit of cheaper debt financing consequently no effect at all on 'Ke ' in other word overall capitalization rare 'Ke' as well as the cost of debt 'Kd' remain constant regardless of the degree of leverage. The critical assumptions of NOI approach are: *(Pandey; 1999:681)*

⟩ The market capitalizes the value of the firm as a whole. Thus, the split between debt and equity is not important.

⟩ The market uses on overall capitalization rate, 'Ko' depends upon the business risk. If the business risk is assumed to remain unchanged, 'Ko' is constant.

⟩ The use of less costly debt fund increases the risk of the shareholders. Thus the advantage of debt is offset exactly by the increase in the equity capitalization

rate, 'Ke'

⌡ The corporate income taxes do not exist. Under net operating income (NOI) approach the capital structure selected is more detail since the value of firm is independent of the firms' capital structure. If the firm increases its use of financial leverage by employing more debt this is directly offset by an increase in the cost of capital. In this approach the total value of the firm is found out by dividing the net operating by overall cost of capital, 'Ke'. The market value of equity 'S', can be determined by subtracting the value of the debt 'B' form the total market value of firm, V (i.e. S = V-B). The cost of equity 'Ke', will be measured as follows:

Equity capitalization rate, $(Ke) = \dfrac{EBIT}{V\ ZB}\ X\dfrac{EBT}{S}$

Alternatively, *Ke = Ko + (Ko-Kd) D/S*

The effect of leverage on the cost of capital under NOI approach can be presented by the following figure:
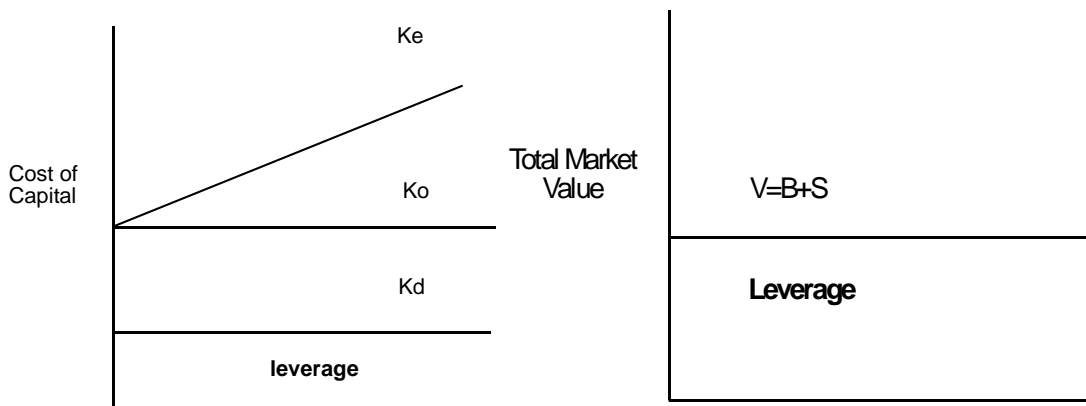


**Figure no. 2.5**: The effect of          **Figure no.2.6**: The Market

Leverage on under NOI approach      Value cost of capital under NOI approach

Form the above figure, we can found that the overall capitalization rate, Ko, and debt capitalization rate, Ke, increase with leverage continuously. As the cost of capital, Ko, is

constant and market value is not influenced either. Hence, this approach implies that there is not any unique optimal capital structure. In other words, as the cost of capital is the same at all level of leverage, so every capital structure is optimum.

The NOI approach assumes a constant are of Kd as it likes NI approach. That means that the debt holders do not demand high rate of interest for high level of leverage risk. But equity holders do react to higher leverage risk and demand higher rate of return for high debt equity ratio. *(Horne; 1996; 254)*

NOI approach is reverse to NI approach. The total value and overall capitalization rate as well as market price of share remain unchanged with any changes. The equity capitalization rate increases linearly with leverage but the overall capitalization rate and debt capitalization rate remains constant.

## 3.   Traditional Theory

The traditional approach is also known as an intermediate approach compromise between the NI approach and NOI approach. This approach says that the value of the firm can be increased or the judicious mix of debt and equity can be reduced cost of capital. In additions the cost of capital decreases with in the reasonable limit of debt and then increase with leverage. Thus an optimal capital structure exists when the cost of capital is minimal or the value of the firm is maximum.

According to I. M. Pandey, "The more sophisticated version of the net income approach is contained in the traditional view. According to this approach, the value of the firm can be increased or the cost of capital can be reduced by a judicious mix of debt and equity capital". *(Pandey; 1999:30)*  "The statement that the debt funds are cheaper than the equity capital carries the clear implication that the cost of debt plus the increase cost of equity together on a weighted basis, will be less than the cost of equity which existed on equity before debt financing".  *(Alexander; 1963: 11)*  So, traditional position implies

that the cost of capital is not independent of the capital structure and that there is an optimal capital structure. The crucial assumptions of the traditional approach are:

- The cost of debt (Kd) remains more or less constant up to a certain degree of leverage but rise there after at an increasing rate.
- The cost of equity (Ke) remains more or less constant or rises only gradually up to a certain degree of leverage and rises sharply there after.
- The average cost of capital (Ko) as a consequence of above behavior or Ke' and 'Kd' (i) decreases up to a certain point (ii) remains more or less unchanged for moderate increases in leverage thereafter and rise beyond a certain point.

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

## a. First Stage: Increasing value

First stage of the traditional approach starts with the total capital at which the shareholders capitalize their net income. In this stage, the cost of equity, Ke, remain constant or rise slightly with debt. But when it increases, it does not increase fast enough to offset the advantages low cost debt. During this stage, the cost of debt, Kd , remains constant or raises negligibly since the market views the use of debt as reasonable policy. As a result, the value of firm increase or overall cost of capital falls with increasing leverage.

## b. Second Stage: Optimal Value

In this stage, once the firm has reached a certain degree of leverage, increases in leverage have a negligible effect on the value, or the cost of capital of the firm. This is so, because

this increases in the cost of equity due to added financial risk that offsets the advantage of low cost of debt. Within the range or at a specific point, the value of the firm will be maximized or cost of capital will be minimum.

**c.   Third Stage: Declining Value**

In this stage, after the accepted degree of leverage, the market value of the firm decreases with leverage or overall cost of capital increases with leverage. This happens because investors perceive a high degree of financial risk and demand a high equity capitalization rate, which offsets the advantage of low cost debt. In this stage, the cost of debt and equity will tends to rise as a result of increasing the degree of financial risk that will make an increase in the overall cost of capital.

The overall effect of these three stages is to suggest that the cost of capital is the function of leverage. First it declines with leverage and after reaching a minimum point or range, it starts rising. The relationship between cost of capital and leverage can be graphically shown as under:
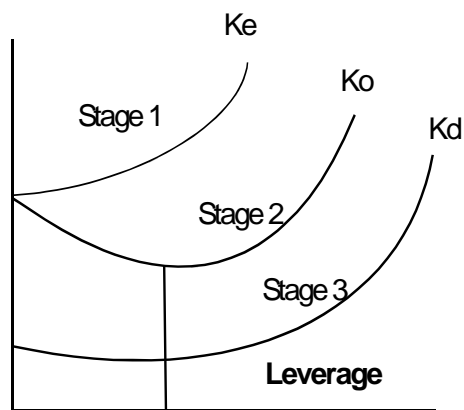


**Figure No. 2.7**: Effect of leverage on cost of capital under traditional theory

In the above figure, it is assumed that Ke rises at an increasing rate with leverage, whereas Kd assumed to rise only after significant leverage has occurred. At first, the

weighted cost of capital, Ko, declines with leverage because the rise in Ke does not entirely offset the sue of cheaper debt funds. As a result, Ko declines with moderate use of leverage. After a point, however, the increase in Ke more than offset the use of cheater debt funds in the capital structure, and Ko bargains to rise. The rise in Ko is supported further once Kd be gains 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.

### 4. Modigliani and Miller (MM) Model

Until 1958, capital structure theory considered the loose assertions about investors rather than carefully constructed model, which could test by formal statistical analysis. In what has been called the most influential setoff financial paper ever published, Franco Modigliani and Merton Miller (MM) addressed capital structure in a rigorous, scientific fashion, and they setoff a chain of research that continuous to this day. *(Bringham, Gapenski and Ehrhardt; 2001:622)* The Modigliani and Miller (MM) theory is identical with a net operating income approach. They argue that, in an absence of taxes, a firm's market value and cost of capital remain invariant to the capital structure changes. In their 1958 article, they provide analytically sound and logically consistent behavioral justification in favor of their hypothesis, and reject any other capital structure theory as incorrect. *(Horne; 1996:255)*

Modigliani and Miller explain their theory based on the following important assumptions: *(Horne; 1996:255)*

⎫ Capital market is perfect. Information is costless and readily available to all investors. There are no transaction costs and all securities are infinitely divisible. Investors are assumed to be rational and to behave accordingly.

⎫ The average future operating earnings of firms are represented by subjective

random variables. It's assumed that the expected value of probability distribution of all investors is same. The MM illustration implies that the expected value of the probability distribution of expected operating earnings for all future periods are same as present operating earnings.

⟩ Firm can be categorized into "equivalent return" classes. All firms within a class have the same degree of business risk. As we shall see later, this assumption is not essential for their proof.

⟩ The absence of corporate taxes is assumed. MM removes this assumption later.

The Modigliani and Miller position is based on the idea that no matter how we can divide the capital structure of a firm among debt, equity and other claims, there is a conservation of investment value. M-M in 1958 proposed that the theory without taxes and they relaxed the theory with tax consideration. So, we can study MM theory under two heading:

⟩ M-M theory without taxes
⟩ M-M theory with taxes

**M-M theory without taxes**

M-M first analyzed leverage under the assumption that there are no corporate or personal income taxes. On the basis of their assumptions, they explain and algebraically proved the following propositions.

**Proposition – I**

The proposition assumes that the market value of the firm is independent of its capital structure. The value of the firm is established by capitalizing its net operating income (EBIT) at the constant rate, which is based on the firm's risk class, the total market value

is independent of the debt-equity mix and is given by the rate appropriate to that risk class. This can be expressed as follows:

*Value of the firm = Market value of debt + Market value of Equity*

$$X \frac{\text{Expected net operating income}}{\text{Expected overall capitalization rate}} \quad X \frac{\text{EBIT}}{\text{EBT}}$$

For an un-levered firm $\quad V_\mu \quad X \frac{\text{EBIT}}{K_d}$

So, under the M-M model value of the firm is constant. When there is no tax. The value of firm is independent of its leverage. This also implies that: *(Bringham, Gapenski and Ehrhardt; 2001:623)*

)   The weighed average cost of capital to the firm is completely independent of its capital structure.

)   The weighted average cost of capital for the firm, regardless of the amount of debt used, is equal to the cost of equity; it would have; if it uses no debt.

According to this proposition, there is no relationship between value of firm and the way its capital structure is made up, nor there no relationship between the overall cost of capital and capita structure.

**Proposition – II**

According to this proposition, the cost of equity, Ke, is a linear function of leverage, measured by the market value of debt to equity, D/S. Thus, leverage will result not only in more earning per share to shareholders, but also increased cost of equity. The benefit of leverage is exactly taken off by the increased cost of equity, and constituently, the firm's market value will remain unaffected.

The cost of equity to a levered firm, $K_{el}$ is equal to the cost of equity to an un-levered firm $K_e u$ in the same risk class plus risk premium where size depends on both differential between un-levered firm's cost of debt and equity and the amount of debt used.

$K_{eL} = K_e\ U + Risk\ Pr\mathit{emium}$

$= K_e\ U + (- K_e\ U\ K_d)\ B\ /\ S$

Where, $K_e\ U$ = Cost of equity on un-levered firm.

$K_{eL}$ = Cost of equity of levered firm.

$K_d$ = Cost of debt

B = Market value of firm's debt

S = Market value of firm's stock

According to the above equation, as the firm's use of debt increases, its cost of equity also rises. This proposition shows the impact of financial leverage on the cost of equity. Firm gets the benefit of cheaper debt due to the increase in leverage, but he benefit is exactly offset by an increase in the cost of equity in the form of risk premium expected by the shareholders, against an increase in financial risk.

The two M-M propositions imply that the inclusion of more debt in the capital structure will not increase the value of the firm. Because of the benefit of cheaper debt will be exactly offset by an increase in the risk, hence in the cost of equity. Thus M-M argue that in the world without taxes, both the value of the firm and its weighted average cost of capital would be unaffected by its capital structure.

**The Arbitrage Proof**

M-M used an arbitrage proof to support their proportions. They showed that, under their assumptions, if two companies differ only in the way they are financed and in their total market value, the investor would sell share of the higher valued firm to buy those of the

lowered valued firm, and continue this process until the companies have exactly the same market value.

M-M assumed that firms are in zero growth situations, i.e. EBIT is expected to remain constant and all earnings are paid out as dividends. M-M argues that the total risk of the firm is not altered by changes in capital structure. The total value of the firm is same as levered or un-levered firm. This hypothesis is supported by arbitrage process. Arbitrage is the process simultaneously buying and selling the same or equivalent securities in different market.

**M-M Theory with Taxes**

M-M's hypothesis, that the firm is independent of its capital structure. But in reality, the corporate income taxes exist and interest paid to the debt holders is treated as a deductible expenses. So, debt financing is advantageous. "In their 1963 article, M-M shows that the value of the firm sill increase with debt due to the deductibility of the interest charges for tax computation, and the value of levered firm will be higher than of the un-levered firm" *(Pandey;1999:695)*

**Proposition – I**

The value of levered firm is equal to the value of un-levered firm in the same risk class plus the gain form leverage. The gain form leverage is the value of tax saving, found as the product of the corporate tax rate (T) times the amount of debt the firm uses (B).Value of Levered firm = Value when un-levered + Tax shield

*VL = Vu + T.B*

Here, when corporate tax introduced, the value of levered firm exceed that of the un-levered firm by the amount of tax shield, it's the important point. Theoretically a firm's

value is maximized at 100 percent debt financing. The value of firm is equal to the firm's value of equity with zero debt. The value of un-levered firm can be found by using following equation.

$$VL\,XS\,X\frac{EBIT(1\,ZT)}{Ke\mu}$$

Where, Vu = Value of un-levered firm

T = corporate tax rate

KeU = cost of equity of un-levered firm

**Proposition – II**

Under this proposition, the cost of equity of levered firm is equal to the cost of equity of an un-levered firm in the same risk class plus a risk premium whose size depends on the differential between the cost of equity and debt to an un-levered firm, the amount of financial leverage used, and the corporate tax rate.

$$KeL = KeU + (KeU – Kd)\,(1 - t)\,(B\,/\,S)$$

Where, KeL = Cost of equity of levered firm

The M-M view under tax consideration implies that because to tax deductibility of interest charges, a firm can increase its value or lower its cost of    capital    continuously with leverage. Thus the optimal capital structure is reached when the firms employ 100 percent debt in its capital structure. But the observed expenditure does not entirely support this view. In practice firm do not employ large amount of debt, nor lender are ready to lend beyond certain limits. M-M suggests that forms would adopt a target debt ratio so as to violate the limit of debt level imposed by lenders.

Why do companies not employ extreme level of debt in practice? There could be two possibilities. First we need to consider the impact of both corporate and personal tax  for

corporate borrowing. Personal tax may offset the advantage of the interest tax shield. Second borrowing may involve extra costs – cost of financial distress which may also offset the advantage of interest shield. *(Pandey; 1999:697)*

## 5. The Miller Model

M-M developed their theory considering corporate taxes in 1963 but before that they introduced their theory without corporate tax in 1958. Although, MM introduced corporate taxes in the second revision of their model, they did not extend the model to include personal taxes. "However, in his presidential address to the American Finance Association, Merton Mille introduced a model designed to show how leverage affects firms' value when both personal and corporate taxes are taken into account. *(Bingham, Gapenski and Ehrhardt; 2001:63)* Due to the Miller argument, changes in the capital structure have no effect on the firm total valuation. This position is the same as M-M's original proposition in the world of no taxes, but it contrasts sharply with their corporate adjustment article, in which they find that debt has substantial advantage.

Miller model suggests that in market equilibrium personal and corporate tax effects cancel out. He assumes that the personal tax on stock income, $T_{ps}$ is zero. Accordingly, his model implies that at the margin, the personal tax rate on debt income, $t_{pd}$ must equal to the corporate tax rate tc. When tpd = tc, changes in proportion of debt in the capital structure do not change in the total after tax income to investors. As a result, capital structure decisions by the corporation would be irrelevant. *(Horne; 1996:264)*

With personal taxes included, and under the same set of assumptions used in the M-M model, the value of an un-levered firm is found as follows:

$$V\mu X \frac{EBIT(1ZTc)(1ZTpc)}{Keu}$$

Where, EBIT = Earning Before Interest and Taxes

tc = Corporate Tax Rate

tps = Personal Tax Rate on Income form Stock

KeU = Equity Capitalization Rate of Un-levered firm.

The value of levered firm under Miler model can be found as follows:

$$VL = Vu + \text{Tax shield or } VL \times Vu + B \left[ 1 - \frac{(1 - tc)(1 - tps)}{(1 - tpd)} \right]$$

Where, tpd = personal tax rate on income form debt. The Millar model has two important implications: *(Pandey; 1999:702)*

) There is an optimal amount of debt in the economy, which is determined by the corporate and personal tax rates. In other words there is and optimal debt equity ratio for all firms in the economy.

) There is no optimal debt – equity ratio for a single firm. There are hundreds of firms, which have already included 'tax exempt' and low 'tax bracket' investors. Therefore a single firm cannot gain or loss by borrowing more or less.

So, this Miller model with corporate and personal income taxes assumes that the advantages of corporate borrowing rate reduced by the personal tax loss. Capital structure does not matter form the single firm's point of view. Miller's model is based on same controversial assumptions, and therefore, most people still believe that in balance, there is a tax advantage of corporate borrowing. According to James, C. Van Horne "The personal tax effect does not entirely offset the corporate tax effect and there is a tax advantage to borrow for the typical corporation. This particularly true for companies having only moderate amount of debt where tax shield uncertainty is not grate. Still, there would appear to be some lessening of the corporate tax effect wing to personal taxes" *(Horne; 1996:266)*

### 2.2.7    Approaches to Established Appropriate Capital   Structure

It's already concerned that capital structure decision affects the value of the firm, it's earning per share and overall capitalization rate of the firm. So it's very important for the companies to plan properly to established target capital structure. Hence, the target capital structure affects the firm positively. Capital structure should optimal or appropriate. While establishing the appropriate capital structure firm should identify the sources of funds and then understand about the advantages and disadvantage of each source of funds. And company should make a proper mix of those sources of funds while financing. Therefore, company should test the effects of various alternative sources of financing and should select an appropriate combination or alternative financial plan, with the help of appropriate approach or technique.

When a company is incorporated, capital structure will be planned initially. It should be designed very carefully. The management of the company should set the target capital structure and subsequent financing decisions should be made with a view to achieve a target capital structure. The financial manager has also to deal with an existing capital structure. *(Pandey; 1999:720)*

Capital that needs to the company to perform its activities continuously. Financial manager should select the best source of capital mix when it's and the financial manager should test the advantages and disadvantages of various sources of finance and select the most advantageous source of capital. It has to take whenever the company needs additional funds. Thus, it is a continuous process. Financial manager can use various approaches while establishing appropriate capital structure. The following most common approaches to decide about thee capital structure are explained here:

1.   EBIT – EPS Analysis

2.  Cash Flow Analysis

**1. EBIT – EPS Analysis**

In search for an appropriate capital structure, it needs to understand how sensitive is earning per share (EPS) to changes in earnings before interest and tax (EBIT) under different financial alternatives. Finance manager always wants to know about, "what is the effect of leverage on risk?" A precise answer of this question is not possible with the help of EBIT – EPS analysis. The finance manager can do two things: (a) Compare the expected value of EBIT with its indifference value and (b) assess the probability of EBIT exceeds the indifference value of EBIT, the debt financing option, may be advantageous. The larger the differences between expected value of EBIT and its indifference value, the stronger the case for debt financing.

Given the variability of EBIT, arising out of the business risk of the company, the rob ability of EBIT falling below the indifference level of EBIT may be assessed. If such probability is negligible, the debt financing option is advantageous. On the other hand, if such probability is high, the debt-financing alternative is risky.

The EBIT – EPS analysis is an important tool in the hands of financial manager to get an insight into the firm's capital structure management. He/s can consider the possible fluctuation in EBIT and examine their impact on EPS under different financial plans. If the probability of earning rate of return on the firm's assets less than the cost of debt is insignificant, a large amount of debt can be used by the firm in its capital structure to increase the earnings per shares. This may have a favorable effect on the market value per share. On the other hand, if the probability of earning a rate of return of the firm's assets less than the cost of debt is very high, the firm should retain form employing debt capital. Thus, it may be concluded that the greater the level of EBIT and lower the probability of downward fluctuation, the more beneficial it is to employ debt in the

capital structure. However, it should be realized that the EBIT – EPS is a first step in deciding about a firm's capital structure.

So, the EBIT – EPS analysis can be used to evaluate the various capital structures in light of the degree of financial risk they entail and return they provide the firm's owners.

The EBI – EPS analysis is one of the widely used methods employed to determine appropriate level of debt. Through the analysis, the financial manager seeks to compare alternative methods of financing under various assumptions as to EBIT and to obtain indifference level of leverage. Indifference point refers to the EBIT level at which EPS remains unchanged irrespective of debt-equity mix.

## 2. Cash Flow Analysis

To establish an appropriate capital structure another widely used approach is Cash Flow analysis. This approach based on fixed charges of the companies. It indicates the capacity of the firm to pay fixed charges on the basis of its ability of cash generation. If firm unable to pay its fixed charges, it suffer form difficulty as market domination It is bad for reputed company, The firm, therefore, must estate and analyze expected future cash flow, before committing itself of fixed charges. So, we should also analyze the cash flow ability of the firm to serve fixed charges for appropriate capital structure. Where, fixed charges include payment of interest, preference divided, principal payment and lease payment. They depend on both the amount of loan securities and term of payment.

The amount of fixed charges depends on volume of debt or preference capitals with short-term maturity. It will be high if the company employs large amount of debt or preference capital. Whenever the company thinks of raising additional debt, it should analyze expected future cash flows to meet the fixed charges. The inability to meet these charges, with the expectation of preference stock dividends, may result in financial insolvency. It is quite risk to employ fixed charge source of finance by those companies whose cash flows are unstable and unpredictable. It is possible of high growth and high

profitable companies to suffer form cash shortage if its liquidity management is poor.

Cash flow analysis is helpful to determine the debt capacity of the firm "debt capacity is the amount which a firm can serve easily even under adverse condition; it is the amount that the firm should employ." *(Pandey; 1999:726)* Some ratios can be used to analyze the debt capacity of the firm. "Among the ways we can gain knowledge about the debt capacity of the firm is through the use of coverage ratios." *(Horne; 288: 204)* Among the coverage ratios, most widely used coverage ratio is time interest earned or interest coverage ratio, which can be calculated by sing following formula:

$$\text{Time Interest Earned} \times \frac{\text{EBIT}}{\text{Interest on debt}}$$

Time interest earned is ratio between EBIT and Interest on debt. This ratio measures the ability to pay interest. It also measures the extent to which operating income can decline before the firm is unable to meet its annual interest costs. Failure to meet this obligation can bring legal action by the firm's creditors, possibly resulting in bankruptcy. Note that earning before interest and taxes, rather than net income, is used in numerator. Because interest is paid with pre tax amount, the full amount of EBIT is available to pay interest. *(Bringham, Gapenski and Erhhardt; 2001:80)*

The technique of cash flow analysis is helpful in determining the firm's debt capacity. Debt capacity is the amount, which a firm can service easily, even under adverse conditions; it is the amount that the firm should employ. There may be lenders who are prepared to lend to you.

But you should borrow only if you can service debt without any problem. A firm can avoid the risk of financial distress if it can maintain its ability to met contractual obligation of interest and principal payments. Debt capacity therefore should be though

in terms of cash flow rather than debt ratios. A high debt ratio is not necessarily bad. If you can service high debt without any risk, it will increase shareholders' wealth. On the other hand, low debt ratio can prove to be burdensome for a firm, which has liquidity problem. *(Pandey; 1999:725)*

## 2.3  Review of Related Studies

To make the study more realistic, previous studies have also been reviewed. It consists of thesis and dissertations done by previous master's level student as well as other research works related to the capital structure of the firm which are as followings:

A study done by **Umesh Koirala (2003)** on the topic of "Comparative study of Capital Structure between Nepal Lever Ltd. and Dabur Nepal Ltd." has been reviewed. The main objectives of the study is to examine the relationship between capital structure with cost of equity, to identify the correlation between return and capital structure decision, to access and explore the capital structure related with EAT, EBIT, EBT, total debt to total assets, debt to share holders equity etc of the selected companies with the help of financial as well as statistical tools related the objectives.

Analyzing the capital structure of these two firms in terms of financial and statistical, he has found that DNPL is highly levered company and bearing much risk by employing more long-term debt whereas NLOL is less risky firm and is deprived form the tax shield benefit of long-term debt, both companies have not maintained total assets ratio properly, the ratio of long-term to total debt ratio on NLOL is nominal and zero after wards, the amount of interest of DNPL is higher than NLOL, both companies do not have appropriate ratio of long-term debt to capital employed, the average return earned by the shareholders of DNPL is lower than NLOL, the debt removing capacity of NLOL is stronger than DNPL, DNPL is a levered firm and still using long-term debt in its capital structure whereas NLL is an un-levered firm since four years, the correlation

coefficient between the total debt and earning per share of DNPL is highly positively correlated but NLOL has not significant due to the negative correlation.

Another study conducted by **Bishnu Raj Budhathoki (2003)** entitled "A comparative analysis on capital structure management of Nepal Lever Ltd. and Nepal Lube Oil Ltd" has also been reviewed. He has applied different aspect of capital structure on his study. He has used men, standard deviation, correlation coefficient as a statistical tools and ratio analysis, Debt-Equity ratio, Long-term debt to total assets ratio, average return on shareholders equity and profitability ratio as financial tools.

He found on his study that: NLOL has got more risk than NLL, NLL is able to earn the reasonable profit for its investors than NLOL. Net worth ratio of NLL in near of standard so it's better than NLOL, NLOL is able to use proper amount of LTD to maximize shareholder return, NLOL can maintain the LTD and the company's equity capital is sufficient to support the acquisition of the assets, NLOL has lower risk than NLL, NLOL shareholders' have greater claim on firm's assets, NLOL has lower total debt proportion than NLL, NLOL can able to cover the interest expenses by it's operating efficiently than NLL, NLOL has perfectly utilized of fixed assets than NLL, NLL has high profitability position than the NLOL, NLL has greater average EPS than NOLL.

A study on "Capital structure and cost of capital" conducted by Shreedhar Subedi (2003) has been reviewed. The major objectives of the study are to analyze the relationship between capital structure and cost of capital in the context of Nepalese financial and non-financial enterprises. The study is basically based on secondary data derived form data of selected listed companies using statistical tools as coefficient of determination, regression analysis, standard error of estimate and t-test. Similarly, financial tools as average cost of capital, leverage, DPR, cost of equity, tax adjusted stock yield etc.

The major findings of the study are, average cost of capital, size of the firm, growth in

total assets, tax adjusted stock yield and cost of equity of financial sector enterprises are higher than non-financial sector and first leverage like total debt to capital employed, second leverage like total debt to equity capital, DPR, earning variability and liquidity of non-financial sector enterprises are higher than financial sector enterprises. According to his findings, this study does not frequently support the MM hypothesis. The result indicates that cost of capital can be affected by the use of debt in capital structure, however, the result in closer to support tradition propositions. He recommends that, Nepalese enterprises should be designed on appropriate capital structure in order to maximize shareholders wealth and the cost of capital should be considered while taking financial decision.

**Anjana Shah (2004)** "A study on capital Structure of selected manufacturing companies in Nepal" tried to analyze the capital structure of source of listed companies and her main objective is to analyze cost of capital, profitability position, debt servicing capacity, relationship between ROE & TD, ROE & DEBT ratio, EAT & TD and Interest and EBIT using both financial and statistical tools. She found that the capital structures of all companies are diverse in nature. Some of them are trying to be equity base (unleveled) so they have constantly reducing the amount of debt from their capital structure. Similarly, JSM has fluctuating debt ratio, NLL & BNL are free form LTD through all of them are from spontaneous source of finance. She concluded that the average TD/TA ratio of NLL shows 51.68% which implies that the creditors still has good margin of safety. The share of outsiders in the total assets of the company is more than its own. The debt removing capacity is very good because of sufficient operating profit every year. NLL is trying to be free form the burden of interest by eliminating LTD which doesn't seems good for efficient management point of view.

**Manoj Kumar Dahal (2005)** tries to show relationship between capital structure decision and its impact on risk and return. He has selected Dabur Nepal Pvt. Ltd on his study. His specific objectives of the study are to asses the risk compensating return and

identify the correlation between returns and capital structure decision by the help of statistic and financial tools like, ROE and TE, ROE and Debt ratio, EAT and Net Worth, EAT and TD, Interest and EBIT and Correlation coefficient, mean, standard deviation etc. It is found that the main source of fund is debt capital (Long-term debt). This implies, it is paying higher interest rate and bearing higher risk.

**Dinesh Shrestha (2006)** tried to study and compare the major determinants of long-term debt of Nepalese manufacturing and trading companies on his thesis "A comparative study of capital structure of Gurakh Kali Rubber Udyog Vs Salt Trading Corporation" He has focused only on statistical tools (mean, Standard deviation, persons coefficient, p-value). The main objective of the study is to examine capital structure and compare with selected companies. He found on his study that STC has higher liabilities along with LTD, Debt/Equity ratio, Total Assets, Interest, Working Capital and Profit as well. It indicates that STC is bearing higher risk to achieve goals and making net profit.

**Rup Narayan Chaudhary (2007)** on the study of capita structure of selected manufacturing and trading companies in Nepal. The main objectives of his study are to analyze the effect of capital structure on cost of capital. To analyze the properties of portfolios formed on financial leverage in Nepalese listed companies, to examine the capital structure management practices in Nepalese listed companies and to examine the relationship between capital structure and other financial variables.

The sources of data used in the study are basically secondary and primary in nature. Financial statement of selected companies publishes by Nepal Stock exchange limited Kathmandu are the main.

He has used simple as well as multiple regression analysis to accomplish the objectives. Simple regression equation models were used to examine the relationship between cost of capitals; with each selected variables. Selected variables represent leverage ratio,

dividend payout ratio, earning variability, growth and liquidity ratio.

He found that the enterprises with higher leverage have higher firm size on the other hand, enterprises having smaller leverage have higher growth in total assets, dividend payout, liquidity ratio, debt service capacity. The portfolio analysis results indicates that financial leverage (TD/TA) is positively related to average earning rate, return on equity and negatively related to business risk. The simple regression analysis under whole sector enterprises indicates that regression coefficient of financial leverage on firm size, growth on total assets, earnings rate, debt service capacity, operating leverage is positively related where as there is negative association between dividend payout, business risk and liquidity ratio. The variability of financial leverage, earning rate, operating leverage, liquidity ratio are highest in trading sector enterprises. Long-term debt to capital employed ratio is highest in manufacturing sector enterprises. Dividend payout ratio and return on equity are highest in financial sector enterprises. Similarly, firm size and debt service capacity are highest in hotel sector enterprises. Growth in total assets is highest in financial sector enterprises.

Regarding the capital structure determinants, most of the respondents stated that business risk, tax rate, finance period, interest rate, firm size, earning rate, operating leverage, flexibility control, debt service capacity, growth opportunities, market condition and dividend payout ratio respectively are most to least affecting factors of capital structure in Nepalese listed companies.

A study done by **Suravi Baral (2008)** on the topic of "capital structure of selected Nepalese manufacturing companies in Nepal" has been reviewed. She had analyzed five manufacturing companies. The main objectives of her stud are to analyze the composition of the capital structure of industry to make the long-term solvency of the selected companies, to evaluate the debt-servicing capacity of the selected companies, to analyze the relation between the variables affecting capital structure.

The methods of analysis employed in this study, consist of two types of analytical tool and technique that are financial and statistical tools. The financial tools employed in this study basically represent ratio analysis, leverage analysis, EBIT-EPS analysis and others. In the trend analysis, various variable shows clear picture of its movement for the study period. Correlation analysis and 't' – test analysis has been made to determine the degree of relationship between two variables. She had found that total debt to net worth ratio of five manufacturing companies is considerable but JSM have negative ratio. The interest coverage ratio of these five companies is very low. So, the companies are unable to pay their interest from the EBIT. The amount of total capitalization is not sufficient to finance long-term assets of these companies. Profitability ratio of the manufacturing companies is low. As a result, profitability of manufacturing companies is unsatisfactory. These companies are unable to earn the profit, excess of the accumulated loss. Once, the equity of five companies is to be born by the debt holder. There is no safety margin to the debt holder. Moreover, their investment are being devalues year by year. Therefore, they may force the company to liquidate and redeem their investment at any times.

**Mr. Krishana Pathak (2009)** Conducted a study on "Capital Structure Management of Gorakhali Rubber Udhogh Limited. "

The Objective of this study is as follows in details:

a. To analyze the financial position of Gorakhali Rubber Udhogh.

b. The main objective of this study is to assets the capita structure of the country in terms of debt interest coverage, EBIT and EBT, EAT and total debt value of firm and find out capitalization rate.

c. To give the suggestive Judgmental decision which will strengthen there capital structure position. So that they can achieve their objectives.

**His Findings are as follows:**

a. The company's debt service capacity was poor as its interest coverage ratio was negative.

b.   The operational performance was not satisfactory due to the negative earnings and low volume of sales revenue.

c.   The company wasn't able to use its full capacity, which resulted in a huge loss.

d.   Its debt capital was very high as compared to the shareholders equity and the trend of debt/equity was in creasing every year.

**He later suggested:**

a.   It is beneficial if company issues equity to obtain additional funds.

b.   The over staffing problem should be solved by proper strategic plan.

## 2.4  Research Gap

This study is concerned with the research title "Capital Structure". Some researchers have selected various companies for the research and some have concentrated in only one institution. But this study includes three manufacturing companies to cover the analytical part and fulfill the objectives of the study. This thesis work has covered seven years data (FY 2059/60-2065/66) to get more accurate conclusion whereas generally five years data had been used in previous studies.

It has used all possible financial and statistical tools to cover the objectives of this study. Karl person's correlation coefficient has been to check the relationship between the sampled variables and coefficient of variance to measure dispersion of corresponding variables. Regression analysis is also used as a statistical tool for investing relationship between the variables by the establishment of an approximate functional between them. In this study, by the use of regression analysis, the strength of relationship between two variables (e.g. ROE on Debt ratio, ROE on D/E ratio, ROA on Debt ratio, NP on TD, NP on LTD) have determined. As a financial tool, various ratio analyses have been done to evaluating the financial position and performance of a firm.

Hence, this study is significantly different from previous study. Effort on this particular subject will be found properly genuine and it will be recognized valuable study in this particular subject.

# CHAPTER - III
## RESEARCH METHODOLOGY

## 3.1 Introduction

Research Methodology is the investigation tools of any certain area and it means clearly observation of certain objective. 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. *(Seltiz and others; 1962: 50)*

Research Methodology suggests the systematic way to solve the research problem. Basically it consists of the research design, the nature and source of data, data collection tools, population and sample, data analysis tools, research.

## 3.2 Research Design

A research design is the conceptual structure within which research is conducted. It is an integrated system that guides the researcher in formulating, implementing, and controlling the study. On the other wise, a research design is the arrangement of conditions of collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure. It is the plan and Formulation of investigation idea and strategy so as to obtain answers to research questions and to control variance.

Kerlinger (1986) describes that "Research Design is the plan, structure, and strategy of investigation conceived so as to obtain answers to research questions and to control variance. The plan is the overall scheme or program of the research. This study is based

upon historical financial activities of the three companies i.e. Unilever Nepal Ltd, Dabur Nepal Ltd, and Nepal Lube Oil Ltd, Various statistical and financial tools have been utilized for analyzing the different variable related to the capital structure.

Since, the study is obviously based on certain research design. This study emphasizes on descriptive and analytical study of collected data over a period of time and it gives suggestion on the improvement of the capital structure. So, this study is based on descriptive and analytical research designs.

## 3.3 Populations and Samples

Population refers to the entire group of people, events or thing of interest that the researcher wishes to investigate. Or the population means the large group form the samples is drawn. The large group about which the generalization is made is called the population under study, or the universe, and small portion on which the study is made is called the sample of the study.

The financial statements (Annual Reports ) published by the concerned companies form the establishment of these companies till the period of this study are taken as the population.. Although study based form entire population or universe is more realistic, it is not always possible to study every item or elements in a universe. The periods covered by this study is the sample period of the study that fairly represents the total population.

The study of capital structure of selected manufacturing companies is based on the financial reports of the concerned companies. This study has considered three companies; Unilever Ltd., Nepal Lube oil Ltd. and Dabur Lever Pvt. Ltd. The study is based on seven years financial data of concerned companies ending FY 2065/66 that compares financial evaluation of these companies with respect to capital structure.

### 3.4    Source of Data

During the preparation of this thesis various sources have been used. To analysis capital structure of these three companies, UNL, NLOL and DNPL, information has been taken form annual reports and publications of different years. So, in this study secondary data are used more than primary data because of various constraints. So, data used in this study are secondary in nature. Mostly the data used in this study are annual reports, Profit and loss account, and Balance sheet of concerned companies, publications of the concerned companies, various publications of Nepal stock exchange and Securities Board, and various magazines and so on.

### 3.5    Analytical Tools

After collection of data, it should be properly edited and organized in the form of tables or graphs. This would help the researcher in finding out the silent features of the data. So, different kinds of analytical tools are used in financial statements with the help of financial transactions, which have placed during the financial year. But information provided by the financial statements is not enough and end itself. Companies cannot get the meaningful conclusion form these statements alone. The information provided by the financial statements is useful in making decisions through analysis and interpretation.

Comparative evaluation of capital structure of three firms is a part of financial analysis and same like that different types of tools can be used. In this way all the tools used in this study can be classified in to two categories: financial and statistical tools. These are as follows:

### 3.5.1    Financial Tools

Financial analysis is the process of identifying the financial strength and weakness of the

company by properly establishing relationships between the items of the financial statements. Each type of analysis has a purpose that determines the different relationships emphasized in the analysis. But this study is based on capital structure this financial tools that help to analyze the capital structure are used.

The major tools employed for the analysis of financial status is the ratio analysis that establish the quantitative or numerical relationship between two variables of the financial statements.

➢ **Ratio Analysis**

Ratio analysis is a powerful tool of financial analysis of capital structure. A ratio is defined as the indicated quotient of two mathematical expressions and as relationship between two or more variables. So, it is used as yardstick for evaluating the financial position and performance of a firm. It can be classified into liquidity ratios; profitability ratios, leverage ratios, and activity ratios etc. This study is based upon the capital structure ratio.

a) **Debt-Equity (D/E) 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. D/E ratio indicates the relative proportions of debt and equity. The relationship between outsiders claim and owners' capital can be shown by debt-equity ratio. It calculated as:

$$\text{D/E Ratio} \quad X \frac{\text{Longterm Debt}}{\text{Shareholder's Sequity}} \mid 100$$

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 o the shareholders or owners of the company.

**b)  Total Debt to Total Assets (TD/TA)**

This ratio measures 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 includes long-term debt and current liabilities. The total assets consist of permanent assets and other assets. It is calculated as:

$$TD/TA\,Ratio\;X \frac{Total\quad Debt}{Total\quad Asses} \mid 100$$

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.

**c)  Long Term Debt to Total Debt Ratio (LTD/TD)**

The Long-term debt to total debt ratio measures 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 LTD/TD is calculated as:

$$LTD/TD\;X \frac{Longterm\quad Debt}{Total\quad Debt} \mid 100$$

**d)  Interest Coverage Ratio (I/C Ratio)**

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

formula:

$$\text{I/C Ratio} \times \frac{\text{EBIT}}{\text{Interest}}$$

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

**e)  Return on Shareholders' Equity**

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

$$\text{Return on shareholders' Equity} \times \frac{\text{Net Profit After Tax}}{\text{Shareholders' Equity}}$$

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

**f)  Proprietary Ratio**

Proprietary Ratio shows the relationship between proprietors' fund and total assets of the company. This is also a type of debt to total capital ratio. This ratio is calculated as:

$$\text{Proprietary ratio} \times \frac{\text{Shareholders Equity'}}{\text{Total Assets}}$$

This ratio measures the contribution of owners to the total assets. And the higher the ratio indicates the higher contribution of owners to the total assets and vice versa.

## g) Long-term Debt to Capital Employed Ratio

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:

$$\text{Long-term debt to capital employed ratio} = \frac{\text{Long-term debt}}{\text{Capital Employee}}$$

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.

## 3.5.2    Statistical Tool

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

➢ **Correlation Coefficient (r)**

Correlation coefficient measures the relationship between two and more variables, it shows the extend relationship between them. The relationship may be direct or inverse. If the both variables show similar change there is direct or positive relationship between them and vice versa. Or it indicates the direction of relationship among variables. A method of measuring correlation so called Pearson's coefficient of correlation. It is denoted by 'r'. The correlation coefficient can be calculated by suing following formula:

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

Where, N= number of observations

X and Y are variables

The decision criteria are:

When, r = +1, the variables have perfectly positive correlated

R = -1, the variables have perfectly negative correlated

➢ **Standard Deviation (SD)**

The standard deviation is used to measures the risk. It shows the deviation of actual mea with average mean. The standard deviation measures the absolute dispersion of variability of a distribution. The greater the variability or dispersion the greater would be the magnitude of the deviation of the value from their mean. The smaller the dispersion or variability, smaller would be the standard deviation. Hence, the standard deviation is useful in judging the representativeness of the mean. The formula of standard deviation is as follows:

$$SD ⨍† Ax \sqrt{\frac{X^2}{n} Z \frac{x}{n}^2}$$

Where, SD (s) = Standard Deviation

X = Value of the variable

n = Number of years or number of observation

➢ **Coefficient of variance (CV)**

Coefficient of Variance is the corresponding relative measure of dispersion. The series for which the coefficient of variation is greater is said to be more variable or conversely less consistent or less uniform.  The formula of coefficient of variance is as follows:

Cofficient of Variance (C) $X = \dfrac{}{\overline{X}} \mid 100$

Where, $\overline{X}$ = Mean

➢ **Regression Analysis**

Average relationship between two variables (x, y) is called regression. Estimation of unknown value of variable with the help of known value of variable is called regression analysis. Where known value of variable is called independent variable and unknown value of variable is called dependant variable. The formula for the calculation is:

$$b = \dfrac{n \sum XY - \sum X \cdot \sum Y}{n \sum X^2 - \left(\sum X\right)^2} \; and \; a = \dfrac{\sum Y - b \sum X}{n}$$

The equation of regression line is Y = a+bX

Where, Y= Dependent variable

X= Independent variable

b= Slope of the regression or Regression coefficient

a= Regression constant

# CHAPTER - IV
## PRESENTATION AND ANALYSIS OF DATA

### 4.1    Introduction

The main objectives of this study are to evaluate the capital structure of NLOL, DNPL and UNL. 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 minimized overall cost of capital. Thus this chapter emphasizes the position of capital structure of NLOL, DNPL and UNL. The analyses in chapter are divided into following sections, which directly and indirectly related to the capital structure

- Ratio Analysis
- Debt-Equity (D/E) Ratio
- Total Debt to Total Assets (TD/TA)
- Long Term Debt to Total Debt Ratio (LTD/TD)
- Long-term Debt to Capital Employed Ratio (LTD/CE)
- Interest Coverage Ratio (I/C Ratio)
- Return on Shareholders' Equity (ROSHE)
- Proprietary Ratio
- Correlation coefficient Analysis
- Regression Analysis

## 4.2  Ratio Analysis

In the study of capital structure ratio analysis plays vital role. Ratio analysis is an important financial tool that systematic interprets the financial statements. With the help of it, a firm can trace out the strengths and weakness of its historical performances and current financial conditions. It is also classified into liquidity ratio, profitability ratio, leverage or capital structure ratio, turnover ratio or activity ratio etc. But in this study, ratios that are relevant for the capital structure is done in detailed in the following pages, along with their trend serially.

### 4.2.1  Analysis of Debt Equity Ratio (D/E 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 is 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 the other word, this ratio exhibits the relative proportions of capital contribution by owners and creditors. Debt equity ratio can be calculated in the basis of shareholders' equity and long-term 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 ratios of concerned companies are shown in the following table that is referred form the appendix 1.

| Fiscal Years | Nepal Lube Oil LTD | | Dabur Nepal Pvt. LTD | | Unilever Nepal LTD | |
|---|---|---|---|---|---|---|
| | LTD as% of SHE | % change | LTD as% of SHE | % change | LTD as% of SHE | % Change |
| 2059/60 | 43% | - | 258% | - | 0 | - |
| 2060/61 | 81% | 88.37% | 179% | -30.62% | 0 | - |
| 2061/62 | 98% | 20.99% | 135% | -24.58% | 0 | - |
| 2062/63 | 0 | -100% | 108% | -20% | 0 | - |
| 2063/64 | 0 | 0 | 66% | -38.8% | 0 | - |
| 2064/65 | 0 | 0 | 5% | -92.42% | 0 | - |
| 2065/66 | 0 | 0 | 3% | -40% | 0 | - |
| Average | 31.71% | | 107.71% | | 0 | |
| SD($\exists$A | 39.60 | | 85.92 | | | |
| C V | 124.87% | | 79.77% | | | |

*Source Appendix-1*

**Chart No.4.1 Line diagram of Analysis of Debt-Equity Ratio**
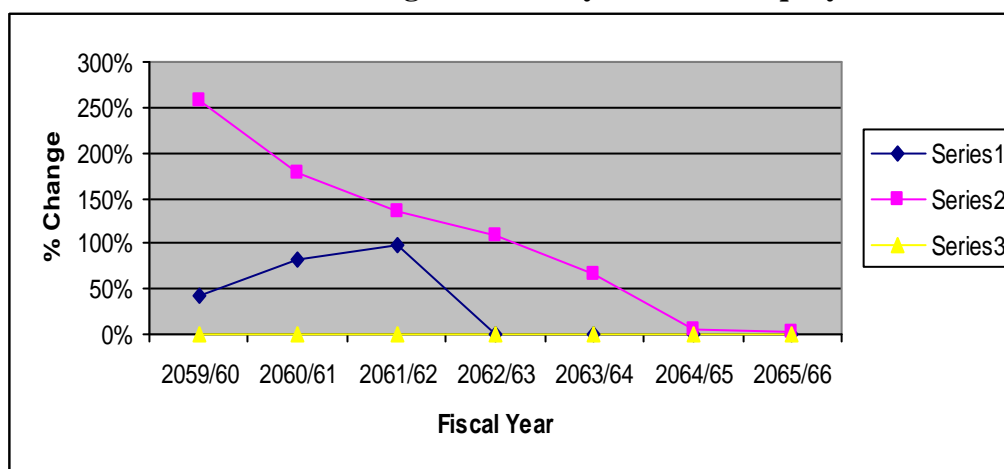


In the above table, the debt equity ratio, the percentage change in that ratio and average ratio has been calculated. Seven years data has been presented here. The table shows that D\E ratios of NLOL are 43 % in fiscal year 2060/61 and 81% and 98 % in fiscal year 2061/62 and 2062/63 respectively. Then afterwards the D/E ratios are zero. The average D/E ratio of NLOL is calculated 31.71 % which shows the creditors have 31.71 % claims on the assets on NLOL. Where first three years D/E ratios are greater than average ratio it also indicates that the higher claim of creditors then the owner of the

company and it is suffering by the higher amount of interest on debt. Percentage changes in the D/E ratios have increasing trend but percentage change ratio is in decreasing trend. In the fiscal year 2061/62 percentage change is 88.37 % and in the FY 2062/63 percentage change is 20.99% and the percentage change is decreased by 100 %. D/E ratios are zero onwards form the FY 064/65, which indicates that NLOL is rapidly going to be un-levered company. Zero D/E ratios imply that there is no burden of overall cost of capital. And there is not claim of creditors in the assets. S.D and C.V are 39.60 and 124.87%. This shows that debt equity ratio of NLOL is inconsistent in nature.

Calculated value of DNPL shows that the D/E ratios have decreasing trend. In the FY 2060/61 D/E ratio is 258% and it decreasing gradually i.e. 179% in FY 061/62 decreased by 30.62%, 135% in FY2062/63 decreased by 24.58%, 108% in FY 063/64 decreased by 20%, 66% in FY 064/65 decreased by 38.88%, 5% in FY 065/66 decreased by 92.42% and 3% in FY 065/66 which is decreased by 40%. By this trend, it can be said that the DNPL is becoming un-levered. The D/E ratio of FY 063/64 is 66%, which can be assumed as appropriate level. It means that the company has raised Rs. 0.66 of total capital for every one rupee of ownership capital generally, 60 to 80 percentage of long-term debt to shareholders' equity can be assumed as an appropriate level of debt-equity ratio. The average D/E ratio on DNPL is 107.71% which is very high ratio and implies that the claim of creditors is 107.71% higher than that of owners of the company. D/E ratio of first four years are higher then average ratio but last three years ratios are lower than the average ratio that implies that there is less burden of overall cost of capital and less claim of creditors. S.D and C.V are 85.92 and 79.77%. This shows that debt equity ratio of DNPL is inconsistent in nature.

At the same time, UNL has zero debt equity ratios in sampled years. It indicates that it doesn't employ any long-term debt to its capital structure and become an un-levered firm. The whole assets are under the claim of its owners. It has not any burden for creditors, but also it can not be deprived from those problems, which arises due to not

employing the long-term debt in its capital structure.

There are both bad and good aspects of higher and lower level of D\E ratio. The high ratio shows that there is less contribution of the owners in the capital structure so they do not take the worse situation seriously. Because of the high ratio, the company has to face a heavy burden of interest payment. It is definitely a danger signal for the creditors because they have high contribution in the firm. If the company fails to achieve its target, the creditors will loss heavily. Thus, creditors may strain every nerve to make an enterprise success. They may interfere in management. The firm may follow very restrictive terms and condition to borrow funds for financing. And finally the company may encounter serious difficulties in rising funds in future. In order to solve this problem, the company should reduce the amount of borrowed funds in its capital structure while financing. The decreasing trend in ratio of DNPL can be taken as a corrective action for maintaining optimum capital structure.

On the other hand, low level of D\E ratio has also some drawbacks. Low D\E ratio implies that firm is cutting off long-term debt form the capital structure. It leads to the companies to un-levered process and the value of un-levered firm is very low. In this case the firm cannot take tax shield benefit. It has to pay high amount of tax because it cannot deduct interest from its earning because firm has lower burden on interest. It means UNL and NLOL are also not in satisfactory level at all. Both companies are un-levered now. They do not use long-term debt and they do not have interest burden anymore. Hence, they cannot take benefit of tax shield to increase the value of firm that cause high capitalization rate.

### 4.2.2 Analysis of Total Debt to Total Assets Ratio (T/D to T/A Ratio)

Debt to total assets ratio express the relationship between creditors fund and total assets. It is also known as leverage ratio. This type of capital structure ratio is a variant of debt

equity ratio. Calculating total debt to total assets is one calculation approach of the debt to capital ratio. Total debt includes current liabilities and all loans and total assets include all types of assets of the firm. It measures the percentage of total funds provided by creditors. This ratio can be calculated by simply dividing total debt by the total assets of the firm. Moderate debt ratio is preferable by creditors, since greater debt ratio leads to the owners of the company to irresponsible activities in the part of speculation. If the venture is unsuccessful, however the only a moderate loss is incurred by the owners because their investment is small. The owner may wish a high ratio to magnify earning. Where lower the debt ratio, the greater the cushion against creditor's loss in the event of liquidation. The debt ratio or total debt to total assets ratio of NLOL, DNPL and UNL is calculated on annex 2. And the calculated ratio can be presented and interpret in the following way:

**Table No. 4.2 Analysis of Total Debt to Total Assets (TD/TA)**

| Fiscal Years | Nepal Lube Oil LTD | | Dabur Nepal Pvt. LTD | | Unilever Nepal LTD | |
|---|---|---|---|---|---|---|
| | TD as % of TA | % change | TD as% of TA | % change | TD as% of TA | % change |
| 2059/60 | 60% | - | 80% | - | 54% | - |
| 2060/61 | 66% | 10% | 78% | -2.5% | 48% | -11.11% |
| 2061/62 | 68% | 3% | 77% | -1.28% | 55% | 14.58% |
| 2062/63 | 66% | -3% | 72% | -6.49% | 39% | -29% |
| 2063/64 | 73% | 10.6% | 71% | -1.38% | 54% | 38.46% |
| 2064/65 | 65% | -10.96% | 66% | -7% | 58% | 7.4% |
| 2065/66 | 68% | 4.62% | 67% | 1.52% | 80% | 38% |
| Average | 66.57% | | 73% | | 55.43% | |
| SD(∃□□) | 3.65 | | 5.07 | | 22.83 | |
| C V | 5.48% | | 6.95% | | 60.09% | |

*Source Appendix-2*

**Chart No. 4.2 Line diagram of Analysis of Total Debt to Total Assets (TD/TA)**
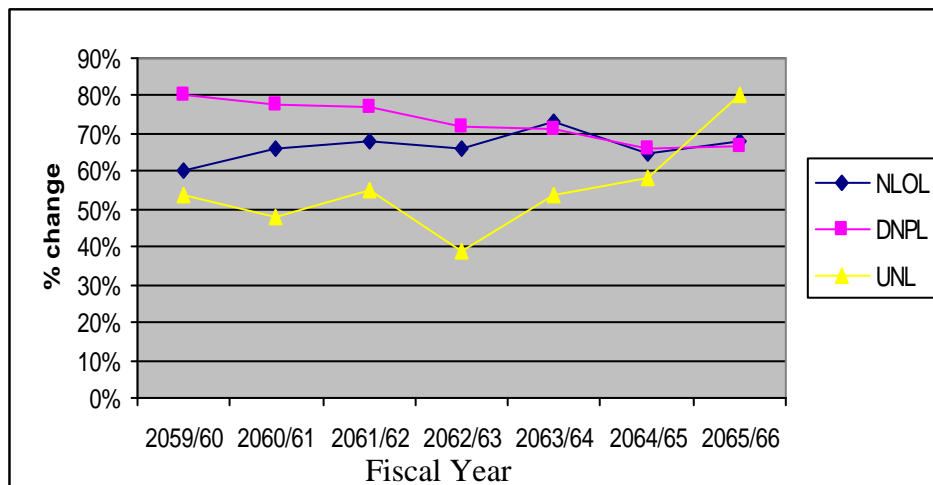


In the above table, the calculated debt ratio of NLOL has fluctuating trend. Average ratio is 66.57% that shows that 66.57% of assets have been purchased for m creditors' fund. In the fiscal year 059/60 debt ratio is 60% which implies that the claim of the creditors in assets is 60% and remaining 40% is the claim of shareholders. In the following FY debt ratio is 66% in 060/61 increased by 10%, 68% in 2061/62 increased by 3%, 66% in 062/63 decreased by 3%, 73% in FY 063/64 increased by 10.6% and 65% in FY 064/65 decreased by 10.96% and 68% in the FY 2065/66 increased by 4.62%. S.D and C.V are 3.65 and 5.48%. This shows that debt equity ratio of NLOL is consistent in nature

Similarly DNPL has decreasing trend till to FY 064/65 but average debt ratio is 73% means almost 2/3 portion assets have been purchased form creditors fund and shareholders have only 1/3 portion contribution in assets. This shows that greater stake of creditors than the shareholders in DNPL. In the first sampled year 059/60 the ratio is 80% which is higher than average ratio afterward the debt ratio is decreasing gradually. It seems that DNPL is following corrective action. Debt ratio in FY 060/61 is 78% which is decreased by 2.5%, 77% in 2061/62 decreased by 1.28%, 72% in 062/63 decreased by 6.49%, 71% in 063/64, 66% in FY 064/65 decreased by 7% and 67% in FY 065/66 increased by 1.52%. Last four years ratios are lower than average ratio. S.D and C.V are

5.07 and 6.95%. This shows that debt equity ratio of DNPL is consistent in nature In the same time UNL has 55.43% average total debt to total assets ratio. It is bit satisfactory level of debt ratio that implies that both outsiders and owner have fifty-fifty percent claim on the assets of the company. It has also fluctuating trend. In the first sampled year 059/60, the debt ratio is 54%, 48% debt ratio in FY 060/61 which is decreased by 11.11%, 55% in 2061/62 increased by 14.58%, 39% in 064/65 again decreased by 29%, 54% in the FY 063/64 increased by 38.46%, 58% in FY 064/65 increased by 7.40% and 80% in FY 065/66 increased by 38%. S.D and C.V are 22.83 and 60.09%. This shows that debt equity ratio of UNL is inconsistent in nature According to J.E Weston and T.E. Copeland this ratio should be about 33%. So we can assume this 33% ratio as standard ratio while analyzing. With comparison to above standard all three firms have higher ratio. This shows that the share of total assets financed by outsiders' funds is very high. In this company the creditors' margin of safety is very low or they have higher risk. This higher ratio indicates that the creditors claim on total assets of the company is very higher than the owners' claim. So we have already concerned that higher ratio would lead to the owner in irresponsible activities. If this company will unsuccessful to yield a substantial percentage of return, the creditors should bear heavy losses but the owners incurred only the moderate loss. However, from, the sampled years all three firms have earned profit except in year 2062/63 of NLOL, as result the creditors may not feel uneasy situation.

In case of UNL this ratio is in little more satisfactory level. The decreasing trend of FY 060/61 is also a sign of good performance. The average ratio of 55.43% shows the relatively good performance in employing debt capital. But UNL and NLOL is un-levered firm now they do not use long-term debt in total debt and these debt ratios in case of un-levered firm can not assumed as good ratios. This level of stake of creditors on total assets is high. Being un-levered firm, these companies cannot maintain this ratio at the standard level. Analyzing the total debt tot total assets ratio DNPL is highly levered firm as a result the ratios are very high than the standard ratio prescribed the

above-mentioned American writer. The ratio of DNPL shows that more than the creditors of firm have contributed 2/3 of portion of total assets. It may invite a dangerous situation for company. From beginning till now the company is operation in profit, as a neither result the creditors may nor feel the uneasy situation. But if the company has higher debt ratio as a result its interest expenses is also high.

We can conclude that this DNPL is highly depending upon the creditors. So we can suggest to the company to reduce the amount of debt financing to make optimal debt ratio.

### 4.2.3    Analysis of Long Term Debt to Total Debt Ratio  (LTD to T/D Ratio)

The relationship between long term debt and total debt has a decisive impact on the financial structure of the companies. The relationship indicates that 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 uses large amount of short-term loans and occur current liabilities and provision in the larger amount, the percentage of long term debt on total 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 ratio 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 is 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 ratios are also calculated to compare with each other. But the detailed calculation is shown in the appendix.

**Table No. 4.3 Analysis of Long Term Debt to Total Debt Ratio (LTD/TD)**

| Fiscal Years | Nepal Lube Oil LTD | | Dabur Nepal PVT | | Unilever Nepal LTD | |
|---|---|---|---|---|---|---|
| | LTD as% of TA | % change | LTD as% of TA | % change | LTD as% of TA | % change |
| 2059/60 | 29% | - | 63% | - | 0 | - |
| 2060/61 | 42% | 44.82% | 51% | -19% | 0 | 0 |
| 2061/62 | 45% | 7.14% | 40% | -21.56% | 0 | 0 |
| 2062/63 | 0 | -100% | 41% | 2.5% | 0 | 0 |
| 2063/64 | 0 | 0 | 27% | -34.14% | 0 | 0 |
| 2064/65 | 0 | 0 | 3% | -88.89% | 0 | 0 |
| 2065/66 | 0 | 0 | 1% | -66.67% | 0 | 0 |
| Average | 16.57% | | 32.29 | | | |
| SD(∃)□ | 19.67 | | 21.69 | | | |
| C V | 118.70% | | 67.17% | | | |

*Source Appendix-3*

**Chart No. 4.3 Line diagram of Analysis of Long Term Debt to Total Debt Ratio**

**(LTD/TD)**
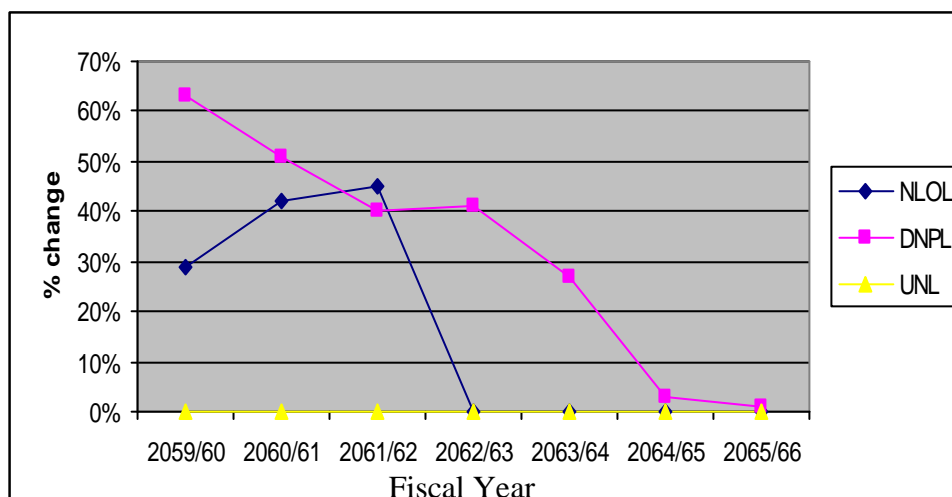


The individual trend analysis of above companies reveals that NLOL and DNPL have fluctuating trend of long term debt to total debt ratio. It is not possible to calculate the trend analysis in case of UNL because there is no long-term debt. The above calculation shows that the ratio of long-term debt to total debt of NLOL constituted 29% in FY 059/60. This means the contribution of long-term debt in total debt is 29% and the remaining portion is contributed by the current liabilities. This ratio on NLOL is

increased to 42% in fiscal year 060/61 and again increased to 45% in FY 2061/62. Then after FY 2062/63, the company stopped using long-term debt. The company has 16.57% of average long-term debt to total debt ratio. By calculating this ratio we can found that about 83.43% of the total debt is contributed by current liabilities. The company has higher debt to equity ratio, but also the profit of long-term debt is less than current liabilities. It is found that the ratio of long-term debt to total debt of all samples FY is higher than the average ratio of 16.57. S.D and C.V are 19.67 and 118.70%. This shows that debt equity ratio of NLOL is inconsistent in nature.

Similarly DNPL has decreasing trend except in the year in the 063/64 at that time long-term to total debt has been increased by 2.5%. In the FY 059/60 the ratio is 63% that indicates that there is 63% contribution of long-term debt in total debt and remaining 37% portion is contributed by current liabilities. In the year 060/61 ratio is 51% which is decreased by 19%, 40% in the year 2061/62 decreased by 21.56%, but in the year 062/63 long-term debt to total debt is increased to 41%. In the year 062/63 the ratio is 27% decreased by 34.14% after that only 3% in the year 064/65 decreased by 88.89% and in the year 065/66 the ratio is slumped to 1% which is decreased by 66.67%. Decreasing average ratio shows that DNPL is in the process of un-levered firm. S.D and C.V are 21.69 and 67.17%. This shows that debt equity ratio of DNPL is inconsistent in nature. Viewing debt equity and total debt to total ratio DNPL was seems as higher levered firm. Here in this section we found that the portion of long-term debt in the total debt is not high. These evidence shows that the total debt is composed of high amount of current liabilities. UNL and NLOL is un-levered firm now they have not used long-term debt since few years so it can be said that total debt is composition of current liabilities. Higher contribution of current liabilities is preferable or not it is depends upon the liquid assets and operating efficiency of the firm. Generally 70% long term to total debt is preferable but both NLOL and DNPL have 16.57% & 32.29% average ratio which show unsatisfactory condition. Where, NLOL and UNL is un-levered firm. These firms cannot take advantage of employing the long-term debt in the capital structure and advantage of

tax shield. Firm analysis we can conclude that the current liabilities of this company are higher than shareholders equity and long-term debt. About 70% of the contribution of long-term debt can be assumed on good but in this case we cannot suggest DNPL to increase the amount of long-term debt. NLOL and UNL can use long-term debt to collect fund, to take advantage of employing debt capital optimally. Therefore we can recommend these companies that companies should properly balance long-term debt and short-term debt or current liabilities.

### 4.2.4 Analysis of long Term Debt to Capital Employed Ratio (LTD to C/E 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 by the firm. LTD 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 indicates the larger proportion of long-term debt in the capital employed and vice versa. This ratio can be calculated by dividing the LTD by C/E. This ratio is also known as debt to permanent capital ratio. The long-term debt to permanent capital ratio is presented in the following table:

**Table No. 4.4 Analysis of Long-term Debt to Capital Employed Ratio**

| Fiscal Years | Nepal Lube Oil LTD | | Dabur Nepal PVT | | Unilever Nepal LTD | |
|---|---|---|---|---|---|---|
| | LTD as% of CE | % change | LTD as% of CE | % change | LTD as% of CE | % change |
| 2059/60 | 30% | - | 72% | - | 0 | 0 |
| 2060/61 | 45% | 50% | 64% | -11.11% | 0 | 0 |
| 2061/62 | 49% | 8.88% | 57% | -10.93% | 0 | 0 |
| 2062/63 | 0 | -100% | 52% | -8.77% | 0 | 0 |
| 2063/64 | 0 | 0 | 40% | -23% | 0 | 0 |
| 2064/65 | 0 | 0 | 5% | -87.5% | 0 | 0 |
| 2065/66 | 0 | 0 | 3% | -40% | 0 | 0 |
| Average | 17.71% | | 41.86% | | 0 | 0 |
| SD(∃) | 21.15 | | 25.64 | | 0 | |
| C V | 119.41% | | 61.25% | | 0 | |

*Source: Appendix-4*

**Chart No. 4.4 Line diagram of Analysis of Long-term Debt to Capital Employed Ratio**
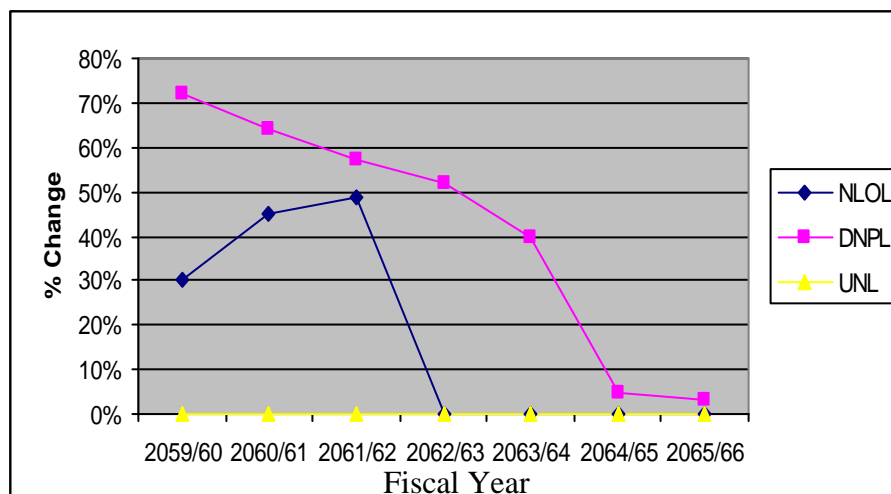


The above table shows that the trend of NLOL has increasing till the FY 2061/62 but from FY 062/63 the company has not used the long-term debt so the ratio cannot be calculated. In the FY 059/60 the ratio is 30% that means 30 %of capital is employed by long-term debt remaining 70 % is contributed by shareholders equity, in the FY 060/61 the ratio is 45%, which is increased by 50%. Similarly in the FY 2061/62 the ratio is

49% that is increased by 8.88% than the previous year. In the next year the company has refunded the long-term debt, hence the ratio is decreased by 100% means there is no contribution of debt holder in the firm and the firm is un-levered thereafter. S.D and C.V are 21.15 and 119.41% respectively. This shows that debt equity ratio of NLOL is inconsistent in nature

Similarly, DNPL has decreasing trend of long-term debt to capital employed ratio. In the FY 059/60 the ratio is 72% that means the contribution of long-term debt in total capital employee is 72% and owner of the companies contributed remaining 28%. But afterward sampled years show that the ratio is decreasing gradually. In the FY 059/60, 2060/61, 061/62, 062/63, 063/64, 064/65 & 065/66 the ratios are 72%, 64%, 57%, 52%, 40%, 5% and 3% respectively. Last sampled years show the deduction of ratio by 40% that indicates that the firm may be in the process of un-levered firm. S.D and C.V are 25.64 and 61.25%. This shows that debt equity ratio of DNPL is inconsistent in nature At the same time in case of UNL the LTD to CE ratio cannot be calculated because the company has not employed LTD in its capital structure. It means this company cutoff all LTD as a source of permanent capital. So this company is suffering form those problems which are arises due to not employing the LTD.

According to M.K. Khan & Jain about 40% to 50% of permanent capital can be assumed as reasonable level of LTD. Where form the above analysis, we can say that average ratio of long-term debt to capital employed by NLOL is lesser than the standard i.e. 17.71% and UNL has zero portion of the ratio. So these companies should try to take benefit form long-term debt employing them. Similarly, average ratio of DNPL shows satisfactory level of the ratio i.e. 41.86% but in the first sampled years show the greater portion of ratio. It indicates the higher burden of company to pay interest expenses. It may be cause of decreasing responsibilities from the side of owners. The interventions of creditors may increase. Though, we can see company's corrective actions in the following sampled years.

### 4.2.5    Analysis of 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 measures the debt serving capacity of a firm and it is concerned on 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. But here in this study, because of limited data, it is unable to separate the amount of interest relating to short-term and long-term debt of the concerned companies. Hence, interest is supposed to zero in the case of un-levered firm. The high ratio shows that the firm may imply unused debt capacity and greater the capacity of the firm to handle fixed charges liabilities of creditors. Whereas, low ratio is a danger 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 three companies are presented in the following table.

**Table No. 4.5 Analysis of Interest Coverage Ratio (I/C Ratio)**

| Fiscal Years | Nepal Lube Oil LTD | | Dabur Nepal PVT | | Unilever Nepal LTD | |
|---|---|---|---|---|---|---|
| | I/C Ratio | % change | I/C Ratio | % change | I/C Ratio | % change |
| 2059/60 | 5.6 | - | 1.91 | - | 0 | 0 |
| 2060/61 | 2.8 | -50% | 2.11 | 20% | 0 | 0 |
| 2061/62 | 0.43 | -84.64% | 2.3 | 9% | 0 | 0 |
| 2062/63 | 0 | -100% | 2.69 | 16.96% | 0 | 0 |
| 2063/64 | 0 | 0% | 2.35 | -12.64% | 0 | 0 |
| 2064/65 | 0 | 0% | 3.37 | 43.40% | 0 | 0 |
| 2065/66 | 0 | 0 | 2.20 | -34.72% | 0 | 0 |
| Average | 1.26% | 0 | 2.42 | | 0 | 0 |
| SD(∃□) | 2.01 | | 1.91 | | 0 | |
| C V | 159.48% | | 78.93% | | 0 | |

*Source: Appendix-5*

**Chart No. 4.5 Line diagram of Analysis of Interest Coverage Ratio (I/c Ratio)**
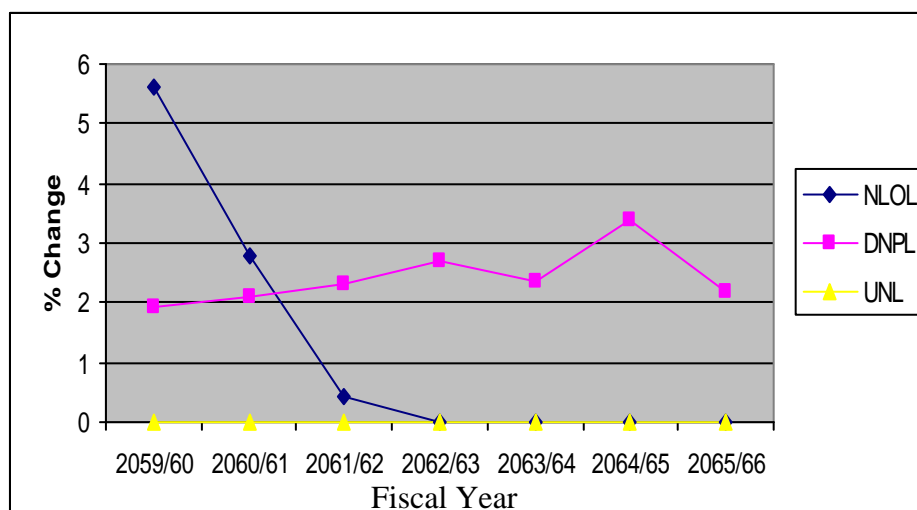


In the above table, the average ratio of NLOL is 1.26%, which implies the number of times the interest covered by its EBIT. The above calculated ratio of NLOL is not good because according to J.F. Weston and T.E. Copeland the standard ratio is 8 times which is very low in case of NLOL. The trend of interest coverage ratio of NLOL shows the decreasing trend till 2061/62. From the FY 062/63 to 065/66 the interest coverage ratio is zero because the interest to be paid in long-term debt is supposed to be zero. The interest

coverage of NLOL in FY 059/60 is 5.6 times which is near to standard so the net profit available will be able to claim the creditors even if the EBIT declines to nearly one-sixth. Similarly in the FY 060/61 the company can maintain the interest coverage ratio. But in sampled year 2061/62 the ratio is only 0.43 which is less than 1, where the company is unable to pay the interest amount. As a result, the company bears loss. The trend was declining every year so this may be the reason why company refunds the long-term debt. S.D and C.V are 2.01 and 159.48%. This shows that debt equity ratio of NLOL is inconsistent in nature.

In case of DNPL, the interest coverage ratio is 1.91, 2.11, 2.3, 2.69, 2.35, 3.37, 2.20 in the FY 059/60, 060/61, 061/62, 062/63, 063/64 064/65 & 065/66 respectively. Here the ratio shows the increasing trend till the FY 064/65, but in the FY 063/64 the ratio is decreased by 12.64%, and again the ratio increased by 43.40% in the FY 064/65, but again the ratio decreased by 34.72%. The average calculated ratio of the company is 2.42 which is greater than NLOL. This implies that the company's available profit can meet the debt amount even if the EBIT declines by one-third. The company has increasing trend except the FY 064/65 and this is good indication because higher ratio is preferable. S.D and C.V are 1.91 and 78.93%. This shows that debt equity ratio of DNPL is inconsistent in nature After observing the above data of all the three companies, we found that the interest coverage ratio of DNPL is greater than the NLOL (2.42>1.26) and the UNL does not have any ratio because there is no interest bearing long-term debt. Although DNPL's and NLOL's ratio indicates that there is enough profit to meet the claim of debtors but comparing to the standard, it seems that both companies have to increase the interest coverage ratio. They have very low ratio as compared to the standard soothe company have to rise this ratio other wise the company may incurs loss due to not able to claim the debtors.

**4.2.6     Analysis of Return on Shareholders' Equity**

Shareholders' fund represents that part of long-term source of funds, which is collect 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 (ROSHE) is used or this ratio is calculated to find out the profitability on owners' capital or investment.  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 dividing earning after tax (EAT) by its shareholders' equity (SHE), which is presented in the following table

**Table No. 4.6 Analysis of Return on Shareholders' equity (ROSHE)**

| Fiscal Years | Nepal Lube Oil LTD | | Dabur Nepal PVT | | Unilever Nepal LTD | |
|---|---|---|---|---|---|---|
| | ROSHE Ratio | % change | ROSHE Ratio | % change | ROSHE Ratio | % change |
| 2059/60 | 24% | - | 31% | - | 48% | 0 |
| 2060/61 | 11% | -54.17% | 36% | 16.13% | 37% | -22.92% |
| 2061/62 | -6% | -154.55% | 30% | -16.67% | 20% | -45.95% |
| 2062/63 | 26% | 533.33% | 28% | -6.67% | 12% | -40% |
| 2063/64 | 18% | -30.77% | 17% | -39.29% | 26% | 116.67% |
| 2064/65 | 7% | -61.11% | 16% | -588% | 36% | 38.46 |
| 2065/66 | 8% | 14.29% | 6% | -62.5% | 87% | 141.67% |
| Average | 12.57% | | 23.43% | | 38% | |
| SD($\exists$) | 10.28 | | 9.85 | | 22.83 | |
| C V | 81.78% | | 42.0% | | 60.0% | |

*Source: Appendix-6*

**Chart No.4.6 Line Diagram of Analysis of Return on Shareholder's Equity (ROSHE)**
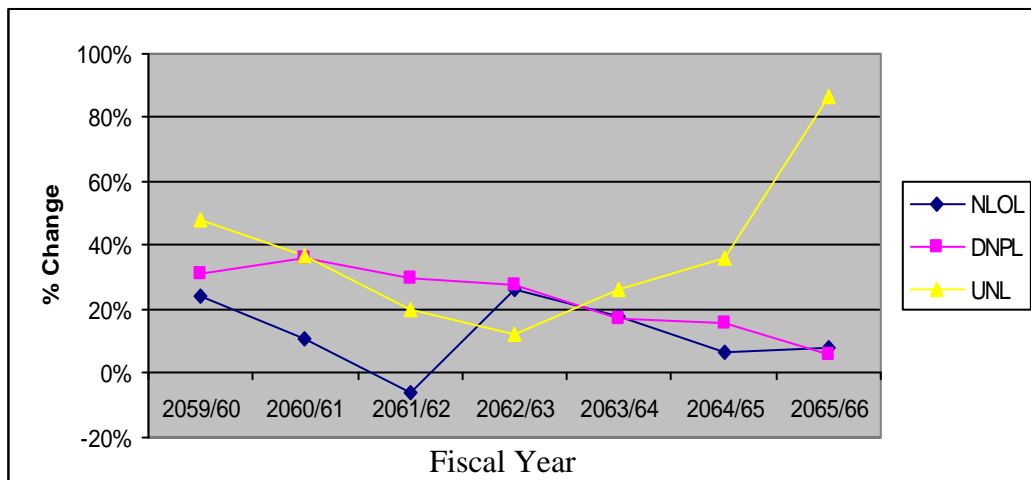


Above table exhibits ROSHE of sampled companies. In the context of NLOL, it has fluctuated trend. In the FY 059/60 the ratio is 24% that implies that one rupee investment by shareholders' equity earned 24 paisa in one -year. In the FY 060/61 it is decreased by 54.17% to 11%. It has also decreased to-6% in the FY 2061/62, which means the shareholders lost 6 paisa by one rupee investment. Similarly in the FY 062/63 the ratio is 26%, in the year 063/64 the ratio 18% and 7% in the FY 064/65. In FY 065/66 the ratio is 8% increased by 14.29%. S.D and C.V are 10.28 and 81.78%. This shows that debt equity ratio of NLOL is inconsistent in nature Similarly DNPL has increasing trend till second sampled years and it has decreasing trend thereafter. In the FY 059/60 the ROSHE is 31% that means shareholders are earning 31 paisa investing rupee one. In the following year it is 36% increased by 16.13%.After that ROSHE of DNPL are decreasing gradually. In the FY 2060/61, 061/62, 062/63, 063/64, 064/65 & 065/66 the ratios are 36%, 30%, 28%, 17%, 16% and 6% respectively. Average ratio is 23.43% and last three years ratios are lesser than average ratio. But remaining years has greater ratios.

Decreasing condition of ROSHE of ROSHE shows unsatisfactory condition of DNPL. S.D and C.V are 9.85 and 42.00%. This shows that debt equity ratio of DNPL is consistent in nature Likewise, the return on shareholders' equity of UNL has decreasing

trend up to FY 062/63 after that it is increasing. In the FY 2059/60 the ratio is 48%, which is quite good signal, the company's owner can earn 48 paisa investing rupee one. But it has decreased gradually the ratio are 37%, 20%, and 12% in the FY 060/61, 2061/62 and 062/63 respectively. The ROSHE is started to increase than after in the FY 063/64 the ratio is 26%, which is increased by 116.67% than last year. IN the FY 064/65 the ratio is 36% and in FY 065/66 the ratio is 87%. In the FY 2065/66 the ratio is 87% that is greater than average ratio i.e.38%. It demonstrates that the company has initiated corrective action to some extent. S.D and C.V are 22.83 and 60%. This shows that debt equity ratio of UNL is inconsistent in nature.

Analyzing the above calculation, we can comment that return earned by the shareholders' equity of NLOL is least and the return of UNL is highest among three companies. Earning of DNPL is moderate but it has decreasing trend and also NLOL has decreasing trend. If this decreasing trend will be continued, serious difficulties may arise in future. Although NLOL and UNL are un-levered companies ROSHE of both companies cannot be supposed in satisfactory level. So we can conclude that all three companies should apply suitable action to increase ROSHE.

### 4.2.7    Analysis of Proprietary Ratio

In total debt to total assets ratio we analyze the proportion of total assets financed by creditors' fund or we judge the contribution of total debt to total assets of the company. But in the propriety ratio, relationship between proprietors' fund and total asses of the company can be analyzed or contribution of owners' or shareholders' equity to total assets can be judged. So, it is the easiest way to analyze the proportion of total assets financed by proprietors' funds. Total assets of the company can calculate proprietary ratio simply dividing proprietors' fund or shareholders' fund. High proprietary ratio indicates the high contribution of shareholders' fund to the total assets and vice versa. The proprietary ratio about more than 50% can be assumed as preferable for the

company. Proprietary ratios of NLOL, DNPL and UNL can be presented in the following table that referred form the appendix.

**Table No. 4.7 Analysis of Proprietary Ratio**

| Fiscal Years | Nepal Lube Oil LTD | | Dabur Nepal PVT | | Unilever Nepal LTD | |
|---|---|---|---|---|---|---|
| | Prop Ratio | % change | Prop Ratio | % change | Prop Ratio | % change |
| 2059/60 | 40% | - | 20% | - | 46%` | - |
| 2060/61 | 34% | -15% | 22% | 10% | 52% | 13% |
| 2061/62 | 32% | -5.88% | 23% | 4.55% | 45% | -13.46% |
| 2062/63 | 34% | 6.25% | 28% | 21.74% | 61% | 35.56% |
| 2063/64 | 27% | -20.59% | 29% | 3.57% | 46% | -24.59% |
| 2064/65 | 35% | 29.63% | 34% | 17.24% | 42% | -8.70% |
| 2065/66 | 32% | -8.57% | 33% | -2.94% | 20% | -52.38% |
| Average | 33.43% | | 27% | | 44.57% | |
| SD(∃) | 3.61 | | 5.07 | | 11.59 | |
| C V | 10.79% | | 18.78% | | 26% | |

*Source: Appendix-7*

**Chart No. 4.7 Line diagram of Analysis of Proprietary Ratio**
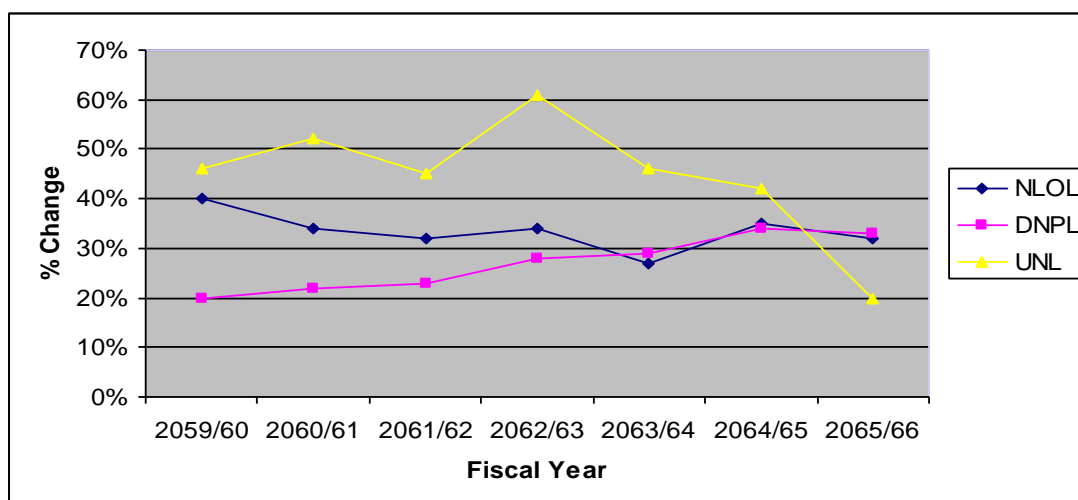


Above calculated proprietary ratio shows that NLOL has fluctuating trend. In the FY 059/60 the proprietary ratio is 40% of assets and other remaining portion i.e. 60% is contributed by creditors' fund. In the FY 060/61 it is decreased by 15% to 34% again in

the FY 2061/62 the ratio is decreased to 32% by 5.88%. In the FY 062/63 it increased to 34% and the following year the ratio is again slumped by almost 21% to 27%, it is least ratio of NLOL that indicates that the creditors have 73% claim in the company. In the FY 064/65 the ratio is again increased to 35% which is greater than average ratio i.e. 33.43%. In the FY 2061/62 and 063/64 and 065/66 the ratios are lesser than average ratio. S.D and C.V are 3.61 and 10.79%. This shows that debt equity ratio of NLOL is consistent in nature.

In the case of DNPL, the proprietary ratio is increasing trend except FY 065/66. From the first sampled year the ratio is increasing gradually to FY 064/65 and last sampled year it is started to decrease again. So we can say that the proprietor of the company seems to be increasing and the claim in the company as-well. In the FY 059/60 the ratio is only 20% and it is increasing afterward. The ratios are 22%, 23%, 28%, 29%, 34% and 33% in the FY 059/60, 060/61, 061/62, 062/63, 063/64, 064/65 & 065/66 respectively. The company's proprietor can able to expand its contribution till 33% at last of the sampled year. Last fours' ratios are greater than average ratio i.e. 27% where as first three years ratios are not. S.D and C.V are 5.07 and 18.78%, shows that debt equity ratio of DNPL is consistent in nature.

Similarly there is fluctuation of proprietary ratio in the case of UNL. In the fiscal year 059/60 the ratio is 46%. In the FY 060/61 the ratio is 52% increased by 13%, in the FY2061/62 the ratio is 45% decreased by 13.46%, in the FY 062/63 the ratio is 61% again increased by 35.56%, in the year 063/64 the ratio is 46% decreased by 24.59% and the ratio at 064/65 is 42% which is decreased by 8.7% and again slumped drastically by 52.38% in last sampled year 065/66. The average ratio is 44.57% that is appropriate ratio to some extend that reveals that the owner to the assets of the company contributes the 44.57% portion. S.D and C.V are 11.59 and 26.00%. This shows that debt equity ratio of UNL is consistent in nature.

Analyzing the above statistical figure, we can conclude that UNL has highest proprietary ratio among three companies on average. The proprietary ratio more than 50% is supposed to be good. But in this study all three firm's average ratio is less than 50%. So we can say that all the companies have lower contribution of proprietors' and creditors have higher claim upon the total assets. Proprietors' fund is dominated by creditors' fund. So these companies may face many difficulties; creditors interventions may increase, net profit of company may decrease etc. The ratios of DNPL and NLOL show the pitiable situation of proprietors fund than UNL. But the ratio of UNL is also not supposed to be satisfactory. So, we can recommend to these companies to reduce the borrowed funds and to increase the proprietors' fund to appropriate level.

## 4.3  Correlation Analysis

Correlation analysis enables us to have 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 variable. 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 based on 'Pearson's coefficient of correlation'. In the following section correlation between different variables are calculated and presented of the sampled companies.

- ∫ ROE & Debt Ratio
- ∫ ROE & Debt Equity Ratio
- ∫ ROA & Debt Ratio
- ∫ NP & LTD
- ∫ NP & Total Debt

### 4.3.1    Correlation coefficient between ROE & Debt Ratio

Debt Ratio indicates that what percentage of total assets is financed by long-term debt of the firm. Normally firm uses short-term and long-term debt. Current liabilities and provisions are also needed during the operation of the firm. Shareholders fund represents that part of long-term source of funds, which is collect by issuing equity shares and preference shares. If the company's earning is good, shareholder's earning is greater than outside investors because they are ultimate owner and they are earning high risk as well. In the following table, relationship between ROE and D/E Ratio has been shown according the appendix.

**Table No. 4.8 Correlation coefficient between ROE and Debt Ratio**

| Nepal Lube Oil Ltd. | Dabur Nepal Pvt. Ltd. | Unilever Nepal Ltd. |
|---|---|---|
| Correlation coefficient (r) | Correlation coefficient (r) | Correlation coefficient (r) |
| -0.40 | 0.12 | |

*Source: Appendix-8*

Karl Person's correlation coefficient between ROE & D/E Ratio of NLOL has -0.40. ROE is negatively correlated to debt ratio. It indicates that the values of ROE and D/E Ratio of NLOL deviate in the opposite direction.

Similarly, the correlation coefficient of DNLP is 0.12, which is positively correlated. It indicates that values of ROE and D/E Ratio of DNPL deviate in the same direction.

Likewise, In the case of UNL the correlation coefficient between ROE and D/E Ratio can not be calculated because of not employing long-term debt since couple of years.

### 4.3.2 Correlation coefficient between ROE & D/E Ratio

Here, in the following table relationship between ROE and Debt-equity Ratio have been shown. Return earned by shareholder is called ROE. The high ROE represents the high profitability of the firm and vice versa. So, high ROE is desirable from the point of view of the owners of the firm. Debt-equity ratio is used to show the relationship between borrowed funds and owner's capital. 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 creditor's capital of business in it's financing. The relationship between ROE and D/E Ratio has been shown using Karl Pearson's correlation coefficient method. The calculated correlation coefficients have been shown in the following table referred form appendix.

**Table No. 4.9 Correlation coefficient between ROE and D/E Ratio**

| Nepal Lube Oil Limited | Dabur Nepal Pvt. Ltd. | Unilever Nepal Ltd. |
|---|---|---|
| Correlation coefficient (r) | Correlation coefficient (r) | Correlation coefficient (r) |
| -0.51 | 0.86 | |

*Source: Appendix-9*

In the basis of above table, correlation coefficient between ROE and D/E ratio of NLOL is -0.51, which implies that there is negative correlation between ROE and D/E Ratio. It shows that the value of ROE and D/E Ratio of NLOL deviate in the opposite direction.

The correlation coefficient of DNPL is 0.86, which is high degree of positive correlation. So, we can say that the relationship between ROE and D/E Ratio is positively correlated. It indicates that values of ROE and D/E Ratio of DNPL deviate in the same direction.

UNL is un-levered and has not used long-term debt. So, we can not calculate debt-equity Ratio.

### 4.3.3 Correlation coefficient between ROA & Debt Ratio:

This ratio expresses the capacity of the capital used in the investment in total assets to make the profit. Hence, this is the indication of the profit of the firm by the utility of the total assets financed through different kinds of sources of capital. It is derived by dividing the net profit after tax with interest by total assets. Similarly, Debt Ratio indicates that percentage of total debt is covered by long-term debt of the firm.

Normally firm uses short-term and long-term debt. Current liabilities and provisions are also needed during the operation of the firm. It is derived by dividing long-term debt by total debt. The calculated correlation coefficients have been shown in the following table referred form appendix.

**Table No: 4.10 Correlation coefficient between ROA and Debt Ratio**

| Nepal Lube Oil Limited | Dabur Nepal Pvt. Ltd. | Unilever Nepal Ltd. |
|---|---|---|
| Correlation coefficient (r) | Correlation coefficient (r) | Correlation coefficient (r) |
| 0.03 | 0.90 | - |

*Source: Appendix-10*

In the above table correlation coefficient of NLOL is found 0.03, which indicates that there is positive correlation between ROA and Debt Ratio of NLOL. But the value is closer to zero.

Similarly, the correlation coefficient of DNPL is 0.90, which is closer to 1 and positive. So we can say that the relationship between ROA and Debt ratio is highly positive correlated. It indicates that values of ROA and Debt Ratio of DNPL deviate in the same direction.

In the case of UNL the correlation coefficient between ROA and Debt Ratio can not be calculated because the company has not used long-term debt.

### 4.3.4    Correlation coefficient between NP & LTD:

In the following table, relationships between Net Profit and Long-term debt have been shown. Long-term debt is the source of long-term financing or long-term fund. Company should pay interest for this debt capital. Where as Net Profit is earning of a firm from each year business operation. In this section the relationship between Net Profit and Long-term debt has been shown using Karl Person's correlation coefficient method. It tries to analyze the increment in LTD leads to increment in Net Profit or not. The calculated correlation coefficient has been shown in the following table referred form appendix.

**Table No: 4.11 Correlation coefficient between Net Profit and Long-term Debt**

| Nepal Lube Oil Limited | Dabur Nepal Pvt. Ltd. | Unilever Nepal Ltd. |
|---|---|---|
| Correlation coefficient  (r) | Correlation coefficient  (r) | Correlation coefficient  (r) |
| -0.45 | 0.51 | - |

*Source: Appendix-11*

In the above table, correlation coefficient between long-term debt and Net profit of NLOL is -0.45, which implies that there is negative correlation between LTD and NP. It shows that the values of LTD and NP deviate in the opposite depiction.

In the case of DNPL, the correlation coefficient is 0.51. It's positive but not 100%. So we can say that relationship between these variables is closely correlated.

Similarly, in the case of UNL the correlation coefficient between long-term debt and Net

profit can not be calculated because the company has not employed long-term debt.

### 4.3.5 Correlation coefficient between NP & TD:

Here, in the following table relationship between Net Profit and Total Debt have been shown. The total debt includes all type of long-term borrowed funds, current liabilities and provisions. Here correlation coefficient of Net Profit and Total Debt has presented to analyze whether there is positive or negative correlation between Net Profit and Total Debt, these are calculated on the basis of Karl Pearson's correlation coefficient. Following table shows the relationship between these variables of sampled companies, which is referred form appendix.

**Table No: 4.12 Correlation coefficient between Net Profit and Total Debt**

| Nepal Lube Oil Limited | Dabur Nepal Pvt. Ltd. | Unilever Nepal Ltd. |
|---|---|---|
| Correlation coefficient  (r) | Correlation coefficient  (r) | Correlation coefficient  (r) |
| -0.17 | 0.20 | 0.80 |

*Source: Appendix-12*

Karl Person's correlation coefficient between Total Debt and Net Profit of NLOL has -0.17, which implies that there is negative correlation between Total Debt and Net Profit. It shows that the values of Total Debt and Net Profit of NLOL deviated in the opposite direction.

In the case of DNPL, the correlation coefficient is 0.20, which is positively correlated. It indicates that values of Total Debt and Net Profit of DNPL deviate in the same direction. Similarly, the correlation coefficient of UNL is 0.80, which is closer to 1 and positive. So we can say that the relationship between Total Debt and Net Profit is highly positive correlated which indicate that values of Total Debt and Net Profit of UNL deviate in the same direction.

**4.4     Regression Analysis**

The concept of regression was first introduced by Francis Galton. Regression refers to an analysis, which is involving the fitting of an equation to a set of data points, generally by the method of least square. In other words, the regression is a statistical method for investing relationships between the variables by the establishment of an approximate functional between them. It is considered as a useful tool for determining the strength of relationship between two (Simple Regression) or more (Multiple regression) variables. It helps to predict of estimate the value of one variable when the value of other variables is known.

**�)   Simple regression**

The analysis, which is used to explain the average relationship between two variables, is known as simple linear regression analysis. In this study, the following simple regression has been analyzed.

**4.4.1     Regression Analysis of Return on Equity on Debt ratio**

**Table No. 4.13 Regression Analysis of Return on Equity on Debt ratio**

| Company | No. of observation (n) | Constant (a) | Regression Coefficient (b) |
|---|---|---|---|
| Nepal Lube Oil Ltd. | 7 | 16.0613 | -0.2106 |
| Dabur Nepal Pvt. Ltd. | 7 | 10.1462 | 0.4114 |
| Unilever Nepal Ltd. | 7 | - | - |

*Source: Appendix -13*

The above table depicts the output of simple regression analysis of Return on Equity on Debt ratio of three companies' viz. NLOL and DNPL and UNL. Where, beta coefficient of NLL is negative. In case of NLOL, beta coefficient is -0.2106, which indicates that one million increase in Debt Ratio (independent variable) leads to about 0.2106 million decrease in Return on Equity, (dependent variable)., holding other variables constant.

The constant (a) 16.0613, means that if Debt Ratio (independent variable) is zero, the estimate Return on Equity, (dependent variable) will be 16.0613.

In case of DNPL, beta coefficient is 0.4114, which indicates that one million increase in Debt Ratio (independent variable) leads to about 0.4114 million increase in Return on Equity, (dependent variable), holding other variables constant. The constant (a) 10.1462, means that if Debt Ratio (independent variable) is zero, the estimate Return on Equity, (dependent variable) will be 10.1462 In case of UNL, It has not used long-term debt since few years.

### 4.4.2    Regression Analysis of Return on Equity on Debt Equity Ratio

**Table No. 4.14 Regression Analysis of Return on Equity on Debt Equity Ratio**

| Company | No. of observation (n) | Constant (a) | Regression Coefficient (b) |
|---|---|---|---|
| Nepal Lube Oil Ltd. | 7 | 16.7767 | -0.1326 |
| Dabur Nepal Pvt. Ltd. | 7 | 12.8574 | 0.0981 |
| Unilever Nepal Ltd. | 7 | - | - |

*Source: Appendix –14*

The above table indicates the output of simple regression analysis of ratio Return on Equity on Debt Equity of three companies' viz. NLL and DNPL and UNL. In case of NLOL, beta coefficient is -0.1326, which indicates that one million increase in Debt Equity Ratio (independent variable) leads to about 0.1326 million decrease in Return on Equity, (dependent variable)., holding other variables constant. The constant (a) 16.7767, means that if Debt Equity Ratio (independent variable) is zero, the estimate Return on Equity (dependent variable) will be 16.7767.

In case of DNPL, beta coefficient is 0.0981, which indicates that one million increase in Debt Equity Ratio (independent variable) leads to about 0.0981 million increase in,

Return on Equity (dependent variable)., holding other variables constant. The constant (a) 12.8574, means that if Debt Equity Ratio (independent variable) is zero, the estimate Return on Equity (dependent variable) will be 12.8574. In case of UNL, Regression analysis cannot be calculated because it has not used long-term debt since few years.

### 4.4.3 Regression Analysis of Return on Assets on Debt Ratio

**Table No. 4.15 Regression Analysis of Return on Assets on Debt Ratio**

| Company | No. of observation (n) | Constant (a) | Regression Coefficient (b) |
|---|---|---|---|
| Nepal Lube Oil Ltd. | 7 | 5.3357 | 0.0056 |
| Dabur Nepal Pvt. Ltd. | 7 | 6.1402 | 0.1461 |
| Unilever Nepal Ltd. | 7 | - | - |

*Source: Appendix –15*

The above table indicates the output of simple regression analysis of Return on Assets on Debt Ratio of three companies' viz. NLOL and DNPL and UNL In case of NLOL, beta coefficient is 0.0056, which indicates that one million increase in Debt Ratio (independent variable) leads to about 0.0056 million increase in Return on Assets, (dependent variable), holding other variables constant. The constant (a) 5.3357, means that if Debt Ratio (independent variable) is zero, the estimate Return on Assets, (dependent variable) will be 5.3357.

In case of DNPL, beta coefficient is 0.1461, which indicates that one million increase in Debt Ratio (independent variable) leads to about 0.1461 million increase in Return on Assets, (dependent variable), holding other variables constant. The constant (a) 6.1402, means that if Debt Ratio (independent variable) is zero, the estimate Return on Assets, (dependent variable) will be 6.1402. In case of UNL, Regression analysis cannot be calculated because it has not used long-term debt since few years.

**4.4.4    Regression Analysis of Net Profit on Long-term Debt**

**Table No. 4.16  Regression Analysis of Net Profit on Long-term Debt**

| Company | No. of observation (n) | Constant (a) | Regression Coefficient (b) |
|---|---|---|---|
| Nepal Lube Oil Ltd. | 7 | 5.9236 | -0.1088 |
| Dabur Nepal Pvt. Ltd. | 7 | 82.080 | 0.0704 |
| Unilever Nepal Ltd. | 7 | - | - |

*Source: Appendix –16*

The above table indicates the output of simple regression analysis of Net Profit on Long-term Debt of three companies' viz. NLOL and DNPL and UNL. In case of NLOL, beta coefficient is -0.1088, which indicates that one million increase in Long-term Debt (independent variable) leads to about 0.1088 million decrease in Net Profit, (dependent variable)., holding other variables constant. The constant (a) 5.9236, means that if Long-term Debt (independent variable) is zero, the estimate Net Profit, (dependent variable) will be 5.9236.

In case of DNPL, beta coefficient is 0.0704, which indicates that one million increase in Long-term Debt (independent variable) leads to about 0.0704 million increase in Net Profit, (dependent variable)., holding other variables constant. The constant (a) 82.080, means that if Long-term Debt (independent variable) is zero, the estimate Net Profit, (dependent variable) will be 82.080. In case of UNL, Regression analysis cannot be calculated because it has not used long-term debt since few years.

**4.4.5    Regression Analysis of Net Profit on Total Debt**

**Table No. 4.17 Regression Analysis of Net Profit on Total Debt**

| Company | No. of observation (n) | Constant (a) | Regression Coefficient (b) |
|---|---|---|---|
| Nepal Lube Oil Ltd. | 7 | 883.0712 | 6.3531 |
| Dabur Nepal Pvt. Ltd. | 7 | 111.5377 | 0.0008 |
| Unilever Nepal Ltd. | 7 | 33.0694 | 0.1746 |

*Source: Appendix –17*

The above table indicates the output of simple regression analysis of Profit on Total Debt of three companies' viz. NLOL and DNPL and UNL. In case of NLOL, beta coefficient is 6.3531, which indicates that one million increase in Total Debt (independent variable) leads to about 6.3531 million increase in Net Profit, (dependent variable)., holding other variables constant. The constant (a) 883.0712, means that if Total Debt (independent variable) is zero, the

estimate Net Profit, (dependent variable) will be 883.0712.

In case of DNPL, beta coefficient is 0.0008, which indicates that one million increase in Total Debt (independent variable) leads to about 0.0008 million increase in Net Profit, (dependent variable)., holding other variables constant. The constant (a) 111.5377, means that if Total Debt is zero, the estimate Net Profit, will be 111.5377.

Similarly, In case of UNL, beta coefficient is .01746, which indicates that one million increase in Total Debt (independent variable) leads to about 0.1746 million increase in Net Profit, (dependent variable)., holding other variables constant. The constant (a) 33.0694, means that if Total Debt is zero, the estimate Net Profit will be 33.0694.

### 4.5    Major findings of the study:

1.   The average debt equity ratio of DNPL is 107.71%, NLOL has only 31.71% and         UNL has zero percent. So we can conclude that DNPL has high claim of creditors   but the ratio is decreasing. It means the owners are increasing its proportion. But    looking to average ratio, which is very high, the responsibility of owners is       decreasing. So DNPL is highly levered and bearing high level of risk employing    more long-term debt and NLOL and UNL are also unable to take advantages form   not employing the long-term debt or are deprived form the tax shield benefit of       long-term           debt. Similarly, the CV of both companies shows its ratio is inconsistent     in nature.

2.   Average ratio of   T/D to T/A of UNL is bit satisfactory which is 55.43% whereas         NLOL has 57% average ratio and DNPL has73%, which is highest average ratio.     73% ratio indicates 73% assets are purchased by creditors' fund. So we can           conclude that higher ratio of DNPL would lead

to the owners in irresponsible    activities. If the creditors diverted their interest from the company it would be very        difficult  it  exist  Though  DNPL is risky firm. In the case of UNL, the average ratio is   almost 50/50, so they both bear 50/50 risk. But NLOL and UNL, as un-levered    company    these ratios are not satisfactory. Analysis of CV of NLOL and DNPL        shows its ratio is consistent in nature where, UNL CV shows its ratio is inconsistent      in nature.

3.  Generally 70% long term to total debt is preferable but both NLOL 16.57% and   DNPL  32.29%  have  less  than  average  ratio,  shows  unsatisfactory condition. More than 65% portion is taken by current liabilities. Now NLOL has not employed long-        term debt for few years and UNL has not used it in whole sampled years, though        they are un-levered firms now. The CV analysis of both NLOL and DNPL shows   inconstant nature of its ratio.

4.    In the case of UNL, LTD to C/E ratio is zero during all sampled years. Where    NLOL  has  not  used  LTD  since  FY  2062/63.  But  DNPL  has  almost 42% of average  ratio of LTD to C/E ratio and continuously decreased to 3% which indicates that    DNPL  is  also  in  process  of  un-levered.  The  CV analysis of both NLOL and DNPL        shows inconstant nature of its ratio. So, we can conclude that all the companies do not   have   appropriate   ratio   of long-term debt to capital employed.

5.  DNPL has greater average Interest coverage ratio i.e. 2.42 times than NLOL. That        means  DNPL  has  good  debt  service  capacity  than  NLOL.  In the last four years of     time, there is not interest charge by NLOL because they have not employed long-   term debt. UNL has zero interest charged as it is also un-levered firm. But DNPL        has good debt service capacity in spite of high burden of interest. The CV analysis  of both NLOL and DNPL shows inconsistent nature of its ratio.

6.  Returns on shareholders' equity of all three companies are not in satisfactory       condition. The highest ROSHE of UNL, DNPL and NLOL are 38%, 23.43% and        12.57%. ROSHE of all companies has in decreasing trend. If this decreasing trend  will   be   continued,  serous  difficulties  may  arise  in future. Similarly, the CV analysis        shows only DNPL has consistent nature of its ratio and remaining both companies has   inconsistent   nature   of   its

ratio. So we can conclude that all three companies should apply suitable action to increase ROSHE.

7. Better proprietary ratio is supposed to be 50%. Over viewing the average proprietary ratio, all three companies have lesser ratio than 50%. NLON has 33.43%, DNPL has 27% and UNL has 44.57%. The proprietary ratio of UNL is bit satisfactory. Most of capitals are contributed by outsiders' fund in the case of NLOL and DNPL. If these companies do not try to increase the proportion of proprietary fund, the creditors' intervention may increase. But increasing trend and consistent nature of its ratio can be taken as good signals for both companies.

8. As far as the simple regression analysis of return on equity on debt ratio of these three manufacturing companies concern, negative beta coefficient (-0.2106) of NLOL indicates increase in debt ratio leads to decrease in debt ratio. Similarly, positive beta coefficient (0.4114) indicates increase in debt ratio leads to increase in debt ratio.

9. According to the regression analysis of return on equity on debt equity ratio of NLOL, it has negative beta coefficient which indicates increase in D/E ratio leads to decrease in ROE. Likewise, positive beta coefficient (0.0981) of DNPL indicates increase in D/E ratio leads to increase in ROE.

10. With respect to regression analysis of return on assets on debt ratio, the beta coefficient of both (NLOL and UNL) manufacturing companies are 0.0056 and 0.1461. These positive beta coefficients indicate increase in debt ratio leads to increase in return on assets.

11. From the simple regression analysis on net profit on long-term debt, NLOL has negative (-0.1088) beta coefficient, indicates increase in LTD leads to decrease in NP. Similarly, positive beta coefficient (0.0704) of DNPL indicates increase in LTD leads to increase in NP. However, because of not using LTD by UNL regression analysis cannot be done.

12. According to the simple regression analysis on net profit on total debt of NLOL, DNPL and UNL, beta coefficient of these manufacturing companies are 6.3531, 0.0008 and 0.1746 respectively. Positive beta coefficient indicates increase in total debt leads to increase in net profit of NLOL, DNPL and UNL.

# CHAPTER -V

## PRESENTATION AND ANALYSIS OF DATA

### 5.1 Introduction

This is the concluding chapter of this study. This chapter is divided into three sections: summary, conclusions and recommendations. In this chapter we summarize the study in brief. We concerned about from the first chapter to the end. Findings of calculation, which have been drawn using different tools and technique based on the data provided by the concerned companies, are concerned here in conclusions section. 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.

### 5.2 Summary

This study analyzes capital structure of Nepalese manufacturing companies. The major objective of this study is to evaluate effect of capital composition on overall value of the company. This study endeavors to evaluate capital structure selected manufacturing companies of Nepal. In Nepalese context, it is generally accepted that only few companies have been given due attention to capital structure. This study attempted to overcome this generally accepted suspect. What is the condition of capital structure of the manufacturing companies of Nepal? Are they using appropriate financial mix? If not, what may be the suggestive idea to improver or to make appropriate capital structure? Does capital structure help to maximize the value of the firm in the context of

Nepalese firms?

Capital structure refers to combination of debt and equity capital, which a firm uses to
Finance its long term operation. Capital structure decision affects the value of the firm,

Earning per share and cost of capital .The objectives of the company are always related to maximizing the value of the firm, earning per share and minimizing the overall cost of capital. To achieve this objective, company should make the appropriate composition of capital structure. To make the study more realistic, previous studies have also been reviewed. It consists of thesis and dissertations done by previous master's level student as well as other research works related to the capital structure of the firm. This study is concerned with the research title "Capital Structure". Some researchers have selected various companies for the research and some have concentrated in only one institution. But this study includes three manufacturing companies to cover the analytical part and fulfill the objectives of the study. It has used all possible financial and statistical tools to cover the objectives of this study. Concept about capital structure has reviewed form different books and presented here and named it theoretical review. Features like risk, return, control, flexibility etc., optimality of capital structure and factors affecting capital structure are presented in this chapter as well as assumptions of capital structure is also explained. Capital structure has two types of risk, one financial and another is business risk, which is focused out in same chapter. Capital structure theories NI approach; NOI approach, MM model, theoretical approach etc. and approaches to establish appropriate capital structure are described in the end of this chapter.

Third chapter needs sequential steps to adopt realistic study. Thus, through research methodology researcher can get appropriate guidelines and knowledge

about the various sequential steps to adopt a systematic analysis, which is explained. Most of data used in this study are secondary in nature that is annual reports provided by concerned companies. Seven years data are taken as sampled years, which are analyzed by using financial and statistical tools such as: ratio analysis, correlation and regression analysis are exhibited.

Secondary data and annual report which was obtained from the companies are presented and analyzed in this chapter. Methods mentioned in the chapter third, are used here to analyze about capital structure. Ratios, correlations, regression analysis and capital structure analysis are used in this chapter to get realistic findings of capital structure, Detail calculations are presented in the appendix to support this chapter, which is given in the end of the thesis.

Hence, an effort has been made in this chapter to present Major findings on overall capital structure management practice in listed manufacturing companies' recommendation and make conclusion.

Some major findings are presented as follows:

1. The average debt equity ratio of DNPL is 107.71%, NLOL has only 31.71% and         UNL has zero percent. So we can conclude that DNPL has high claim of creditors   but the ratio is decreasing. It means the owners are increasing its proportion. But    looking to average ratio, which is very high, the responsibility of owners is        decreasing. So DNPL is highly levered and bearing high level of risk employing    more  long-term debt and  NLOL  and UNL are also unable to take advantages form   not employing the long-term debt or are deprived form the tax shield benefit of       long-term            debt. Similarly, the CV of both companies shows its ratio is inconsistent     in nature.

2. Average ratio of T/D to T/A of UNL is bit satisfactory which is 55.43% whereas          NLOL  has  57%  average  ratio  and  DNPL  has73%,which  is

highest average  ratio.73% ratio indicates 73% assets are purchased by creditors' fund. So we can    conclude that higher ratio of DNPL would lead to the owners in irresponsible  activities. If the creditors diverted their interest from the company it would be very          difficult it exist Though DNPL is risky firm. In the case of UNL, the average ratio is    almost 50/50, so they both bear 50/50 risk. But NLOL and UNL, as un-levered      company these ratios are not satisfactory. Analysis of CV of NLOL and DNPL  shows its ratio is consistent in nature where, UNL CV shows its ratio is inconsistent        in nature.

3.    Generally 70% long term to total debt is preferable but both NLOL 16.57% and DNPL  32.29%  have  less  than  average  ratio,  shows  unsatisfactory condition. More than 65% portion is taken by current liabilities. Now NLOL has not employed long-          term debt for few years and UNL has not used it in whole sampled years, though           they are un-levered firms now. The CV analysis of both NLOL and DNPL shows   inconstant nature of its ratio

4.    In the case of UNL, LTD to C/E ratio is zero during all sampled years. Where    NLOL  has  not  used  LTD  since  FY  2061/62.  But  DNPL  has  almost 42% of average  ratio of LTD to C/E ratio and continuously decreased to 3% which indicates that    DNPL  is  also  in  process  of  un-levered.  The  CV analysis of both NLOL and DNPL        shows inconstant nature of its ratio. So, we can conclude that all the companies do not   have  appropriate  ratio  of long-term debt to capital employed.

5.    DNPL has greater average Interest coverage ratio i.e. 2.42 times than NLOL. That        means  DNPL  has  good  debt  service  capacity  than  NLOL.  In the last four years of      time, there is not interest charge by NLOL because they have not employed long-   term debt. UNL has zero interest charged as it is also un-levered firm. But DNPL          has good debt service capacity in spite of high burden of interest. The CV analysis of both NLOL and DNPL shows inconsistent nature of its ratio.

6.    Returns on shareholders' equity of all three companies are not in satisfactory     condition. The highest ROSHE of UNL, DNPL and NLOL are 38%, 23.43% and        12.57%. ROSHE of all companies has in decreasing trend. If this decreasing trend  will  be  continued,  serous  difficulties  may  arise  in future. Similarly, the CV analysis        shows only DNPL has consistent nature of its ratio and remaining both companies has   inconsistent  nature  of  its

ratio. So we can conclude that all three companies    should apply suitable action to increase ROSHE.

7.    Better proprietary ratio is supposed to be 50%. Over viewing the average    proprietary    ratio, all three companies have lesser ratio than 50%. NLON has    33.43%, DNPL has 27% and UNL has 44.57%. The proprietary ratio of UNL is bit    satisfactory. Most of capitals are contributed by outsiders' fund in the case of NLOL    and DNPL. If these companies do not try to increase the proportion of proprietary  fund, the creditors' intervention may increase. But increasing trend and consistent    nature of its ratio can be taken as good signals for both companies.

8.    As far as the simple regression analysis of return on equity on debt ratio of these    three manufacturing companies concern, negative beta coefficient (-0.2106) of  NLOL indicates increase in debt ratio leads to decrease in debt ratio. Similarly,    positive beta coefficient (0.4114) indicates increase in debt ratio leads to increase in    debt ratio.

9.  According to the regression analysis of return on equity on debt equity ratio of    NLOL, it has negative beta coefficient which indicates increase in D/E ratio leads to    decrease in ROE. Likewise, positive beta coefficient (0.0981) of DNPL indicates   increase in D/E ratio leads to increase in ROE.

10. With respect to regression analysis of return on assets on debt ratio, the beta    coefficient of both (NLOL and UNL) manufacturing companies are 0.0056 and    0.1461. These positive beta coefficients indicate increase in debt ratio leads to    increase in return on assets.

11.  From the simple regression analysis on net profit on long-term debt, NLOL has  negative (-0.1088) beta coefficient, indicates increase in LTD leads to decrease in    NP. Similarly, positive beta coefficient (0.0704) of DNPL indicates increase in LTD    leads to increase in NP. However, because of not using LTD by UNL regression    analysis cannot be done.

12. According to the simple regression analysis on net profit on total debt of NLOL, DNPL and UNL, beta coefficient of these manufacturing companies are 6.3531,    0.0008 and 0.1746 respectively. Positive beta coefficient indicates increase in total debt leads to increase in net profit of NLOL, DNPL and UNL.

## 5.3 Conclusion

Comparison among concerned companies has been done taking data of these companies. To evaluate the capital structure, different types of tools and technique are used which are presented in the chapter fourth. From the same chapter following conclusion can be drawn. Long-term debt and profitability ratio of all sampled companies are in fluctuating trend. DNPL is highly levered and bearing high level of risk employing more long-term debt and NLOL and UNL are also unable to take advantages form not employing the long-term debt or deprived form the tax shield benefit or long-term debt.

The correlation coefficient analysis shows that DNPL has positive relationship between ROE & Debt ratio, ROE & D/E ratio, ROA & Debt ratio, NP & LTD and NP & TD where NLOL is positively correlated only with ROA & Debt ratio. However, UNL is un-levered company through out the sampled year, the correlation between NP & TD is strongly positive.

According to the regression analysis, DNPL has positive regression coefficient between ROE & Debt ratio, ROA & Debt ratio, NP& LTD and NP &TD where NLOL has positive regression between ROA &Debt ratio and NP & TD.UNL has positive regression between NP & TD.

## 5.4 Recommendations

In this section of the study it endeavors to recommend few points that can be helpful to stakeholders as well as to the company which are based on the above done calculations and drawn conclusions. These recommendations are guidelines, which would be helpful in taking prompt and appropriate decision abut capital structure.

) All sampled manufacturing companies have fluctuating capital structure. So that it is recommended that they should try to make consistency in capital structure.

) Nepalese manufacturing companies should be designed be appropriate capital structure in order to maximize shareholders wealth and minimize the cost of capital.

) Proper analysis and evaluation of capital mix decision should be required for these three companies.

) Sampled manufacturing companies should aware abut the debt financing resulted tax advantages on interest charge that would help to maximize value of the firm.

) Since the financing pattern of all sampled companies includes large amount of short-term loans and current liabilities, it may bring the solvency problem. Therefore, it is recommended that they should increase the proportion of long-term fund and their financing pattern.

) Nepal has become the full member of WTO. Therefore, Nepal has to adopt various norms and values of international trade as specified by WTO. The liberal terms and conditions of international trade and tariff must be followed by Nepal as a member of WTO. This condition will create many challenges that should be faced by the Nepalese industries. Therefore, DNPL, UNL and NLOL should make their management efficient and tactful to cope with the perspective challenges and grasp the opportunities.

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# Appendix – 1

## Ratio Analysis:
## Calculation of Debt to Equity Ratio

| Fiscal | Nepal Lube Oil Ltd | | | Dabur Nepal Pvt. Ltd | | | Unilever Nepal Ltd. | | |
| Year | Long Term Debt | Share Holders' Equity | Debt to Equity Ratio | Long Term Debt | Share Holders' Equity | Debt to Equity Ratio | Long Term Debt | Share Holders' Equity | Debt to Equity Ratio |
|---|---|---|---|---|---|---|---|---|---|
| 2059/60 | 17,711,454 | 40,755,381 | 43% | 663,365,000 | 257,251,000 | 258% | - | 250,400,294 | 0 |
| 2060/61 | 34,797,970 | 42,780,394 | 81% | 629,000,000 | 35,220,400 | 179% | - | 324,941,846 | 0 |
| 2061/62 | 36,258,583 | 37,142,021 | 98% | 620,462,000 | 459,785,000 | 135% | - | 342,346,849 | 0 |
| 2062/63 | - | 38,600,276 | 0 | 637,766,000 | 589,945,000 | 108% | - | 348,125,009 | 0 |
| 2063/64 | - | 39,696,607 | 0 | 441,163,000 | 672,137,000 | 66% | - | 358,429,113 | 0 |
| 2064/65 | - | 40,757,037 | 0 | 36,481,000 | 757,701,000 | 5% | - | 396,013,822 | 0 |
| 2065/66 | - | 40,771,762 | 0 | 20,789,000 | 769,686,000 | 3% | - | 216,933,296 | 0 |

# Appendix – 2

## Calculation of Total Debt to Total Assets Ratio

| Fiscal Year | Nepal Lube Oil Ltd | | | Dabur Nepal Pvt. Ltd | | | Unilever Nepal Ltd. | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total Debt | Total Assets | TD as % of TA | Total Debt | Total Assets | TD as % of TA | Total Debt | Total Assets | TD as % of TA |
| 2059/60 | 60,442,304 | 101,197685 | 60% | 1,052,513,000 | 1,309,746,000 | 80% | 294,424,548 | 544,824,842 | 54% |
| 2060/61 | 83,258,923 | 126,039,317 | 66% | 1,239,136,000 | 1,591,340,000 | 78% | 304,807,478 | 629,749,324 | 48% |
| 2061/62 | 80,043,186 | 117,185,207 | 68% | 1,559,510,000 | 2,019,295,000 | 77% | 418,068,601 | 760,415,540 | 55% |
| 2062/63 | 74,765,334 | 113,365,610 | 66% | 1,542,732,000 | 2,132,677,000 | 72% | 223,210,331, | 571,335,340 | 39% |
| 2063/64 | 105,400,027 | 145,096,634 | 73% | 1,606,606,000 | 2,278,743,000 | 71% | 426,450,560 | 784,879,673 | 54% |
| 2064/65 | 76,092,996 | 116,850,033 | 65% | 1,846,956,000 | 2,244,657,000 | 66% | 543,705,764 | 939,719,568 | 58% |
| 2065/66 | 87,401,867 | 128,173,629 | 68% | 1,579,102,000 | 2,348,788,000 | 67% | 882,022,532 | 1,098,955828 | 80% |

# Appendix – 3

## Calculation of Long Term Debt to Total Debt Ratio

| Fiscal Year | Nepal Lube Oil Ltd | | | Dabur Nepal Pvt. Ltd | | | Unilever Nepal Ltd. | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total Debt | Total Assets | LTD as % of TD | Total Debt | Total Assets | LTD as % of TD | Total Debt | Total Assets | LTD as % of TD |
| 2059/60 | 17,711,454 | 60,442,304 | 29% | 663,365,000 | 1,052,513000 | 63% | - | 294,424,548 | 0 |
| 2060/61 | 34,797,970 | 83,258,923 | 42% | 629,000,000 | 1,239,136,000 | 51% | - | 304,807,478 | 0 |
| 2061/62 | 36,258,583` | 80,043,186 | 45% | 620,462,000 | 1,559,510,000 | 40% | - | 418,068,601 | 0 |
| 2062/63 | - | 74,765,334 | 0 | 637,766,000 | 1,542,732,000 | 41% | - | 223,210,331 | 0 |
| 2063/64 | - | 105,400,027 | 0 | 441,163,000 | 1,606,606,00000 | 27% | - | 426,450,560 | 0 |
| 2064/65 | - | 76,092,996 | 0 | 36,481,000 | 1,846,956,000 | 3% | - | 543,705,764 | 0 |
| 2065/66 | - | 87,401,867 | 0 | 20,789,000 | 1,579,102,000 | 1% | - | 882,022,532 | 0 |

# Appendix – 4

## Calculation of Long Term Debt to Capital Employed Ratio

| Fiscal Year | Nepal Lube Oil Ltd | | | Dabur Nepal Pvt. Ltd | | | Unilever Nepal Ltd. | | |
|---|---|---|---|---|---|---|---|---|---|
| | Long Term Debt | Capital Employed | TD as % of TA | Long Term Debt | Capital Employed | TD as % of TA | Long Term Debt | Capital Employed | TD as % of TA |
| 2059/60 | 17,711,454 | 58,466,835 | 30% | 663,365,000 | 920,916,000 | 72% | - | 250,400,294 | 0 |
| 2060/61 | 34,797,970 | 77,578,364 | 45% | 629,000,000 | 981,204,000 | 64% | - | 324,941,846 | 0 |
| 2061/62 | 36,258,583 | 73,400,504 | 49% | 620,462,000 | 1,080,247,000 | 57% | - | 342,346,849 | 0 |
| 2062/63 | - | 38,600,276 | 0 | 637,766,000 | 1,227,711,000 | 52% | - | 348,125,009 | 0 |
| 2063/64 | - | 39,696,607 | 0 | 441,163,000 | 1,113,300,000 | 50% | - | 358,429,113 | 0 |
| 2064/65 | - | 40,757,037 | 0 | 36,481,000 | 794,182,000 | 5% | - | 396,013,822 | 0 |
| 2065/66 | - | 40,771,762 | 0 | 20,789,000 | 790,475,000 | 3% | - | 316,933,296 | 0 |

**Appendix – 5**

## Calculation of Interest Coverage Ratio

| Fiscal Year | Nepal Lube Oil Ltd | | | Dabur Nepal Pvt. Ltd | | | Unilever Nepal Ltd. | | |
|---|---|---|---|---|---|---|---|---|---|
| | EBIT | Interest | Ratio in times | EBIT | Interest | Ratio in times | EBIT | Interest | Ratio in times |
| 2059/60 | 14,726,283 | 2,629,598 | 5.60 | 169,495,000 | 88,908,000 | 1.91 | 136,349,302 | - | 0 |
| 2060/61 | 9,307,783 | 3,321,787 | 2.80 | 243,768,000 | 115,469,000 | 2.11 | 148,615,244 | - | 0 |
| 2061/62 | 1,644,482 | 3,844,056 | 0.43 | 268,441,000 | 116,570,000 | 2.30 | 107,755,426 | - | 0 |
| 2062/63 | 11,382,442 | - | 0 | 302,662,490 | 112,367,000 | 2.69 | 69,220,496 | - | 0 |
| 2063/64 | 8,519,148 | - | 0 | 248,123,702 | 105,441,000 | 2.35 | 126,646,858 | - | 0 |
| 2064/65 | 3,827,920 | - | 0 | 266,993,565 | 67,279,000 | 3.37 | 195,570,084 | - | 0 |
| 2065/66 | 6,375,503 | - | 0 | 110,953,000 | 50,473,000 | 2.20 | 257,465,167 | - | 0 |

# Appendix – 6

## Calculation of Return on Shareholders' Equity Ratio

| Fiscal Year | Nepal Lube Oil Ltd | | | Dabur Nepal Pvt. Ltd | | | Unilever Nepal Ltd. | | |
|---|---|---|---|---|---|---|---|---|---|
| | EAT | SHE | ROSHE | EAT | SHE | ROSHE | EAT | SHE | ROSHE |
| 2059/60 | 9,677,348 | 40,755,381 | 24% | 79,331,000 | 257.251.000 | 31% | 119,032,385 | 250,400,294 | 48% |
| 2060/61 | 4,718,785 | 42,780,394 | 11% | 126,894,000 | 352.204.000 | 36% | 120,576,551 | 324,941,846 | 37% |
| 2061/62 | (2,199,574) | 37,142,021 | -6% | 139,509,000 | 459,785,000 | 30% | 68,043,503 | 342,941,849 | 20% |
| 2062/63 | 9,903,935 | 38,600,276 | 26% | 164,295,490 | 589,945,000 | 28% | 42,606,160 | 348,125,009 | 12% |
| 2063/64 | 7,253,037 | 39,696,607 | 18% | 115,082,702 | 672,137,000 | 17% | 93,167,104 | 358,429,113 | 26% |
| 2064/65 | 2,922,159 | 40,757,037 | 7% | 121,268,565 | 757,701,000 | 16% | 140,782,743 | 396,013,822 | 36% |
| 2065/66 | 3,058,555 | 40,771,762 | 8% | 45,343,000 | 769,686,000 | 6% | 189,200,000 | 216,933,296 | 87% |

**Appendix – 7**

## Calculation of Proprietary Ratio

| Fiscal Year | Nepal Lube Oil Ltd | | | Dabur Nepal Pvt. Ltd | | | Unilever Nepal Ltd. | | |
|---|---|---|---|---|---|---|---|---|---|
| | SHE | Total Assets | SHE as % of TA | SHE | Total Assets | SHE as % of TA | SHE | Total Assets | SHE as % of TA |
| 2059/60 | 40,755,381 | 101,197,685 | 40% | 257.251.000 | 1,309,746,000 | 20% | 250,400,294 | 544,824,842 | 46% |
| 2060/61 | 42,780,394 | 126,039,317 | 34% | 352.204.000 | 1,591,340,000 | 22% | 324,941,846 | 629,749,324 | 52% |
| 2061/62 | 37,142,021 | 117,185,207 | 32% | 459,785,000 | 2,019,295,000 | 23% | 342,941,849 | 760,415,540 | 45% |
| 2062/63 | 38,600,276 | 113,365,610 | 34% | 589,945,000 | 2,132,677,000 | 28% | 348,125,009 | 571,335,340 | 61% |
| 2063/64 | 39,696,607 | 145,096,634 | 27% | 672,137,000 | 2,278,743,000 | 29% | 358,429,113 | 784,879,673 | 46% |
| 2064/65 | 40,757,037 | 116,850,033 | 35% | 757,701,000 | 2,244,657,000 | 34% | 396,013,822 | 939,719,568 | 42% |
| 2065/66 | 40,711,762 | 128,173,629 | 32% | 769,686,000 | 2,348,788,000 | 33% | 216,933,296 | 1,098,955828 | 20% |

# Appendix – 8

**Correlation Analysis:**

Let,

X = Return on Equity (ROE)

Y = Debt Ratio

## Correlation between ROE and Debt Ratio of NLOL, DNPL & UNL

| FY | Nepal Lube Oil Ltd | | | | | Dabur Nepal Pvt. Ltd | | | | | Unilever Nepal Ltd. | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | X | Y | XY | $X^2$ | $Y^2$ | X | Y | XY | $X^2$ | $Y^2$ | X | Y | XY | $X^2$ | $Y^2$ |
| 2059/60 | 24 | 29 | 696 | 576 | 841 | 31 | 63 | 1953 | 961 | 3969 | - | - | - | - | - |
| 2060/61 | 11 | 42 | 462 | 121 | 1764 | 36 | 51 | 1836 | 1296 | 2601 | - | - | - | - | - |
| 2061/62 | -6 | 45 | -270 | 36 | 2025 | 30 | 40 | 1200 | 900 | 1600 | - | - | - | - | - |
| 2062/63 | 26 | 0 | 0 | 676 | 0 | 28 | 41 | 1148 | 784 | 1681 | - | - | - | - | - |
| 2063/64 | 18 | 0 | 0 | 324 | 0 | 17 | 27 | 459 | 289 | 729 | - | - | - | - | - |
| 2064/65 | 7 | 0 | 0 | 49 | 0 | 16 | 3 | 48 | 256 | 9 | - | - | - | - | - |
| 2065/66 | 8 | 0 | 0 | 67 | 0 | 6 | 1 | 6 | 36 | 1 | - | - | - | - | - |

| Sum | 88 | 116 | 888 | 1846 | 4630 | 164 | 126 | 6650 | 4522 | 10590 | - | - | - | - | - |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Correlation( r)  = -0.40 | | | | | Correlation( r)  = 0.12 | | | | | Correlation( r)  = - | | | | |

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

# Appendix – 9

Let,

X = Return on Equity (ROE)

Y = Debt Equity Ratio

## Correlation between ROE and D/E Ratio of NLOL, DNPL & UNL

| FY | Nepal Lube Oil Ltd | | | | | Dabur Nepal Pvt. Ltd | | | | | Unilever Nepal Ltd. | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | X | Y | XY | $X^2$ | $Y^2$ | X | Y | XY | $X^2$ | $Y^2$ | X | Y | XY | $X^2$ | $Y^2$ |
| 2059/60 | 24 | 43 | 1032 | 576 | 1849 | 31 | 258 | 7998 | 961 | 66564 | - | - | - | - | - |
| 2060/61 | 11 | 81 | 891 | 121 | 6565 | 36 | 179 | 6444 | 1296 | 32041 | - | - | - | - | - |
| 2061/62 | -6 | 98 | -588 | 36 | 9604 | 30 | 135 | 4050 | 900 | 18225 | - | - | - | - | - |
| 2062/63 | 26 | 0 | 0 | 676 | 0 | 28 | 108 | 3024 | 784 | 11664 | - | - | - | - | - |
| 2063/64 | 18 | 0 | 0 | 324 | 0 | 17 | 66 | 1122 | 289 | 4356 | - | - | - | - | - |
| 2064/65 | 7 | 0 | 0 | 49 | 0 | 16 | 5 | 80 | 256 | 25 | - | - | - | - | - |
| 2065/66 | 8 | 0 | 0 | 67 | 0 | 6 | 3 | 18 | 36 | 9 | - | - | - | - | - |
| Sum | 88 | 222 | 1335 | 1846 | 18014 | 164 | 754 | 22736 | 4522 | 132884 | - | - | - | - | - |
| | Correlation( r) = -0.51 | | | | | Correlation( r) = 0.86 | | | | | Correlation( r) = - | | | | |

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

# Appendix – 10

Let,

X = Return on Assets (ROA)

Y = Debt Ratio

## Correlation between ROA & Debt Ratio of NLOL, DNPL & UNL

| FY | Nepal Lube Oil Ltd | | | | | Dabur Nepal Pvt. Ltd | | | | | Unilever Nepal Ltd. | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | X | Y | XY | $X^2$ | $Y^2$ | X | Y | XY | $X^2$ | $Y^2$ | X | Y | XY | $X^2$ | $Y^2$ |
| 2059/60 | 12 | 29 | 348 | 144 | 841 | 13 | 63 | 819 | 169 | 3969 | - | - | - | - | - |
| 2060/61 | 6 | 42 | 252 | 36 | 1764 | 15 | 51 | 756 | 225 | 2601 | - | - | - | - | - |
| 2061/62 | 1 | 45 | 45 | 1 | 2025 | 13 | 40 | 520 | 169 | 1600 | - | - | - | - | - |
| 2062/63 | 9 | 0 | 0 | 81 | 0 | 13 | 41 | 533 | 169 | 1681 | - | - | - | - | - |
| 2063/64 | 5 | 0 | 0 | 25 | 0 | 10 | 27 | 270 | 100 | 729 | - | - | - | - | - |
| 2064/65 | 3 | 0 | 0 | 9 | 0 | 8 | 3 | 24 | 64 | 9 | - | - | - | - | - |
| 2065/66 | 2 | 0 | 0 | 4 | 0 | 4 | 1 | 24 | 16 | 1 | - | - | - | - | - |
| Sum | 38 | 116 | 645 | 300 | 4630 | 76 | 226 | 4 | 912 | 10590 | | - | - | - | - |
| | Correlation( r) = 0.03 | | | | | Correlation( r) = 0.90 | | | | | Correlation( r) = - | | | | |

$$ r = \frac{N \mid XY \, z f \, X \mid Y \mathring{A}}{\sqrt{N \mid x^2 \, z f \, x \mathring{A}} \sqrt{N \mid Y^2 \, z f \, Y \mathring{A}}} $$

# Appendix – 11

Let,

X = Net Profit

Y = Long Term Debt

## Correlation between NP & LTD of NLOL, DNPL & UNL (Rs. In Million)

$r\ X\dfrac{}{\sqrt{N}\ |}$

| FY | Nepal Lube Oil Ltd | | | | | Dabur Nepal Pvt. Ltd | | | | | Unilever Nepal Ltd. | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | X | Y | XY | $X^2$ | $Y^2$ | X | Y | XY | $X^2$ | $Y^2$ | X | Y | XY | $X^2$ | $Y^2$ |
| 2059/60 | 9 | 17 | 153 | 81 | 289 | 79 | 663 | 52377 | 6241 | 439569 | - | - | - | - | - |
| 2060/61 | 4 | 34 | 136 | 16 | 1156 | 126 | 629 | 79254 | 15876 | 395641 | - | - | - | - | - |
| 2061/62 | -2 | 36 | -72 | 4 | 1296 | 139 | 620 | 86180 | 19321 | 384400 | - | - | - | - | - |
| 2062/63 | 9 | 0 | 0 | 81 | 0 | 164 | 637 | 104468 | 26896 | 405769 | - | - | - | - | - |
| 2063/64 | 7 | 0 | 0 | 49 | 0 | 115 | 441 | 50715 | 13225 | 194481 | - | - | - | - | - |
| 2064/65 | 2 | 0 | 0 | 4 | 0 | 121 | 36 | 4356 | 14641 | 1296 | - | - | - | - | - |
| 2065/66 | 3 | 0 | 0 | 9 | 0 | 45 | 20 | 900 | 2025 | 400 | - | - | - | - | - |
| Sum | 32 | 87 | 217 | 244 | 2741 | 789 | 3046 | 378250 | 98225 | 1821556 | | - | - | - | - |
| | Correlation( r)  = -0.45 | | | | | Correlation( r)  = 0.51 | | | | | Correlation( r)  = - | | | | |

xix

# Appendix – 12

Let,

X = Net Profit

Y = Total Debt

## Correlation between NP & TD of NLOL, DNPL & UNL

| FY | Nepal Lube Oil Ltd | | | | | Dabur Nepal Pvt. Ltd | | | | | Unilever Nepal Ltd. | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | X | Y | XY | $X^2$ | $Y^2$ | X | Y | XY | $X^2$ | $Y^2$ | X | Y | XY | $X^2$ | $Y^2$ |
| 2059/60 | 9 | 60 | 540 | 81 | 3600 | 79 | 1052 | 83108 | 6241 | 1106704 | 119 | 294 | 34986 | 14161 | 86436 |
| 2060/61 | 4 | 83 | 332 | 16 | 6889 | 126 | 1239 | 156114 | 15876 | 1535121 | 120 | 304 | 36480 | 14400 | 92416 |
| 2061/62 | -2 | 80 | -160 | 4 | 6400 | 139 | 1559 | 216701 | 19321 | 2430481 | 68 | 418 | 28424 | 4624 | 174724 |
| 2062/63 | 9 | 74 | 666 | 81 | 5476 | 164 | 1542 | 252888 | 26896 | 2377764 | 42 | 223 | 9366 | 1764 | 49729 |
| 2063/64 | 7 | 105 | 735 | 49 | 11025 | 115 | 1606 | 184690 | 13225 | 2579236 | 93 | 426 | 39618 | 8649 | 181476 |
| 2064/65 | 2 | 76 | 152 | 4 | 5776 | 121 | 1486 | 179806 | 14641 | 2208196 | 140 | 543 | 76020 | 19600 | 294849 |
| 2065/66 | 3 | 87 | 261 | 9 | 7569 | 45 | 1579 | 71055 | 2025 | 2493241 | 189 | 882 | 166698 | 35721 | 777924 |
| Sum | 32 | 565 | 2526 | 244 | 46735 | 789 | 10063 | 1144362 | 98225 | 14730743 | 771 | 3090 | 391592 | 98919 | 1657554 |
| | Correlation( r)  = -0.45 | | | | | Correlation( r)  = 0.51 | | | | | Correlation( r)  = - | | | | |

$$r \mathrm{X} \frac{N \mid XY \, \mathrm{z} \! f \; X \mid Y \mathrm{\AA}}{\sqrt{N \mid x^2 \, \mathrm{z} \! f \; x \mathrm{\AA}} \sqrt{N \mid Y^2 \, \mathrm{z} \! f \; Y \mathrm{\AA}}}$$

# Appendix – 13

## Regression analysis of Return on Equity on Debt Ratio of NLOL

| Fiscal Year | Debt Ratio (X) | ROE (Y) | XY | $X^2$ |
|---|---|---|---|---|
| 2059/60 | 29 | 24 | 696 | 841 |
| 2060/61 | 42 | 11 | 462 | 1764 |
| 2061/62 | 45 | -6 | -270 | 2025 |
| 2062/63 | 0 | 26 | 0 | 0 |
| 2063/64 | 0 | 18 | 0 | 0 |
| 2064/65 | 0 | 7 | 0 | 0 |
| 2065/66 | 0 | 8 | 0 | 0 |
| Sum | X=116 | Y= 88 | XY= 888 | $X^2$=4630 |

$$b = \frac{n \sum XY - (\sum X)(\sum Y)}{n \sum X^2 - (\sum X)^2}$$

$$= \frac{7 \times 888 - 116 \times 88}{7 \times 4630 - (116)^2} = -0.2106$$

$$a = \frac{\sum Y - b(\sum X)}{n} = \frac{88 - (-0.2106)(116)}{7} = 16.0613$$

## Regression analysis of Return on Equity on Debt Ratio of DNPL

| Fiscal Year | Debt Ratio (X) | ROE (Y) | XY | $X^2$ |
|---|---|---|---|---|
| 2059/60 | 63 | 31 | 1953 | 3969 |
| 2060/61 | 51 | 36 | 1836 | 2601 |
| 2061/62 | 40 | 30 | 1200 | 1600 |
| 2062/63 | 41 | 28 | 1148 | 1681 |
| 2063/64 | 27 | 17 | 459 | 729 |
| 2064/65 | 3 | 16 | 48 | 9 |
| 2065/66 | 1 | 6 | 6 | 1 |
| Sum | X=226 | Y= 164 | XY= 6650 | $X^2$=10590 |

$$b = \frac{n \sum XY - (\sum X)(\sum Y)}{n \sum X^2 - (\sum X)^2} = \frac{7 \times 6650 - 226 \times 164}{7 \times 10590 - (226)^2} = \frac{9486}{23054} = 0.4114$$

$$a = \frac{\sum Y - b \sum X}{n} = \frac{164 - (0.4114)(226)}{7} = 10.1462$$

# Appendix – 14

## Regression analysis of Return on Equity on Debt Equity Ratio of NLOL

| Fiscal Year | D/E Ratio (X) | ROE (Y) | XY | $X^2$ |
|---|---|---|---|---|
| 2059/60 | 43 | 24 | 1032 | 1849 |
| 2060/61 | 81 | 11 | 891 | 6561 |
| 2061/62 | 98 | -6 | -588 | 9604 |
| 2062/63 | 0 | 26 | 0 | 0 |
| 2063/64 | 0 | 18 | 0 | 0 |
| 2064/65 | 0 | 7 | 0 | 0 |
| 2065/66 | 0 | 8 | 0 | 0 |
| Sum | X=222 | Y= 88 | XY= 1335 | $X^2$=18014 |

$$b = \frac{n \sum XY - (\sum X)(\sum Y)}{n \sum X^2 - (\sum X)^2} = \frac{7 \times 1335 - 222 \times 88}{7 \times 18014 - (222)2} = 0.1326$$

$$a = \frac{\sum Y - b(\sum X)}{n} = \frac{88 - (-0.1326)(222)}{7} = 16.7767$$

## Regression analysis of Return on Equity on Debt Equity Ratio of DNPL

| Fiscal Year | D/E Ratio (X) | ROE (Y) | XY | $X^2$ |
|---|---|---|---|---|
| 2059/60 | 258 | 31 | 7998 | 66564 |
| 2060/61 | 179 | 36 | 6444 | 32041 |
| 2061/62 | 135 | 30 | 4050 | 18225 |
| 2062/63 | 108 | 28 | 3024 | 11664 |
| 2063/64 | 66 | 17 | 1122 | 4356 |
| 2064/65 | 5 | 16 | 80 | 25 |
| 2065/66 | 3 | 6 | 18 | 9 |
| Sum | X=754 | Y= 164 | XY= 22736 | $X^2$=132884 |

$$b = \frac{n \sum XY - (\sum X)(\sum Y)}{n \sum X^2 - (\sum X)^2} = \frac{7 \times 22736 - 754 \times 164}{7 \times 132884 - (754)^2} = 0.09814$$

$$a = \frac{\sum Y - b(\sum X)}{n} = \frac{164 - (0.09814)(754)}{7} = 128618$$

# Appendix – 15

## Regression analysis of Return on Assets on Debt Ratio of NLOL

| Fiscal Year | Debt Ratio (X) | ROA (Y) | XY | $X^2$ |
|---|---|---|---|---|
| 2059/60 | 29 | 12 | 348 | 841 |
| 2060/61 | 42 | 6 | 252 | 1764 |
| 2061/62 | 45 | 1 | 45 | 2025 |
| 2062/63 | 0 | 9 | 0 | 0 |
| 2063/64 | 0 | 5 | 0 | 0 |
| 2064/65 | 0 | 3 | 0 | 0 |
| 2065/66 | 0 | 2 | 0 | 0 |
| Sum | X=116 | Y= 38 | XY= 645 | $X^2$=4630 |

$$b = \frac{n\sum XY - (\sum X)(\sum Y)}{n\sum X^2 - (\sum X)^2} = \frac{7 \mid 645 - 116 \mid 38}{7 \mid 4630 - (116)^2} = 0.0056$$

$$a = \frac{\sum Y - b(\sum X)}{n} = \frac{38 - (0.0056)(116)}{7} = 5.3357$$

## Regression analysis of Return on Assets on Debt Ratio of DNPL

| Fiscal Year | Debt Ratio (X) | ROA (Y) | XY | $X^2$ |
|---|---|---|---|---|
| 2059/60 | 63 | 13 | 819 | 3969 |
| 2060/61 | 51 | 15 | 765 | 2601 |
| 2061/62 | 40 | 13 | 520 | 1600 |
| 2062/63 | 41 | 13 | 533 | 1681 |
| 2063/64 | 27 | 10 | 270 | 729 |
| 2064/65 | 3 | 8 | 24 | 9 |
| 2065/66 | 1 | 4 | 4 | 1 |
| Sum | X=226 | Y= 76 | XY= 2935 | $X^2$=10590 |

$$b = \frac{n\sum XY - (\sum X)(\sum Y)}{n\sum X^2 - (\sum X)^2} = \frac{7 \mid 2935 - 226 \mid 76}{7 \mid 10590 - (226)^2} = 0.1461$$

$$a = \frac{\sum Y - b(\sum X)}{n} = \frac{76 - (0.1461)(226)}{7} = 6.1402$$

# Appendix – 16

## Regression analysis of Net Profit on Long-term Debt of NLOL (Rs. In Million)

| Fiscal Year | LTD (X) | NP(Y) | XY | $X^2$ |
|---|---|---|---|---|
| 2059/60 | 17 | 9 | 153 | 289 |
| 2060/61 | 34 | 4 | 136 | 1156 |
| 2061/62 | 36 | -2 | -72 | 1296 |
| 2062/63 | 0 | 9 | 0 | 0 |
| 2063/64 | 0 | 7 | 0 | 0 |
| 2064/65 | 0 | 2 | 0 | 0 |
| 2065/66 | 0 | 3 | 0 | 0 |
| Sum | X=87 | Y= 32 | XY= 217 | $X^2$=2741 |

$$b = \frac{n\sum XY - (\sum X)(\sum Y)}{n\sum X^2 - (\sum X)^2} = \frac{7 \times 217 - 87 \times 32}{7 \times 2741 - (87)^2} = -0.1088$$

$$a = \frac{\sum Y - b(\sum X)}{n} = \frac{32 - (-0.1088)(87)}{7} = 5.9236$$

## Regression analysis of Net Profit on Long-term Debt of DNPL (Rs. In Million)

| Fiscal Year | LTD (X) | NP(Y) | XY | $X^2$ |
|---|---|---|---|---|
| 2059/60 | 663 | 79 | 52377 | 439569 |
| 2060/61 | 629 | 126 | 79254 | 395641 |
| 2061/62 | 620 | 139 | 86180 | 384400 |
| 2062/63 | 637 | 164 | 104468 | 405769 |
| 2063/64 | 441 | 115 | 50715 | 194481 |
| 2064/65 | 36 | 121 | 4356 | 1296 |
| 2065/66 | 20 | 45 | 900 | 400 |
| Sum | X=3046 | Y= 789 | XY= 378250 | $X^2$=1821556 |

$$b = \frac{n\sum XY - (\sum X)(\sum Y)}{n\sum X^2 - (\sum X)^2} = \frac{7 \times 378250 - 3046 \times 789}{7 \times 1821556 - (3046)^2} = 0.0704$$

$$a = \frac{\sum Y - b(\sum X)}{n} = \frac{789 - (0.07024)(3046)}{7} = 82.0802$$

# Appendix – 17

## Regression analysis of Net Profit on Total Debt of NLOL (Rs. In Million)

| Fiscal Year | TD (X) | NP(Y) | XY | $X^2$ |
|---|---|---|---|---|
| 2059/60 | 60 | 9 | 540 | 3600 |
| 2060/61 | 83 | 4 | 332 | 6889 |
| 2061/62 | 80 | -2 | -160 | 6400 |
| 2062/63 | 74 | 9 | 666 | 5476 |
| 2063/64 | 105 | 7 | 7980 | 11025 |
| 2064/65 | 76 | 2 | 152 | 5776 |
| 2065/66 | 87 | 3 | 261 | 7569 |
| Sum | X=565 | Y= 32 | XY= 9771 | $X^2$=46735 |

$$b = \frac{n\sum XY - (\sum X)(\sum Y)}{n\sum X^2 - (\sum X)^2} = \frac{7 \times 9771 - 565 \times 32}{7 \times 46735 - (565)^2} = 6.3531$$

$$a = \frac{\sum Y - b(\sum X)}{n} = \frac{32 - (6.3531)(565)}{7} = 883.0712$$

## Regression analysis of Net Profit on Long-term Debt of DNPL Rs. In Million)

| Fiscal Year | TD (X) | NP(Y) | XY | $X^2$ |
|---|---|---|---|---|
| 2059/60 | 1052 | 79 | 83108 | 1106704 |
| 2060/61 | 1239 | 126 | 156114 | 1535121 |
| 2061/62 | 1559 | 139 | 216701 | 2430481 |
| 2062/63 | 1542 | 164 | 252888 | 2377764 |
| 2063/64 | 1606 | 115 | 184690 | 2579236 |
| 2064/65 | 1486 | 121 | 179806 | 2208196 |
| 2065/66 | 1579 | 45 | 71055 | 2493241 |
| Sum | X=10063 | Y= 789 | XY= 1144362 | $X^2$=14730743 |

$$b = \frac{n\sum XY - (\sum X)(\sum Y)}{n\sum X^2 - (\sum X)^2} = \frac{7 \times 1144362 - 10063 \times 789}{7 \times 14730743 - (10063)^2} = 0.0081$$

$$a = \frac{\sum Y - b(\sum X)}{n} = \frac{789 - (0.0081)(10063)}{7} = 111.5377$$

## Regression analysis of Net Profit on Total Debt of UNL (Rs. In Million)

| Fiscal Year | TD (X) | NP(Y) | XY | $X^2$ |
|---|---|---|---|---|
| 2059/60 | 294 | 119 | 34986 | 86436 |
| 2060/61 | 304 | 120 | 36480 | 92416 |
| 2061/62 | 418 | 98 | 28424 | 174724 |
| 2062/63 | 223 | 42 | 9366 | 49729 |
| 2063/64 | 426 | 93 | 39618 | 181476 |
| 2064/65 | 543 | 140 | 76020 | 294849 |
| 2065/66 | 882 | 189 | 166698 | 777924 |
| Sum | X=3090 | Y= 771 | XY= 391592 | $X^2$=1657554 |

$$b = \frac{n \sum XY - (\sum X)(\sum Y)}{n \sum X^2 - (\sum X)^2}$$

$$= \frac{7 \mid 391592 - 3090 \mid 771}{7 \mid 1657554 - (3090)^2} = 0.1746$$

$$a = \frac{\sum Y - b(\sum X)}{n} = \frac{771 - (0.1746)(3090)}{7} = 33.0694$$

## APPENDIX 18

### UNILEVER NEPAL LIMITED

#### Summary of Balance Sheet and Income Statement of UNL

| r ( B.S.) | 2059/60 | 2060/61 | 2061/62 | 2062/63 | 2063/64 | 2064/65 | 2065/ |
|---|---|---|---|---|---|---|---|
| ity | 92,070,000 | 92,070,000 | 92,070,000 | 92,070,000 | 92,070,000 | 92,070,000 | 92,070, |
| g term debt | - | - | - | - | - | - | - |
| rent bilities | 294,424,548 | 304,807,478 | 426,450,418,068,601 | 223,210,331 | 426,450,560 | - | - |
| al Debt (D+CL) | 294,424,548 | 304,807,478 | 426,450,418,068,601 | 223,210,331 | 426,450,560 | - | - |
| al | 544,824,842 | 629,749,324 | 760,415,540 | 571,335,340 | 784,879,673 | - | - |

| ets(FA+CA) | | | | | | | |
|---|---|---|---|---|---|---|---|
| reholder's d | 250,400,294 | 324,941,846 | 342,346,849 | 348,125,009 | 358,429,113 | - | - |
| s | 1,503,693,367 | 1,728,629,324 | 1,540,992,319 | 1,236,052,386 | 1,244,727,395 | - | - |
| T | 136,349,302 | 148,615,244 | 107,755,426 | 69,220,496 | 126,646,858 | - | - |
| rest | - | - | - | - | - | - | - |
| T | 136,349,302 | 148,615,244 | 107,755,426 | 69,220,496 | 126,646,858 | - | - |
| fit | 119,032,385 | 120,576,551 | 68,043,503 | 42,606,160 | 93,167,104 | - | - |
| ital ployed | 250,400,294 | 324,941,846 | 342,346,849 | 348,125,009 | 358,429,113 | - | - |

# APPENDIX 19

## Dabur Nepal Pvt. Ltd.

## Summary of Balance Sheet and Income Statement of DNPL

| Year (B.S.) | 2059/60 | 2060/61 | 2061/62 | 2062/63 | 2063/64 | 2064/65 |
|---|---|---|---|---|---|---|
| Equity | 79,852,000 | 79,852,000 | 79,852,000 | 79,852,000 | 79,852,000 | 79,852,000 |
| Long Term Debt | 663,365,000 | 629,000,000 | 620,462,000 | 637,766,000 | 441,163,000 | 36,481,000 |
| Current Liabilities | 389,148,000 | 610,136,000 | 939,048,000 | 904,966,000 | 1,165,443,000 | 1,450,475,000 |
| Total Debt (LTD + CL) | 1,052,513,000 | 1,239,136,000 | 1,559,510,000 | 1,542,732,000 | 1,606,606,000 | 1,846,956,000 |
| Total Assets (FA + CA) | 1,309,746,000 | 1,591,340,000 | 2,019,295,000 | 2,132,677,000 | 2,278,743,000 | 2,244,657,000 |
| Shareholder's Fund | 257,251,000 | 352,204,000 | 459,785,000 | 589,945,000 | 672,137,000 | 757,701,000 |
| Sales | 1,301,545,000 | 1,900,720,000 | 2,224,916,000 | 2,764,962,000 | 2,699,505,000 | 3,017,702,000 |
| EBIT | 169,495,000 | 243,768,000 | 268,441,000 | 302,662,490 | 248,123,702 | 226,993,565 |
| Interest | 88,908,000 | 115,469,000 | 116,570,000 | 112,367,000 | 105,441,000 | 67,279,000 |
| EBT | 79,331,000 | 126,894,000 | 139,509,00 | 164,295,490 | 115,082,7 | 121,268,565 |

| | | | 0 | | 02 | |
|---|---|---|---|---|---|---|
| Profit | 79,331,000 | 126,894,000 | 139,509000 | 164,295,490 | 115,082,702 | 121,268,565 |
| Capital Employed | 920,916,000 | 981,204,000 | 1,080,247,000 | 1,227,711,000 | 1,113,300,000 | 794,182,000 |

# APENDIX - 20

## Nepal Lube Oil Ltd.

## Summary of Balance Sheet and Income Statement of NLOL

| Year (B.S.) | 2059/60 | 2060/61 | 2061/62 | 2062/63 | 2063/64 | 2064/65 | 20 |
|---|---|---|---|---|---|---|---|
| Equity | 20,292,200 | 20,292,200 | 20,292,200 | 20,292,200 | 20,292,200 | 20,292,200 | 20, |
| Long Term Debt | 17,711,454 | 34,797,970 | 36,258,583 | - | - | - | |
| Current Liabilities | 42,730,850 | 48,460,953 | 43,784,603 | 74,765,334 | 105,400,027 | 76,092,996 | 87, |
| Total Debt (LTD + CL) | 60,442,304 | 83,258,923 | 80,043,186 | 74,765,334 | 105,400,027 | 76,092,996 | 87, |
| Total Assets (FA + CA) | 101,197,685 | 126,039,317 | 117,185,207 | 1113,365,610 | 145,096,634 | 116,850,033 | 128 |
| Shareholder's Fund | 40,755,381 | 42,780,394 | 37,142,021 | 38,600,276 | 39,696,607 | 40,757,037 | 40, |
| Sales | 107,331,022 | 107,188,225 | 72,223,408 | 136,004,136 | 119,151,146 | 84,712,633 | 118 |
| EBIT | 14,726,283 | 9,307,783 | 1,644,482 | 11,382,442 | 8,519,148 | 3,827,920 | 6,3 |
| Interest | 2,629,598 | 3,321,787 | 3,844,056 | - | - | - | |
| EBT | 12,096,685 | 5,985,996 | (2199574) | 11,382,442 | 8,519,148 | 3,82,7,920 | 6,3 |
| Profit | 9,677,348 | 4,718,785 | (2,199,574) | 9,903,935 | 7,253,037 | 2.922.159 | 3.0 |
| Capital Employed | 58,466,835 | 77,578,364 | 73,400,604 | 38,600,276 | 39,696,607 | 40,757,037 | 40, |