

CAPITAL STRUCTURE MANAGEMENT
A CASE STUDY OF SELECTED MANUFACTURING COMPANIES

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RECOMMENDATION

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

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List of Abbreviations

B.S	Bikram Sambat
CV	Coefficient of Variation
DFBPL	Dugar Foods and Beverage Private Limited
EAT	Earning after Tax
EBIT	Earning before Interest and tax
EPS	Earning per share
FY	Fiscal Year
LTD	Long Term Debt
NOI	Net Operating Income
NP	Net Profit
Pvt. Ltd.	Private Limited
RSML	Reliance Spinning Mills Limited
ROA	Return on Assets
ROE	Return on Equity
S.D.	Standard Deviation
STD	Short Term debt
T.A.	Total Assets
T.D.	Total Debt
T.E.	Total Equity
T.U.	Tribhuvan University

CHAPTER I

INTRODUCTION

1.1 Background of the study

It is known fact that the basic goal of the firm is to maximize the value of the firm or shareholders wealth. To achieve this goal, the company should have sound investment and financing policy. Company should acquire current assets such as inventory, marketable securities, etc. and fixed assets such as land and building, plant and machinery, equipments, vehicles etc. To finance these assets, firms can various sources of financing. These sources of financing may be short term and long term. Short term sources of financing mature within one year or less where as fund raised from long-term sources of financing can be used for several years or forever. Thus when a firm expands its business or activity, it needs capital. The term capital denotes to long term funds of the firm raised from long term debt, preferred stock and common stock.

Capital Structure refers to the combination of long-term sources of funds such as debentures, long term debt, preference share capital and equity share capital including reserves and surpluses. Capital structure is the composition of the debt and equity securities and is considered as financing decision undertaken by the financial manager. The financial manager must strive to obtain the best financing mix or optimum capital structure for his firm. The firm attains capital structure where the debt-equity proportion maximizes the market value of the shares. The uses of debt affect the return and risk of the equity shareholder, it increases the return on equity fund and at the same time it also increases risk. A proper balance must be strike between the risk and return in order to maximize the market value of shares.

Capital structure is very crucial part of financial management as the various composition of debt and equity capital may impact different on risk and rate of return. A business enterprise has to maintain a proper mix of both the securities in a

manner that the cost and risk perception to the shareholders are minimized.

The capital structure refers to the proportion of debt and equity capital. This has an important place in the theory of financial management. The financing decision of a firm relates to the choice of proportion of debt and equity to finance the investment requirement of which a proper balance is necessary to ensure a tradeoff between risk and return to the shareholder. An optimal capital structure, which consists of reasonable proportion of debt and equity, can help to maximize the value and ultimately the shareholders wealth.

In Nepal, some companies do not plan capital structure and then develop the financial decisions taken by the financial manager without any formal planning. Those companies may prosper in the short-run, but ultimately they can face great difficulties in raising funds to finance their activities. The unplanned capital structure of the companies may also fail to economize the use of their funds. Thus, it is being increasingly realized that a company should plan its appropriate capital structure to maximize the use of funds and be able to adapt more easily to changing conditions.

This research is concerned with the study of capital structure management of some selected manufacturing companies. To describe the capital structure of any firm the long-term source of funds is necessarily used. Well financial performance depends on optimal capital structure. The term capital refers to the long-term funds like debt equity. The capital mix, which leads to the maximum value and minimum cost of capital, is optimal capital structure, which can be obtained by changing the financing mix.

Composition of capital structure is one of the most important components of solvency analysis. Capital structure refers to a company's sources of financing and its economic attributes. Capital structure is usually measured in terms of the relative magnitude of the various financing sources. A company's financing stability and risk of insolvency depend on its financing sources and the types and sizes of various assets its own. Common size and ratio analysis of capital structure are preliminary measures of the risk of the company's capital structure. The higher the proportion of debt, the

larger the fixed charges of interest and debt repayment and the greater the likelihood of insolvency during period of earnings decline or hardship. Capital structure measures serve as screening devices (Bernstein and Wild, 1997:58). This study is directed towards analyzing the effect of capital structure on the value of the firm in the context of Nepalese manufacturing.

1.2. A brief overview of manufacturing companies selected for the study

1.2.1 M/s Reliance Spinning Mills Ltd. (RSML):

M/s Reliance Spinning Mills Ltd. (RSML) is registered as a public limited company with the Company Registrar's Office under registration number 62/050/51 dated 11/05/1994 and with Ministry of Finance, Department of Tax under PAN No. 300016312 dated 17/05/2000. All registrations are renewed and are up to-date. The unit is also registered with VAT and is submitting VAT returns timely. The company has paid up capital of 85, 00, 00, 000.00 (Annual General Meeting 2011)

The company is the manufacturer of various types of Yarn. The product range of the company comprises POLYESTER/VISCOSE YARN ON CONES- both Grey and Dyed which include 100% polyester blend, 100% Viscose blend, 65% polyester+35% Viscose or any other blend as per customer choice with counts ranging from NE 12 to 40 single, double and multifold. The company also manufactures 100% ACRYLIC YARN including Polyester/Acrylic blended Yarn with counts ranging from NE 13 to NE 40 single, double and multifold in hanks as well as in cones both Grey & Dyed. Its product varieties also comprise 100% POLYESTER SPUN YARN with counts ranging from NE 10 to NE 40 in Dyed as well as Dope Dyed form. In addition to these, the company also manufactures SPECIALITY YARN PVT (Polyester/Viscose/Textures blended Yarn), SLUB Yarn and INDUSTRIAL YARN.

The company is an export oriented unit. More than 70% of its products are exported to countries beyond Nepal i.e. to India, Bangladesh and Turkey. The rest of the productions are sold in the domestic market. The factory of the unit is situated in Khanar VDC, Sunsari district which is in the eastern part of Nepal near Biratnagar.

1.2.2 M/s Dugar Food and Beverage Pvt. Ltd. (DFBPL):

M/s Dugar Food and Beverage Pvt. Ltd. (DFBPL), a company incorporated under Company Act 2021, is registered with Ministry of Industry, Department of industry on B.S. 2042/12/19 (01/04/1986) under registration No 2269/042. The company is also registered with Ministry of Finance, Tax Department under registration No 77/903/043 on 06/11/1986 and with VAT office, under registration No 300049503 on 22/10/2000.

DFBPL is involved in producing fruit drink under brand name "Frooti" and "Appy". The company is under technical collaboration with Parle Agro Limited, Mumbai. The unit has been constantly increasing its production capacity. They have recently added new "Tetra Pak" machines and currently their production capacity is 7500 packs / hour. The unit has been catering demands of fruit drinks to the consumers all over the country. The company has paid up capital of Rs.100, 00,000.

The unit was the market leader in packaged fruit drink up to some years ago. However, Dabur Nepal Pvt. Ltd's Real Fruit Juice with its wide range of flavours and attractive and aggressive marketing strategy has made it the market leader in recent years in its segment. DFBPL is however making efforts to capture market share with image building exercise and widening of sales network. However the fruit drink market has grown by almost 40%, according to estimates by the companies. Due to various publicity against other types of cold drinks also, demand of soft drinks are increasing in the market. DFBPL is however making efforts to capture market share with image building exercise and widening of sales network. The long association in this line of business the promoters have maintained a good relation with wholesalers and the volume of business has also been increasing steadily.

1.3. Focus of the study:

Nepal is among the least developing countries with a low per capita income. It has a slow industrial growth. Thus, the economic growth is not satisfactory for an overall

growth of the national economy and industrialization is essential for the sustainable long-term improvement of the country.

Though there are numerous manufacturing industries in Nepal, most of them are suffering from heavy losses and some of them have already closed. Similarly, most of the industries use major portion of their income in paying interest and could not afford for the improvement of new technology. Some industries even could not meet the interest and other expenses from the income, so they increase loan (debt) and become more levered. Capital structure decision directly affects the shareholders risk and return and market value of the share. As capital structure decision includes decision of debt and equity mix, which has implications for the shareholder's earning and risk which in turn, will affect the cost of capital and market value of the firm.

1.4. Statement of the problem

Generally, every company has its own policy in determining capital structure for operating business activities. Some of the business use only equity capital some use only debt capital and some combine both equity and debt capital. Therefore, determination of the capital structure largely depends upon the company policy and cost of capital. Most of the companies make low cost capital structure.

As underdeveloped country, Nepal has many manufacturing companies established and yet few are running and majority closed down. There is no doubt that they need to seek for long term profits and be transparent in their strategy, policy and management so as to contribute more to country's GDP.

This research attempts to have the answer of following question:

- a) How are selected companies managing their capital structure?
- b) Are selected companies capable of paying their interest?
- c) What is the strength of capital structure position of selected companies?
- d) Which company has more income between selected companies based on their capital structure management?

- e) What is the capital mix of selected companies?

1.5. Objective of the Study:

Everyone is aware that every task is done with certain objectives. Objectives are destination point of each task, plan and work. Each task is started with certain objectives. So, this study also has some major objectives. As we are the student of management, especially financial management, we must have knowledge about financial management of the companies.

This study concerns to analyze, evaluate and interpret the capital structure employed by the selected organizations. Thus the specific objectives of the study are pointed out as follows:

- a) To examine the capital structure of selected sample companies.
- b) To assess the interest paying capacity of the selected companies.
- c) To measure the strength of capital structure position.
- d) To compare income of two companies based on their capital structure management.
- e) To analyze the capital mix of selected companies.

1.6. Limitation of the Study

Every research study has been completed with few considerations or limitation. In Nepalese context, data problem is very acute. Necessary data may not be available due to business secrecy and only audited data was available. Maximum effort was given for not deviating from the facts and figures while presenting and analyzing the data and information. However, this study was completed with some of the following considerations which aren't eliminated. Some of the limitations of the study are following.

- a) Basically the study was based on the secondary data and general discussion and questionnaire was support for the basic or primary data.

- b) The consistency of the result is strictly based on the information provided to us.
- c) The main purpose of the study is to fulfill the partial requirement of MBS thesis.
- d) The purposed study was based on data of five fiscal year covering year 2007 to 2011 and the conclusion is drawn from the period under study.
- e) Due to the lack of time and financial resource only two companies are selected as sample for study.

CHAPTER II

REVIEW OF LITERATURE

Introduction:

This chapter includes the literature of previous studies and conceptual framework for the related studies such as books, journals, research paper and other studies related to the capital structure, cost of capital, theories of capital structure and financial leverage. For every study some past records like previously prepared thesis from some college and some books which are related and very helpful to the studies. To present the real framework of the research mere analysis is not enough; review of some related materials should be included with to give the research a clear vision. It covers those studies which are conducted within and outside the country. It has been expected that the review will help to make the research more effective and useful. This helps the researcher to explore what kind of research studies have already been conducted in his/her field of study and thus reduces the probability of duplication. Moreover, it is useful for exploring what areas of research are still left to be conducted.

2.1 Conceptual Framework

The term capital structure represents the total long-term investment in a business firm. It includes funds raised through ordinary and preference shares, bonds, debentures, term loans from financial institutions, etc. Any earned revenue and capital surpluses are included. In other words, Capital structure is a mixture of both debt and equity securities. Nowadays, almost in every company debt and equity are used. In some companies more amount is collected from the equity where as in other companies more amount is collected from debt capital. Decision regarding what type of capital structure a company should have is of critical importance because of its potential impact on profitability and solvency. The ratio of collecting such amount varies from company to company. The main component that mostly used on capital structure of the companies is as follows:

I) DEBT CAPITAL

Debt is one source of money collection to run the company. It includes loans and other types of credit that must be repaid in the future, usually with interest. The debt element in capital structure is a tool utilized in order to increase profitability. Debt has two important advantages. First, the interest paid is a tax deduction, which lowers debt's effective cost. Second, debt holders get a fixed return, so stock holders do not have to share the profits if the business is extremely successful. However, debt also has some disadvantages. First, the higher the debt ratio, the riskier the company, hence the higher it's cost of both debt and equity. Second, if a company falls on hard times and operating income is not sufficient to cover interest charges, its stockholders will have to make up the shortfall, and if they cannot, bankruptcy will result. There can be various debts in terms of expire of time:

- (a) Short Term Debt
- (b) Long Term Debt

II) EQUITY CAPITAL

Equity is a stock or any other security representing an ownership interest. The amount of capital, which has been collected from the selling of shares, is known as Equity capital. In contrast to debt financing, equity financing does not involve a direct obligation to repay the funds. Instead, equity investors become part-owners and partners in the business, and thus are able to exercise some degree of control over how it is run. There can be different types of shares as:

- (a) Common Stock
- (b) Preference Stock
- (c) Retained Earning

In equity capital, certain amount is provided to the shareholders as a dividend. So, all the shareholders will receive dividend for investing their capital in the shares.

Capital structure consists of the combination of various resources that establish equity and debt. It is the permanent financing of the firm represented preliminary by long term debt, preferred stock and common equity, but excluding all the short term credit.

The capital structure is the combination of the long term debt and equity; it is a part of financial structure, comprised of total combination of preferred stock, common stock and long term debt and current liabilities. If current liabilities are removed from it we get capital structure.

Capital structure represents the relationship among different kinds of long term sources of capital and their amount. Normally, a firm raises long term capital through the issue of common shares sometimes accompanied by preference shares. The share capital is often supplemented by debt securities and other long-term borrowed capital. In some cases, the firm accepts deposits. In going concern, retained earnings or surplus too form a part of capital structure. Except for the common shares, different kinds of external financing i.e. preference as well as borrowed capital carry fixed return to the investors.

Capital structure is made up of debt and equity securities which comprise a firm's finance of its assets. It is the permanent financing of the firm represented by long term debt plus preferred stock plus net worth. Capital structure decision is one of the most important decisions that are taken by financial manager. Once the financial manager is able to determine the best combination of debt and equity, he or she must raise the appropriate amount through best available sources.

2.1.1 Optimal capital structure

Financial manager should be very much careful while designing capital structure of the firm because capital structure decision affects the cost of capital and value of the firm. Company's financial manager should try to minimize the cost of capital and maximize the shareholders wealth or value. The structure of long-term financing which minimizes the overall cost of capital or maximizes the value of firm is called optimal capital structure. At optimal capital structure market price per share is also maximized. As a result, shareholder's wealth is maximized and goal of the firm is achieved. Optimal capital is also called target capital structure. Target capital structure is the structure at which the firm ultimately plans to operate.

An optimal capital structure is usually defined as combination of debt and equity that will minimize a firm's cost of capital, while maximizing shareholder's wealth. Hence, it maximizes firm's cost of capital. The value will be maximized and the cost will be minimized, when the margined cost of each source of the funds is same. The optimal capital structure is combination of debt, preferred stock and common equity at which the weighted average cost of capital is optimal. Optimal capital structure is refers to that combination of debt and equity where the value of the firm is maximized.

The optimal capital structure may be defined as the relationship of debt and equity securities that maximizes the value of firm's equity stock. There should be balance between risk and return borne by equity shareholders and optimal capital structure plays an important role in balancing it. The objectives of optimal capital structure are as follows:

a) Minimum cost of capital

Optimal capital structure minimizes the cost of capital of the firm. As a result shareholder's return and value maximized at optimal capital structure.

b) Risk

Optimal capital structure should be less risky. The use of excessive debt threatens the solvency of the company. Company should be use debt to that extent up to which debt does not and significant risk; otherwise its use should be avoided.

c) Flexibility

The capital structure should be flexible. Flexibility in capital structure helps to grab market opportunity as company can raise required funds whenever it is needed for profitable investment opportunities. It also helps to reduce costs (cost of debt and preferred stock) when funds raised from debt and preferred stock are no more required in the business.

d) Capacity

The capital structure should be determined within the debt capacity of the company, and this capacity should be not been exceeded. The debt capacity of a company depends on its ability to generate future cash flows. It should have enough cash to pay creditors fixed charges and principal sum.

e) **Control**

Control power is the one of the most concerned part for the management. Management always wants to maintain control over the firm. The capital structure should involve minimum risk of loss of control of the company. Issue of excess equity shares to new investors may bring threats to the control of existing manager.

2.1.2 Financial structure and capital structure

Capital structure refers to the combination of long-term sources of funds, such as, long-term debt, preference stock and common equity including reserves and surpluses (i.e. retained earnings). Capital structure represents the relationship among different kinds of long term sources of capital and their and their amount. Normally, a firm raises long term capital through the issue of common shares; sometimes accompanied by preferences shares. The share capital is often supplemented by debt securities and other long term borrowed capital. In a going concern, retained earnings or surplus too form a part of capital structure. Except for the common shares, different kinds of external financing i.e. preferences shares as well as the borrowed capital carry fixed return to the investors. Capital structure of a firm can be shown in equation 1.1.

$$\text{Capital Structure} = \text{Long term debt} + \text{Preferred Stock} + \text{Common equity} \dots (1.1)$$

Financial structure refers to the composition of all sources and amount of funds collected to use or invest in business. In other words, financial structure refers to the ‘capital and liabilities side of balance sheet’. Therefore, it includes shareholder’s funds, long-term loans as well as short- term loans. It is different from capital structure as capital structure includes only the long- term sources of financing while financial structure includes both long term and short term sources of financing. Thus, a firm’s structure of a firm can be shown in equation 1.2.

$$\text{Financial Structure} = \text{Current Liabilities} + \text{Long term debt} + \text{Preferred stock} + \text{Common Stock} \dots (1.2)$$

The relationship between financial and capital structure can be expressed in equation 1.3.

$$\text{Financial Structure} = \text{Current Liabilities} + \text{Capital Structure} \dots \dots \dots (1.3)$$

Traditionally short term borrowing are excluded from the list of methods of financing the firm's capital budgeting decisions and therefore the long – term claims are said to represent the proportionate relationship between debt and equity. Equity includes paid up share premium and reserves and surplus (retained earnings). Financial structure is different form capital structure as capital structure includes only the long-term sources of financing while financial structure includes both long-term and short-term sources of financing.

2.1.3 Theories of Capital Structure

In respect to capital structure decision of the firm, several capital structure theories have been developed over the period. Those theories are:

- Net income approach (NI)
- Net operating income approach (NOI)
- Traditional approach
- Modigliani-Miller's approach:-
 - Without taxes
 - With taxes

2.1.4 Assumption of the theory of Capital Structure

To present the analysis as simply as possible, the following assumptions have been made:-

- There are no corporate or personal income taxes.
- The firm's total assets remains constant but its capital structure can be changed by selling debt to repurchase common stocks or by selling shares to retire debt.
- The firm has a policy of paying 100 percent of its earnings in dividends; i.e.

dividend payout ratio is 100 percent.

- The net operating income of the firm is not expected to grow or decline over time. The expected values of the probability distributions of expected operating earnings for all future periods are the same as present operating earnings.
- Firms employ only two types of capital i.e. debt & equity.
- The firm's is expected to continue indefinitely.

In this analysis of capital structure theories the following three rates are concerned

$$\text{i) } K_i = \frac{F}{B}$$

$$\text{ii) } K_e = \frac{E}{S}$$

$$\text{iii) } K_o = \frac{NOI}{V_r}$$

Where, $V_r = B + S$. Here, K_o is an overall capitalization rate for the firm. It is defined as the weighted average cost of capital and may also be expressed as follows;

$$K_e = K_i \left(\frac{B}{B + S} \right) + K_e \left(\frac{S}{B + S} \right)$$

Where,

K_i = Cost of debt,

F = Annual interest charges or total interest payment,

B = Total market value of debt

K_e = Cost of equity,

E = Earning stock outstanding (net income available to equityholders)

K_o = Overall capitalization rate or overall cost of capital,

NOI = Net operating income or earnings

S = Total market value of equity

V_f = Total market value of the firm. (i.e. $B + S$).

2.1.5 Net income (NI) Approach

This net income approach is suggested by David Durand. According to this approach the capital structure decision is relevant to the valuation of the firm, in other words, a change in the capital structure or financial leverage will lead to a corresponding change in the overall cost of capital as well as the total value of the firm. The degree of financial leverage is measured by the ratio of debt to equity. The weighted average cost of capital will decline, while the value of firm as well as the market price of ordinary shares will increase with the increase in leverage conversely, a decrease in leverage will cause an increase in the overall cost of capital and a decline both in value of the firm as well as market price of the equity shares.

The NI approach to valuation is based on the following three assumptions:

- i) There are no taxes.
- ii) That the cost of debt is less than the equity capitalization rate/cost of equity.
- iii) That the use of debt doesn't change with the introduction of debt or change is either the cost of debt or cost of equity.

The financial leverage according to NI approach is an important variable in the capital structure decision of a firm with a judicious mixture of debt and equity a firm can involve an optimum capital structure, which will be the one at which value the firm uses no debt or if the financial leverage is zero the overall cost of capital will be equal to the equity capitalization rate, the weighted average cost of capital will decline and will approach the cost of debt as the degree of leverage reaches one (*Khan and Jain1995*).

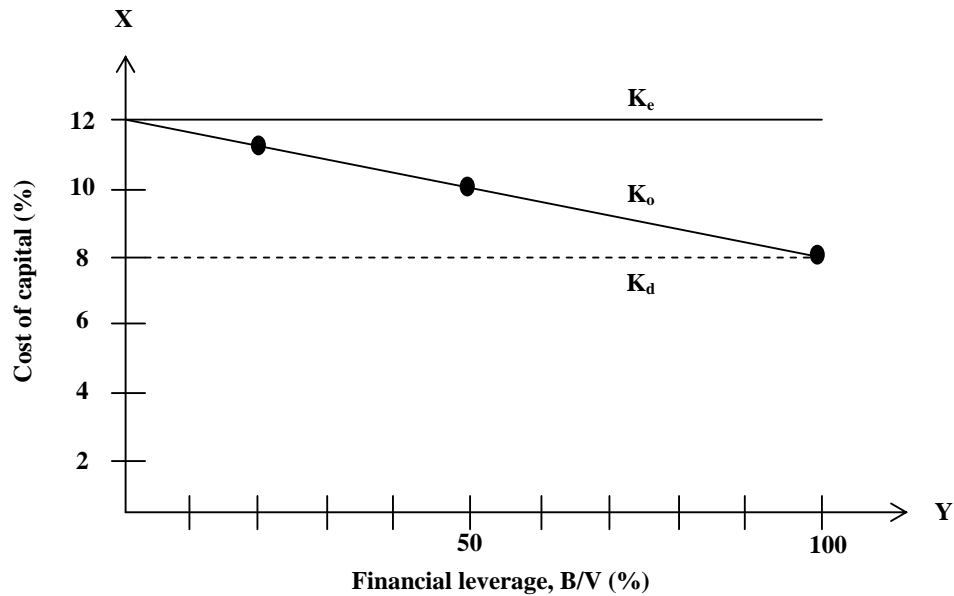
“The essence of the net income approach is that the firm can increase its value and lower the overall cost of capital by increasing the proportion of debt in the capital structure” (*Pandey1998*).

The use of additional debt has caused the total value of the firm to increase and the overall cost of capital to decrease. Thus, the decrease in leverage has increased the overall cost of capital and has reduced the value of the firm. As a result, the market price per share is affected (*Khan and Jain, 1992:479*).

The relationship between the various factors (i.e. k_e , k_i , k_o ,) with the degree of leverage, on the basis of its above mentioned assumption can be presented by figure as under.

Figure No. 2.1

Cost of Capital and Financial Leverage under Net Income Approach



The degree of operating leverage (B/S) is plotted along the X-axis, while the percentage rate for K_i , K_e and K_o on the Y-axis. Due to the assumptions that k_e and k_i (i.e. cost of equity and cost of debt respectively) remain unchanged as the degree of leverage changes, where both curves are parallel to the X-axis. But as the degree of leverage increases, k_o (i.e. overall cost of capital) decreases and approaches the cost of debt when the leverage is 1.0, (i.e. $k_o=k_e$). It is obvious owing to the fact there is no equity amount in the firm's capital structure. At this point, the firm's overall cost of capital would be minimized. Therefore, the significant conclusion of the NI approach is that the firm can employ almost 100% debts to maximize its value.

Under this approach, total value of firm and k measured by (*Pandey, 1998:231*)

$$K_o = \frac{NOI}{V_r}$$

Where, k_o = overall cost of capital, NOI = Net operating income, V_r = value of the firm (i.e. B+S), B = Market value of debt outstanding S = Market value of stock outstanding.

2.1.6 Net operating Income approach (NOI)

Another theory of capital suggested by Durand David is the net operating income (NOI) approach. This approach is opposite to the NI approach. The essence of this approach is that the leverage/ 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 the market price per shares, as the overall cost of capital is independent of the degree of leverage, and this approach (NOI) is based on the following proposition (*Khan and Jain: 1992*).

- Overall cost of capital or capitalization rate k is constant-the NOI approach to valuation argues that the overall capitalization rate of the firm remains constant for all degree of leverage. The value of the firm, given the level of EBIT, is calculated as:

$$V = \frac{EBIT}{K_o}$$

In other words, the market evaluates the firm as a whole. The split of the capitalization between debt and equity is therefore, not important.

- Residual value of equity- the value of equity is a residual value, which is determined by deducting the total value of the debt (B) from the total value of the firm V_f . Thus, total market value of equity (S) = $V_f - B$.
- Changes in cost of equity capital- the cost of capital (k_e) increase with the degree of leverage. The increase in the proportion of debt in the capital structure relatively to equity shares would lead to an increase in the financial risk to the ordinary shareholders. In other words, the use of less costly debt funds increases the risk to shareholders. Thus, the advantage of debt is offset exactly by the increase in the equity-capitalization rate (K_e).

- Cost of debt- it has two parts, they are (i) explicit cost-represented by the rate of interest. Irrespective of the degree of leverage, the firm is assumed to be able to borrow at a given rate of interest. This implies that the increasing proportion of debt in the financial risk of the lenders and they don't penalize the firm by charging higher interest (ii) Implicit or hidden cost- as shown in the assumption relating the changes in k_e , increase in the leverage or the proportion of debt to equity causes an increase in the cost of equity capital. This increase in k_e being attributable to the increase in debt is the implicit part of k_i . Thus, the advantage associated with the use of debt, supposed to be a cheaper source of funds in terms of the explicit cost is exactly neutralized by the implicit cost represented by the increase in k_e , as a result, the real cost of debt and the real cost of equity, according to the NOI approach is the same and equal k_o .
- Optimum capital structure- the total value of the firm is unaffected by its capital structure, no matter what the degree of leverage is, the total value of the firm will remain constant. The market price of shares will also not change with the change in the debt-equity ratio. There is nothing such as an 'optimum capital structure'. Any capital structure is optimum according to this NOI approach. Other critical assumption of the NOI approach can be explained as:
 - i) the corporate taxes don't exist.
 - ii) the debt capitalization rate K_j is constant as K_o .
 - iii) the market uses an overall capitalization rate (K_o) to capitalize the net operating income,
 - iv) K_o depends on the business risk, if the business risk is assumed to remain unchanged, K_o is a constant.

$$Vr = (B+S) = \frac{NOI}{K_o}$$

The cost of equity (K) will be measured as follows:

$$K_e = K_o + (K_o - K_e) \frac{B}{S}$$

Or,

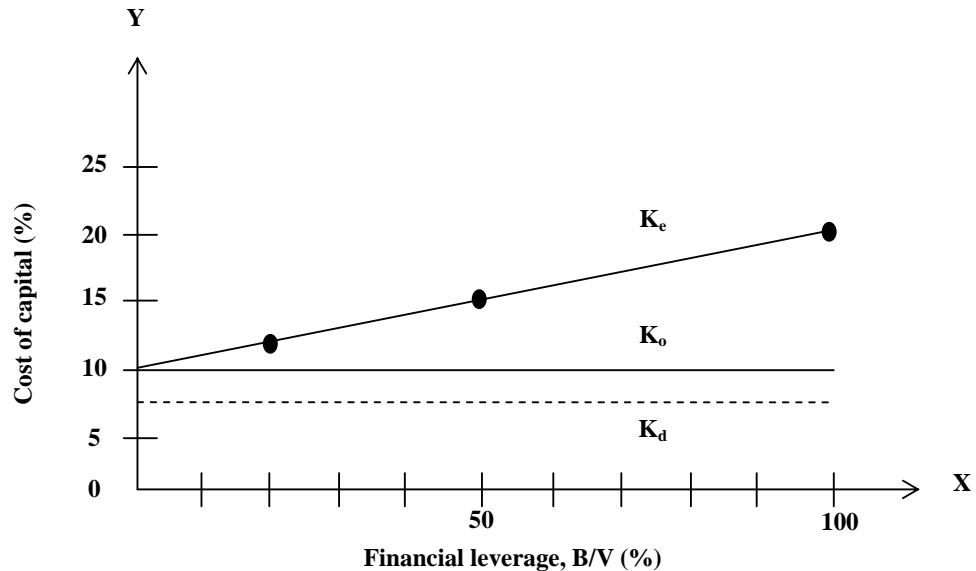
$$K_e = \frac{E}{S}$$

Where, E is simply net operating income minus interest payments and S is market value of stock.

The relationship between the various factors (i.e. K_e , K_i , K_o) with the degree of leverage, on the basis of its above-mentioned assumptions, can be presented in figure as follows:

Figure No. 2.2

Cost of Capital versus Financial leverage under Net Operating Income Approach



With this approach, net operating income is capitalized at an overall capitalization rate to obtain the total market value of the firm. The market value of the debt then is deducted from the total market value to obtain the market value of the stock. Under this approach (NOI), the overall capitalization rate, K_o as well as the cost of debt funds, K_i stay the same regardless of the degree of leverage. The required return on equity, however, increases linearly with leverage.

The critical assumption with this approach is that K_o is constant, regardless of the degree of leverage. The market capitalizes the value of the firm as a whole; as a result, the breakdown between debt and equity is unimportant. An increase in the use of supposedly 'cheaper' debt funds is offset exactly by the increase in the required equity return, K_e . Thus, the weighted average of K_e and K_i remains unchanged for all degrees of leverage.

As the firm increases its degree of leverage, it becomes increasingly more risky. As long as K_i remains constant, K_e is a constant linear function of the debt-to-equity

ratio. Because the K_o can't be altered through leverage, the NOI approach implies that there is one optimal capital structure.

2.1.7 Traditional Approach (TA)

“The traditional approach to valuation and leverage assumes that there is an optimal capital structure and that the firm can increase the total value of the firm. The traditional approach is also known as intermediate approach. The traditional approach of capital structure has been popularized by Ezra Solomon. This approach is compromise between Net Income (NI) and Net Operating income (NOI) approach.

According to this view, the value of the firm can be increased or the judicious mix of debt and equity capital can reduce the cost of capital. In addition, the cost of capital decreases with the reasonable limit of debt and then increase with leverage. Thus an optimal capital structure exists when the overall capitalization rate is minimized or the value of the firm is maximized.

Under this approach the equity capitalization rate is higher than debt capitalization rate. It means the debt funds are cheaper than equity funds. The total is called overall cost of capital or overall capitalization rate. This rate will be less than the cost of equity and higher than the cost of debt.

According to the traditional position, the manner in which the overall cost of capital reacts to changes in capital structure can be divided in to three stages (*Pandey; 1998*)

- **Increasing Value Stage**

This is the first stage in this first stage, the rate at which the shareholders capitalize their net income, i.e. the cost of equity (K_e), remains constant or rises slightly with debt. But when it increases it doesn't increase fast enough to offset the advantage, of low cost debt. During this stage, the cost of debt (K_i) remains constant or rise negligibly. Since, the market views use of debt as a reasonable policy. As a result, the value of the firm (V_f) increases or the overall cost of capital (K_o) fall with increasing leverage.

Under the assumption that 'K_e' remain constant with the acceptable limit of debt, the value of the firm will be,

$$\begin{aligned}
 V = S + B &= \frac{X - K_d B}{K_e} + \frac{K_d B}{K_d} \\
 &= \frac{X - K_d B}{K_e} + B \\
 &= \frac{X}{K_e} + \frac{(K_e - K_d)B}{K_e} \dots\dots\dots (2.2)
 \end{aligned}$$

Thus, so long as 'K_e and 'K_d' are constant the value of the firm 'V' increases at constant rate (K_e-K_d)/K_e as the financial leverage increases.

When equation (2.1) is solved for X/V

$$\text{We get } K_o = X/V = K_e - (K_e - K_d) \times B/V \dots\dots\dots (2.3)$$

Where,

- X= Net operating income
- B= Bond Value (Debt)
- S= Equity Capital
- K_d= Cost of debt
- K_e= Cost of equity
- V= Value of the firm
- K_o= Cost of overall Capitalization rate.

This implies that, with K_e>K_d, the average cost of capital will decline with leverage.

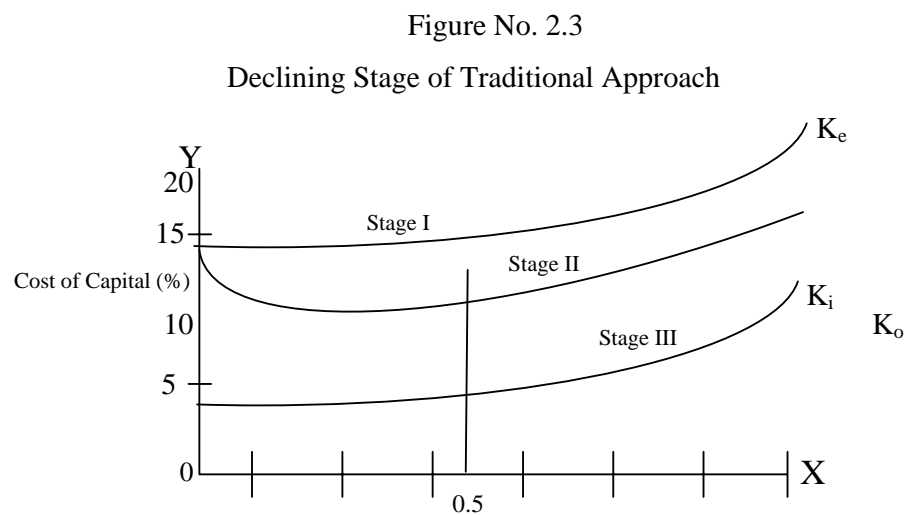
▪ **Optimal Value Stage**

This is the second stage. In the second stage, when the firm has reached to a certain degree of financial leverage, further application of debt will increase the cost of equity due to the added financial risk that offsets the advantages of low cost debt. Hence, the

total market value of the firm remains unchanged within the range of such debt level or at a specific point the value of the firm will be maximized or the costs of capital will be minimized.

▪ **Declining Stage**

In this stage, the value of the firm decreases with leverage or the cost of capital increases with leverage. This happens because, the investors perceive a high degree of financial risk and increase equity capitalization rate by more than to offset the advantage of low cost debt. It can be shown from following figure:



Leverage of Degrees (B/S)

Under such situation, there is a precise at which the cost of capital would be minimum. The precise point would occur at that optimum degree of leverage, at which marginal cost of debt is equal to the overall cost of capital.

2.1.8 Modigliani and Miller Approach (MM)

In 1958, Franco Modigliani and Morton H Miller published a research paper “The cost of capital corporation Finance and theory of Investment” where a comprehensive analysis of capital structure was revealed. It has added a milestone on the theory of

capital structure, “The Modigliani-Miller thesis relating to the relationship between the capital structure, cost of capital and valuation is needed to the net operating income (NOI) approach” (*Khan and Jain, 1992*).

M-M proposition supports the degree of leverage at any level of debt equity ratio. M-M theory is based on the following assumptions:

1. Perfect capital markets: This specifically means that investors are free to buy or sell securities.
 - i. They can borrow without restriction at the same terms as the firms do, and
 - ii. They behave rationally. It is also implicit the transaction costs i.e., the cost of buying and selling securities do not exist.
2. Homogenous risk classes: Firms can be grouped in to homogeneous risk classes. Firms would be considered to belong to a homogeneous risk classes if their expected earnings have identical risk characteristic. It is implied under the M-M hypothesis that forms with in same industry constitute a homogeneous class.
3. Risk: The risk of investors is defined in terms of the variability of the net operating income (NOI).
4. No taxes: Originally M-M assumes that no-corporate income taxes exist. This assumption is relaxed later on.
5. Full payout: Firms distribute all net earnings to the shareholders.

M-M theory can be explained two ways.

a. M-M Theory (without taxes) and

b. M-M Theory (with taxes)

a. M-M Theory(without taxes)

Modigliani and Miller (M-M) support the relationship between leverage and cost of capital that explained by NOI approach. They argue that in the absence of taxes, total market value and cost of capital of the firm remain in variant to the cost of capital structure change. “ They make formidable attack on the traditional position by offering behavioral justification for having the cost of capital remains constant throughout all degree of leverage”(*Solomon, 1996*).

M-M contained that the cost of capital is equal to the capitalization rate of pure equity stream on income and the market value is ascertained by capitalizing its expected income at the appropriate discount rate for its risk class. The M-M cost of capital hypothesis can be best expressed in terms of their propositions I and II.

Proposition I

The M-M proposition I, states that the market value of a firm is independent of its capital structure. It is because the value of the firm is determined by capitalizing the net operating income (NOI or EBIT) at a rate appropriate for the firms risk class. Accordingly, the value of firm is obtained by

$$V = \text{NOI} / K_o$$

Where,

V = value of the firm

NOI = Net operating income

K_o = Risk adjusted capitalization rate.

The M-M proposition I also implies that the weighted average cost of capital (K_o) to any firm i.e., levered or unlevered is completely independent of its capital structure and equal to the cost of equity (K_e) to an unlevered firm in the same risk class. Thus, there is no relationship between the value of a firm and the way its capital structure is made up, nor there is any relationship between the average cost of capital and the capital structure, it is identical to the NOI approach.

Proposition II

The proposition II states the cost of equity rises proportionately with the increase in the financial leverage in order to compensate in the form of premium for bearing additional risk from risk arising from the increased leverage. In other words, for any firm (i.e. levered or unleveled in a given risk class the cost of equity) the cost of equity is equal to the constant average cost of capital and interest. It can be expressed as follows:

$$K_e = K_o + (K_o - K_d) D/E$$

Where,

K_e = cost of equity

K_o = Average cost of capital

K_d = cost of debt or interest rate

D/E = debt equity ratio.

The validity of proposition II depends up on the assumptions that K_d will not increase for any degree of leverage but in practice K_d increases with leverage beyond a certain acceptable level. However, M-M mentions that even if K_d is function of leverage, K_o will remain constant, as well as K_e will increase at a decreasing rate. (*Pandey; 1987*).

Thus, taking both the proposition I and II together, the M-M theory in the absence of taxes contends that the overall cost of capital as well as the value of the firms are independent of capital structure. The theory in a tax free world is identical to the approach. In other words, the value of levered firm (V_L) is equal to the value of unlevered firm (V_U) in the risk class i.e., $V_L = V_U$.

b. M Theory (with taxes)

At first, M-M assumes that the corporate tax does not exist and said that cost of capital and the value of firm are independent to the capital structure decision. This assumption was not valid in reality, there exist corporate taxes and interest on debt is deductible for the purpose of the tax calculation. Thus, the value of levered firm will be more by the present value of debt tax shield than that of unlevered firm. In other words, the value of levered firm is equal to the value of unlevered firm plus present value of debt tax shield. This can be shown equation:

$$V_L = V_U + TB$$

Where,

V_L = Value of levered firm

V_U = value of unleveled firm

T = tax rate

B = amount of debt

Thus, M-M proposition I with taxes indicates that $V_L > V_U$ and suggests that a firm's value rises continuously as it moves from zero debt to 100% debt.

Proposition I

“The M-M proposition states that the cost of equity of levered firm rises with leverage ratio to compensate for the additional leverage risk while the cost of debt remains constant because the debt is assumed to be risk less” (*Pradhan; 1986*).

Accordingly the cost of equity is calculated as follows:

$$K_{eL} = K_{eU} + (K_{eu} - K_d) (1-t) D/E$$

Where,

K_{eL} = Cost of equity of levered firm

K_{eu} = Cost of equity of unlevered firm

K_d = Cost of debt

T = tax rate

D/E = Debt equity ratio.

It indicates that the cost of equity increases with D/E ratio. On the other hand, the tax deductibility of interest on debt lowers the cost of debt but still remains constant irrespective of debt equity ratio. This reduction in the cost of debt as result of tax saving outweighs the increased cost of equity, forcing the average cost of capital to increase with every additional unit of debt financing. As such, the theory suggests that it is always better to have maximum debt financing.

Assumption of MM hypothesis

Perfect competition market environment where information relating investment is freely accessible there involves no transaction cost. In addition to this, investors are free to sell and buy the securities and can borrow without any restriction at the same rates as corporation does. All investors are rational and no investor can influence the market.

- The individual investors may have the different views as to the shape of the probability distribution but expected rate of return for all in is assumed the same.

- The division of the income between cash dividend and retained earning in any periods is a more detail or dividend payout ratio is 100%.
- There are no income taxes. Modigliani and Miller remove this assumption latter.
- Homogeneous business risk
(*Pandey, 1988:240*).

Assumptions of M.M. Hypothesis can be classified in two ways.

- A. M.M Hypothesis with no taxes.
- B. M.M. Hypothesis with taxes.

A: M.M. Hypothesis with no taxes is identical to Net operating income approach, which has already been explained.

B: According to Franco Modigliani and Merton H. Miller hypothesis with taxes, the value of levered firm must be greater than value of unlevered firm by the amount of debt tax shield (*Merton H. Miller and Franco Modigliani, 1966*)

a) Debt tax shield when corporate tax is given present value of Debt –tax shield =
 $B \times T \dots \dots \dots (2.4)$

Where,

B= value of debt

T= corporate Tax

b) Debt tax shield when corporate and personal taxes are given.

Present value of debt-tax shield =

$$B \times \left[1 - \frac{(1-t)(1-t_{cs})}{1-tb} \right]$$

Where,

t = Corporate Tax

t_{cs}= personal tax an common stock

t_b = Marginal personal tax on debt.

Proposition I

According to assumption of M-M hypothesis that for firm in same class business risk, value of the firm is independent of its capital structure i.e. financial leverage. This is their proposition it can be expressed as follows (*Pandey, 1988:240*).

$$V=(S+B) = X/K_o=NOI/K_o.....(2.6)$$

Proposition I can be stated in an equivalent way in terms of the firms overall cost of capital (K_o), which is the ratio of the market value of all its securities.

That is:

$$\frac{X}{(S + B)} = \frac{X}{V} K_o (2.7)$$

If defining K_d as the expected return on the firms debt and K_e as the expected return on the firm’s equity then expected net operating income is given as,

$$X=K_oV=K_oV+K_dB$$

As given in equation (2.7) by definition

$$K = X/V$$

$$K_o =K_e \frac{B}{S + B} + K_d \frac{B}{S + B} (2.8)$$

It can be expressed as follows too,

$$V_L=V_u=X/K_{ou}$$

Where,

K_{ou} = cost of overall capital of unlevered.

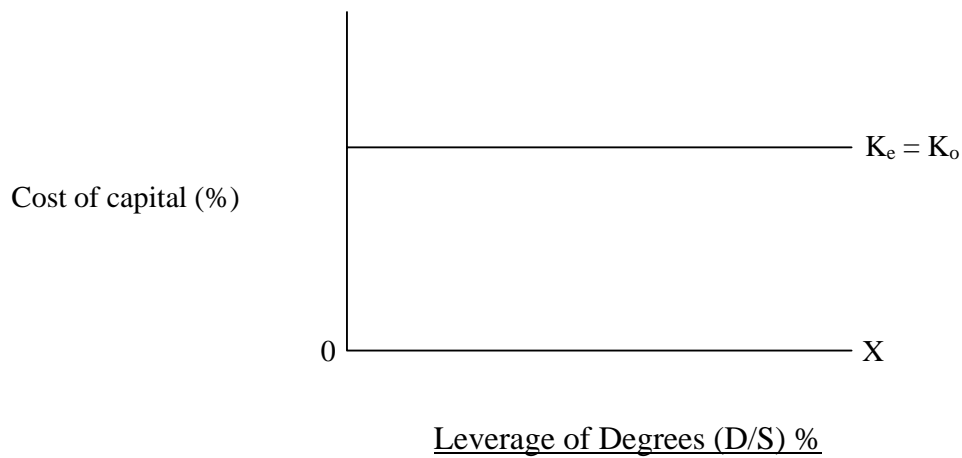
V_L = value of levered firm

V_u = value of unleveled firm.

Thus, under the conditions we have specified, the value of levered firm is equal to the value of unleveled firm. This is the famous capital structure irrelevance or leverage irrelevance of proposition- I of Modigliani-Miller.

M.M. concluded that the total market value of firm is unaffected by financing mix, it follows that the cost of capital is independent of the capital structure and is equal to the capitalization rate of a pure equity stream of its class (*Pandey, 1988:241*). The cost of capital functional, as hypothesized by M.M. through proposition-I, is shown in figure 2.5

Figure No. 2.4
M.M Approach Proposition-I



It is evident from figure 2.5 that average cost of capital is a constant and is not affected by leverage.

Proposition II

Based on proposition I, M.M. formulated proposition II, which defines the cost of equity is the linear function of the leverage. The equation form of this proposition can be expressed as follows.

$$K_e = K_o + (K_o - K_e) \frac{D}{S} \dots \dots \dots (2.9)$$

Validity of the M.M. proposition II depends up on the assumption of 'K_e' constant for only degree of leverage. But in real Business world 'K_e' increases with leverage beyond a certain acceptable level of leverage According to this assumption.

$$K_{oL}=K_{ou}$$

K_{oL}= cost to overall capital of levered firm.

K_{ou}= cost to overall capital of unleveled firm.

2.1.9 Determinants of the Capital structure

The initial capital structure should be designed very carefully. The management of company should set a target capital structure and the subsequent financing decision should be made with a view to achieve the target capital structure. The financial manager has also to deal with an existing capital structure. Every time, when the funds have to be procured the financial manager weigh the pros and cons of various sources of finance and selects most advantageous sources of capital structure. Generally the following factors should be considered whenever a capital structure decision has to be taken.

- I. **Leverage effect on EPS:** - The use of fixed cost sources of financing such as debt and preference share capital to finance the assets of the company is known as financial leverage. If the assets financed with the use of debt yield a return greater than the cost of debt, the earning per share increase without an increase in the owner's investment, the EPS also increase when the preference share capital is used to acquire assets. But leverage impact is more pronounced in case of debt because the cost of debt is usually lower than the cost of preference share capital and interest paid on debt is tax deductible, because it effects in the EPS. Financial leverage is one of the important considerations in planning the capital structure of a company. The companies with high level of earnings before interest and taxes can made profitable use of the high degree of leverage to increase return on the share holder's equity. The firm is able to maximize the EPS when it uses the debt financing. Through the rate of preference dividend is equal to the rate of interest, EPS is high in case of debt

financing because the interest charges are tax deductibles while preference dividends aren't. The EBIT-EPS analysis is an important tool in the hands of the financial manager to get an insight to the firm's capital structure management and the financial manager can consider the possible fluctuations in EBIT and examine their impact on EPS under different financial plans.

- II. **Sales stability and growth rates:** - Firms whose sales are relatively stable can safely take on more debt and incur higher fixed charges than a company with unstable sales. As far as growth rate is concerned, other things remaining the same, faster growing firms must rely more heavily on external capital, i.e. they tend to use more debt.
- III. **Profitability:** - Firms with higher rate of return on investment use relatively little debt because company's high rate of return enables them to do most of their financing with retained earnings.
- IV. **Taxes:** - Interest is a deductible expense, and deductions are most valuable to firms with high tax rates. Therefore, the higher a firm's tax rate, greater the advantage of debt.
- V. **Management attitude:** - Since no one can prove that one capital structure will lead to higher stock prices than another, management can exercise its own judgments about the proper capital structure some management tends to be more conservative than others and thus use less debt than the average firm in their industry, whereas aggressive management use more debt in the quest for highest profits.
- VI. **Lender attitude:**-Lender's attitude frequently influences capital structure decision. Lenders emphasize that excessive debt reduces the credit standing of the borrower and the credit rating of the securities previously issued. The corporation discusses its financial structure with lenders and gives much weight to their advice.
- VII. **Flexibility:** - Flexibility is one of the most serious considerations in setting up the capital structure; it is the firm's ability to adapt its capital structure to the

needs of the changing conditions. The capital structure of a firm is flexible if it has no difficulty in changing its source of funds. The company should be able to raise funds without undue delay and costs. The financing plan of the company should be flexible enough to change the composition of the capital structure. The degree of flexibility in the capital structure of a company depends on the flexibility in fixed charges, the terms of redemption and the debt capacity, although flexibility is most desirable, it is achieved at a cost. A company trying to obtain loans at a easy terms will have to pay interest at a higher rate. Also to obtain the right of refunding, it will compensate creditors by paying a higher rate. Also to obtain the right of refunding, it will compensate the benefits and costs attaining the desired degree of flexibility and balance them properly.

VIII. Size of the company: - The size of the company greatly influences the availability of funds from different sources. Generally, a small has great difficulties in raising long term loans. On the other hand, if it is able to obtain some long term loan, it will be available at a higher rate of interest and inconvenient terms. Small companies depend upon share capital and retained earnings for their long term funds. The share of small companies are not widely scattered therefore, sometimes the small companies limit the growth of their business to what can easily be financed by retaining the earning. On the other hands, the share of large company is widely distributed and it may difficult to organize and to manage the widely scattered shareholders against the existing management team. A large company has a greater degree of flexibility in designing its capital structure. Such company can obtain the loans at easy terms as well as can sell their common stock, preference share and debentures to the public. Because of large size of issues, its cost of distributing any kinds of security is less than that for a small company. Thus a company should make a best use of its size in planning the capital structure.

IX. Marketability: - It is the readiness of investors to purchase a particular type of security in a given period of time. It doesn't influence the initial capital structure but it is an important consideration to decide about the appropriate

timing of security issues and at another time, it may readily accept common shares issues. The capital markets are changing continuously. The market favors debenture issues and at another time, it may readily accept common shares issues. Due to the changing market sentiments the company has to decide whether to raise funds with a common share issue or with a debt issue. Thus, it should be considered in planning the capital structure to the company.

- X. **Flotation Cost:** - It is not a very important factor influencing the capital structure. Flotation cost is incurred only when the funds are raised. Generally, the cost of floating a debt is less than the cost of floating equity issue. This may encourage a company to use debt than issue common shares. If retaining the earning increases the owner's capital, no flotation cost is incurred.

2.2 Review of Related Studies, Articles and Thesis

A number of studies has been conducted in ten various aspects of capital structure in Nepal. They are reviewed here under.

2.2.1 Review of Related Studies under Foreign Context

Milton Haris and Artur Ravis (1991) synthesized the recent literature, summarized the theories of capital structure, related to the known empirical evidence, and suggested promising avenues for future research. First they focus the theory of capital structure, second they arbitrarily exclude theories based primarily on tax consideration. Third they systematically exclude certain topics that, while related to capital structure theory does not have this theory as their control focus. In short, they concentrated on non-tax-drives capital structure theory.

They have identified four categories of determinants of capital structure. These are the desire to:

- Rectify conflicts of interest among various groups with claims to the firm's resources, including managers.
- Convey private information to capital market or mitigate adverse selection effects, in the product/ input market or,

- Affect the outcomes of corporate control contests.

According to them, each of these four categories is discussed in a separate section. The plan of their studies is as follows. In section I they discussed model based on agency cost. Models using asymmetric information are considered in section II Interaction of capital structure with behavior in the product or inputs markets or with characteristics of product or inputs are taken up in section III Section IV surveys models based on corporate control consideration. In section V, they summarize the theoretical results and compare them with evidence. At last their conclusions are presented in section VI.

They have concluded on their studies that the theories surveyed have identified a great many potential determinants of capital structure (in addition to taxes). That means various variables affect the capital structure.

According to, Weston, Besly and Brigham's study (1996), capital structure theory has been developed along with two main line: (1) tax benefit bankruptcy cost trade-off theory and (2) signaling theory, they said that each firm has an optimal capital structure, defined as that mix of debt, preferred stock and common equity which minimize its weighted average cost of capital.

I.M. Pandey (1998), the professor of Indian institute of management, Ahmedabad had also studies about capital structure. According to him, under favorable economic conditions the earning per share increase with leverage. But leverage also increases the financial risk of shareholders. As a result, it cannot be stated definitely whether or not the value of the firm will increase with leverage. Further he has said if the value of the firm can be affected by capital structure which maximizes the market value of the firm. Pandey further added there exist conflicting theories on the relationship between capital structures: Pandey has argued that the capital structure decision of the firm can be characterized as a choice of that combination of debt and equity, which maximize the market value of the firm. He has supported to traditional approach the cost of equity declines with leverage at an acceptable range of debt and then starts to increase with increasing debt in capital.

James C. Van (1999), Horne has also presented controversial decision about capital structure. According to him, financial signaling occurs when capital structure changes convey information to security holders. It assumes symmetric information between management and stock holders. Management behavior results in debt issue being regarded as good news by investors and stock issues as bad news.

2.2.2 Review of Related Articles

There are various studies accepted on capital structure management of various state owned and public limited companies of Nepal. Most of the Studies indicates that a sound principle of capital structure and its management have not been followed by the enterprise in Nepal. The studies also observed defects in capital structure. As for example in many enterprises, their debt capital was comparatively higher than equity. So, the company was regarded as highly levered company. But with the progress of time, there have been a very few signs of recovery. Some measures were taken to bring down the amount of debt capital. Despite the company's performance have not better signs of recovery. The defective capital structure shown in the studies induced the researcher for the further study on the subject. The researcher may feel comfort, if the gap created by the previous studies can be filled up. Further , this study will help research student to carry further studies as well as, it will be helpful to the interested groups in the selected companies such as investors creditors etc. to analyze their position at a present and search for the prospective investors.

The following are the articles related to capital structure management of manufacturing company.

Monohar Krishna Shrestha (1985) his study on “analysis of capital structure in selected public enterprises” argue that most of public enterprises have confusing capital structure since the corporation are not guided by any objectives based financial plan and polices. The corporations are using least combination of debt with equity to avoid financial burden as far as possible. According to Mr.Shrestha, the debt-equity ratio should neither be highly levered to create too much financial obligations that lie beyond capacity to meet not should be much lower low levered to infuse operational strategy to bypass responsibilities without performance. He used ratio analysis as the

tool of analysis and found the selected public enterprises. He further added that in many instances aphorism become the basis of capital structure and most of them want to eliminate debt if possible to relieve financial obligations.

Radhe S. Pradhan (1994) on his financial management and practices in Nepal in 1992, The survey mainly dealt with financial function, sources and types of financing, financing decisions involving debt effect of change in taxes on capital structure, financial distress dealing with banks and dividend policy. The major findings of study connected with financial management are given as:

1. Banks and retained earnings are the two most widely used financing sources.
2. Generally, there is no definite time to borrow the issues stocks. That is majorities of respondents are unable to predict when interest rate will low or go up are unable to protect when the stock will go down or up.
3. The enterprises have a definite performance for bank loans at a lower level of debt.
4. Most enterprises do not borrow from on bank only and they do switch between banks which ever offer best interest rate.
5. Most enterprises find that banks are flexible in interest rate and convenience.

To sum up it can be said that out of numerous studies on the capital market of Nepal. This study is established itself as a milestone and an outstanding one.

Garvin Cassar (2003) published an article entitled “capital structure and financing of SMEs and is the evidence of Australia”. The article is about the investigation of determinants of capital structure and use of financing for small and medium sized enterprises. This paper investigates the determinants of capital structure and the use of developed to explain capital structure. With empirical evidence based upon large listed firms tending to support these theories. Institutional differences in the types of financial organizations, their pre-dominance and the traditional markets they serve, vary the way investment and capitals are allocated. For example, different investor groups may use investor groups exist, the allocation decisions may differ due to regulatory.

Toru yoshikawa and Philip H. phan (2005) published an article entitled “The effects of ownership and capital structure on board composition and strategic diversification in Japanese corporations” investigates the relationships between ownership and board structure with the diversification strategy of large Japanese firms.

The results show that corporate nominee directors are associated with lower of product diversification of their invested firms. This suggests that nominee directors in large Japanese corporations see themselves representing specific interests and therefore investors should pay attention to board composition in order to assess the level of protection they can expect to reserve. Even without any apparent agency problem with management, there remains a potential “principal- principal”.

2.2.3 Review of related studies and thesis under Nepalese context

Aryal (1995) in his dissertation on “An Evaluation of capital structure of bottlers Nepal limited” that the company does not have proper balance between debt and equity, he further suggested that the company must raise fund by equity capital because the risk can diverted, however, he made his analysis for five years period and he found that the company has to follow good policy to set the capital structure of the company.

Kafle (2001) has conducted research on “A comparative Analysis of capital structure between Lumbini sugar Factory Limited ND Birgunj sugars Factory Limited”.According to him both the companies were facing serious deterioration in earnings according to the net operation income approach. He noted down both the companies had defective capital structure as debt equity ratio were not so much satisfactory, Birgunj sugar Mills had low debt equity ratio. Which indicates access power of equity holders? And both the companies were unable to pay interest because they were operating at loss. As Birgunj sugar Factory was highly levered Lumbini sugar factory was unlied both the companies had defective capital structure.

Mr. Kafle suggested that it should change the debt equity ratio for sound capital structure management to maintain it in 1.1 ratios.

Shrestha (2002), in his analysis of capital structure in selected public enterprises has focused on providing the conceptual base and the determinants of capital structure analyzing the capital structure of selected public enterprises and suggested the possible measure to overcome the capital structure problems. He has calculated the cost of equity and weighted average cost of capital taking consideration the net operating income approach respectively. The capitalization rate and EBIT were found very poor and inconsistency. He also used the various ratios and the analysis of capital structure and found a very imbalance capital structure.

In this study, he found that neither there exists proper determinants not standard are developed to justify the appropriate capital structure. So, he argues that the public enterprises are following capital structure and neither government nor public enterprises themselves are serious for the use of appropriate capital structure. Interest obligation seems to be financial burden to the existing public enterprises to main an optimal capital structure because there is no reliable basis to ensure sound capital structure Dr. Shrestha concludes that the selected public enterprises under study have a very confusing capital structure. Since, the corporation is not guided by objective based financial plans and policies.

Finally, he suggested that the debt-equity ratio should neither be highly levered to create too much financial obligation that lie beyond capacity to met nor should it be much low levered to infused operational lethargy to bypass responsibilities without performance.

Baidhay (2004) has conducted research on “capital structure of manufacturing companies in NEPSE” suggested that the company should increase the equity proportion in financing its assets to be in the safe mode against liquidation and the company should try to streamline their sales. RSML and DFBPL should try to access longer source of debt which will be less costly for them rather than relying in short term loans.

Bhattarai (2005) in her research titled “capital structure of manufacturing companies in Nepal”, She has conducted that companies do not always plan capital structure and it develops as a result of the financial decisions taken be the financial manager

without any formal planning. Moreover some industries even could not meet the interest and other expenses from the income. So they increase loan and become more levered.

She suggested increasing the profitability of the company by reducing the profitability of the company by reducing the burden of interest on debt. The study recommends having the optimal capital structure. Hence, the excessive use of debt should be gradually curtailed in the coming year because the companies have no earning capacities to meet the interest burden.

Ghimire (2006) “capital structure management for small and medium sized enterprises is about the investigation of determinants of capital structure and use of financing for small and medium sized enterprises. This thesis investigates the determinants of capital structure and the use of developed to explain capital structure. With empirical evidence based upon large listed firms tending to support these theories. Institutional differences in the types of financial organizations, their predominance and the traditional markets they serve, vary the way investment and capitals are allocated.

By reviewing these empirical studies, we can make a general conclusion that in respect to imperfect capital market where the corporate tax exists, the use of debt in capital structure decreases the cost of capital. Bur the Nepalese companies don't have any guideline to make appropriate capital structure and they choose the capital structure randomly. In other words, relationship between capital structure and cost of capital may not have a definite trend in Nepal. So, there is need to carry our specific study on the impact of capital structure on cost of capital. This type of study is expected to provide useful information for policy market and implementation at both micro and macro levels.

2.3 Research Gap

Capital structure involves long term loans, financing decisions or choice between debt and equity capital. The cost of capital and value of the firm varies with changes in

capital structure. Capital structure represents the relationship among different kinds of long term sources of capital and their amount.

There is very limited study on capital structure management of listed manufacturing companies. Most of the studies are concerned with the research title “capital structure management”. Some researcher have selected varies manufacturing companies for the research and some have concentrated in only the company.

So, the research has chosen this topic throw light on capital structure management of listed manufacturing companies. Before this, there were many good and impressive research works but only banks and financial institutions were selected for the research and there were very few public limited companies which were being investigated. Therefore, investigator selected extra and different nature showing company for his investigation. Researcher has used financial as well as statistical tools like: ratio analysis, leverage ratio, interest coverage ratio, Profitability ratio, Mean regression, correlation analysis. Almost all the ratio has been applied to cover analytical part and fulfill the objectives of this study. It involves more recent date of listed companies for five year (2007-2011).Probably; this study may be first research of its kind in the area. Besides, every researcher has their own way of interpretation and own way of presenting their findings. In this research too, the researcher has use his own creativity and effort in presenting the findings and although there may be some related thesis on the given topic the unique style and endeavor of the researcher has brought the new dimension and twist to the subject matter and overall findings.

CHAPTER III

RESEARCH METHODOLOGY

Research is the process of systematic and in-depth study of any particular subject or to investigation, backed by collection, compilation, presentation and interpretation of relevant data and information. Methodology is the set of method used in particular area of activity. It is known as a path from which the researcher can systematically solve the research problem. In order to accomplish the objectives at this study the research methodologies have been designed on the basis of secondary data by using useful financial and statistical tools. Research methodology describes the methods and process in the entire aspect of the study. In other words, research methodology is a systematize way to solve the research problem. It refers to the various sequential steps to be adopted by the researcher in studying problems with certain objects. It is the method of or process applied to solve defined research process.

It is known as a path from which the researcher can systematically solve the research problem. In order to accomplish the objectives at this study the research methodologies have been designed on the basis of secondary data by using useful financial and statistical tools. The research methodologies adopted in this study are discussed in the following manner. This chapter is composed of five sections.

- Research design
- Populations and samples
- Selection of enterprises
- Nature and sources of data
- Method of analysis and interpretation

3.1 Research Design

Research design is the plan structure and strategy of investigation conceived so as to obtain answer to research questions and to control variances. In other words research design is the frame work for a study that helps the analysis of data related to study topic. Research design is needed because it facilitate the smooth scaling of the various research operations, thereby making research as efficient as possible yielding maximum information with minimum expenditure of effort, time and money. To achieve the objective of this study, descriptive and analytical research design has been used. It is known as the path from which the researcher can systematically solve the research problem. In order to accomplish the objectives of this study the research methodologies have been designed on the basis of secondary data by using useful financial and statistical tools.

3.2 Population and Samples

All 2148 registered manufacturing companies in Nepal are considered as total population. Out of these registered manufacturing companies two manufacturing companies have been chosen with use of random sampling method. The samples manufacturing selected are as follows:

1. M/s Reliance Spinning Mills Limited
2. M/s Dugar Food & Beverages Pvt. Ltd.

3.3 Nature and Sources of Data

Data is most important part of any research. Secondary data will extensively use in this study. The raw secondary raw data are modified to some extent for the study purpose. Mostly, data from the balance sheet, income statement and profit and Loss account of Reliance Spinning Mills Limited and Dugar Foods & Beverages Pvt. Ltd. has been used. Some other necessary data for the study has taken form auditor general

reports and various journals in management and other publications. Formal and informal discussion and questionnaire has provided the necessary data and information as primary sources. The data from websites of Reliance Spinning Mills Limited and Dugar Foods & Beverages Pvt. Ltd. has been used.

3.4 Method of Analysis and Interpretation

The main purpose of analyzing the data is to change it from an unprocessed form to an understandable presentation. The methods of analysis employed in this study consist of two types of analytical tool and technique.

- Financial tools
- Statistical tools

3.4.1 Financial tools

The Financial tools employed in this study represent ratio analysis, leverage analysis, EBIT-EPS analysis and others.

3.4.1.1 Ratio analysis

Ratio analysis is the powerful tool of financial ratio, which represents the relationship between two accounting figures, expressed mathematically. Ratio analysis is defined as the systematic use of ratio to interpret the financial statements so that the strengths and weaknesses of a firm as well as its historical performance and current financial conditions can be determined, like other tools of financial management, ratio analysis involves two types of comparison. First, it is employed to compare present ratio with post and expected figure ratio for same corporation. Second the comparison is done to see the difference exist between ratios of one corporation with industries average of the same period. The required financial ratios for this study are enables in details as follows:-

I) Leverage ratios

Leverage ratio measures the contributing of financing by owners compared with financing provided by the outsiders. They also provide some measure of the risk of debt financing by the calculation of the coverage of fixed charges. In this study, following leverage ratios have been calculated.

- **Long-term debt to equity ratio**

Long debt to equity ratio reflects the relative claims of creditors and a shareholder against the assets of the firms. It is calculated as:-

$$\text{D/E ratio} = \frac{\text{long - term debt}}{\text{shareholder's equity}}$$

A high debt equity ratio indicates that the claims of creditors are greater than that of the owners and vice-versa.

- **Debt to capital ratio**

The debt to total capital ratio is the relationship between creditors funds and owners capital ratio. One approach is to relate the long term debt to the permanent capital of the firm. It is calculated as:

$$\text{Debt to Total Capital Ratio} = \frac{\text{long term debt}}{\text{permanent capital}}$$

‘Permanent Capital’ consists of shareholders equity as well as long-term debt.

- **Total Debt to total Assets Ratio**

The total debt of the firm comprises long-term debt plus current liabilities while total assets consist of permanent capital plus current liabilities. Thus, it can be calculates as:

$$\text{TD/TA ratio} = \frac{\text{Total debt}}{\text{Total Assets}}$$

This ratio however gives somewhat similar indicates as the debt equity ratio.

- **Interest Coverage Ratio**

This is also known as ‘time interest earned ratio’. This ratio, easier the debt servicing capacity of a firm in so far as fixed interest on long term loan is concerned. It is calculated as:

$$\text{Interest coverage ratio} = \frac{\text{EBIT}}{\text{Interest}}$$

Larger the interest coverage ratio the greater the capability of the firm to handle fixed charge. Liabilities and the more assured the payment of interest to the creditors. However, too high a ratio may imply unused debt capacity.

II) Profitability Ratio

Profitability ratios give final answers about how effectively the firm is being managed. In this study following profitability ratio are calculated:

- **Profit margin on sales**

The profit margin on sales is ratio between net income and sales. It is calculated by dividing net income after taxes by sales.

$$\text{Profit margin on sales} = \frac{\text{Net Income}}{\text{Sales}}$$

- **Return on total assets**

It is also known as return to investment.

$$\text{Return on total assets} = \frac{\text{EBIT}}{\text{Total Assets}}$$

While an after tax basis, because of the tax shatters benefit of interest. We add the after tax interest expenses to net income for numerator of the ratio.

$$\text{Return on total assets ratio (ROA)} = \frac{\text{Net Income} + \text{Interest}(1 - T)}{\text{Total Assets}}$$

- **Return on net worth(ordinary shareholder equity)**

The rate of return on the stockholders investment is calculated by dividing net income after tax by net worth. It is computed by dividing EAT with net worth. Here net worth represents only equity capital.

It approximates the net benefit that the stock holders have received from investing their capital in the bank.

$$\text{Return on equity (ROE)} = \frac{\text{Net Income}}{\text{Common equity}}$$

- **Return on Assets(ROA)**

It is the ratio of banks net after tax income divided by its total assets. ROA ratio is primarily an indicator of managerial efficiency. It indicates how capably the management of the bank has been convening the institutions assets in to net earnings.

$$\text{Return on Assets (ROA)} = \frac{\text{Net Income}}{\text{Total Assets}}$$

- **Dividend Payout Ratio**

Dividend refers to the portion of net income paid out to shareholders. It is paid in cash and or stock for making investment and bearing risk.

Dividend decision of the firm is yet another crucial area of financial management as it affects shareholders wealth and the value of the firm. The percentage of earning paid out in form of cash dividend is another as DPS.

$$\text{Dividend Payout Ratio (DPR)} = \frac{\text{Dividend per share(DPS)}}{\text{Earning per share(EPS)}}$$

- **Price Earnings Ratio**

The P/E ratio shows how much investor is willing to pay per rupees of reported profits. The P/E ratio is calculated by dividing market price per share by earnings per share. The EPS is calculated by dividing net income by number of common share outstanding.

$$\text{Price earnings ratio (P/E)} = \frac{\text{Market price per share}}{\text{Earning per share}}$$

3.4.2 Statistical tools

Many statistical tools are often employed in the analysis and interpretation of data as in aid to management and managerial decisions. Following statistical tools are used more systematically in this chapter.

- Mean
- Regression
- Correlation analysis
- Standard deviation
- Coefficient of variation
- **Mean**

The most popular and widely used measure of representing the entire data by one value is what most laymen call an “average” and what the statisticians call the arithmetic mean. Its value is obtained by adding together all items and by dividing this total by the number of items. The mean value of ratios of study period all the manufacturing companies have been calculated to compare their results. The formula used for calculating mean is as follows:

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

Where $\sum X$ = Sum of values

N = Number of observations

- **Regression**

Regression analysis studies the statistical relationship between the variables. The main objective of regression analysis is to predict or estimate the value of dependent variable corresponding to a given value of independent variables. Regression analysis shows how variables are related. Regression is the estimation of unknown values or prediction of one variable from known value of the other variables.

Regression lines expressed in terms of mathematical relations are known as regression equation.

Regression equation of Y on X,

$$Y = a + bx$$

Where,

Y = Dependent Variable

X = Independent Variable

a = Intercept of the line

b = Slope of line (It measures the rate of relationship)

- **Correlation Analysis**

Two variables are said to be correlated if change in the values of one variable appears to be related or linked with the change in the other variable. Correlation is an analysis of the covariance between two or more variables and correlation analysis deals to determine the degree of relationship between variables. The most important of measuring the correlation between the two variables is Karl Pearson's coefficient of correlation. Thus, it is the mathematical method of measuring the degree of association between the two variables.

The formula for calculation simple correlation coefficient(r) by Karl Pearson's method is:

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

Where,

N= Number of period observations

X, Y= Financial variables

OR

$$r = \frac{\sum XY}{\sqrt{\sum x^2 \sum y^2}}$$

Where,

$$x = x - \bar{x}$$

$$y = y - \bar{y}$$

The correlation coefficient 'r' always varies from '-1' to '+1'. When r=+1, it reveals there is perfect positive correlation between the variables. When r=-1 is obtained, it reveals there is perfect negative correlation between the variables. The correlation coefficient 'r' always varies from '-1' to '+1'. When r=+1, it reveals there is perfect positive correlation between the variables. When r=-1 is obtained, it reveals there is perfect negative correlation between the variables.

- **Standard Deviation(SD)**

The standard deviation is used to measure the risk. It shows the deviation of actual mean 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 deviation is useful in judging the representativeness of the mean.

The formula of standard deviation is as follows.

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

Where,

S.D. = Standard deviation

X = Value of the variable

n = Number of years

- **Coefficient of variation(CV)**

Coefficient of variation 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.

$$\text{Coefficient of variance (CV)} = \frac{SD}{\bar{X}}$$

SD(σ) = Standard Deviation

\bar{X} = Mean

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

4.1 Introduction

This chapter deals with the presentation, analysis and interpretation of data collected from secondary as well as primary data. The purpose of this chapter is to carry out the analysis upon the secondary data in order to achieve the objectives. In fact, this chapter is the vital part of this research, which leads to fulfill existing gaps. The first section of this chapter deals with the determination of relevant financial and technical tools and explained the results. The available information are changed and adjusted into required data for analyzing. This chapter first proceeds with financial analysis is done through presentation of data and calculating various financial ratios that reflect the relationship variable affecting capital structure used total assets, net worth current liabilities and current assets other related variable are also used.

In this chapter, we firstly analyze the variables of capital structure of manufacturing companies by classifying manufacturing companies according to their usage of leverage. After that, we analyze the value of manufacturing companies relating with capital structure variables by correlation analysis to empirically analyze the data of manufacturing companies taken for study.

4.2 Leverage Ratio

Leverage ratio is any ratio used to calculate the financial leverage of a company to get an idea of that company's methods of financing or measure its ability to meet its financial obligations. . There are several ratios, but the main factors evaluated by a ratio include debt, equity, assets, and interest expenses. Leverage ratios are also known as capital structure ratio. The capital structure ratio judges the long-term financial position of the firm. The ratio indicates funds provided by owner and lenders. As the general rule, there should be an appropriate mix of debt and owner

equity in financing the firm's assets. Leverage ratio helps to make choice between the debt and shareholders' equity by providing advantages and disadvantages of using debt and shareholder's equity like:

- a) The company has legal obligation to pay the interest to debtors but not such legal obligation on its equity capital.
- b) Shareholder's can retain control of company with the limited involvement.
- c) Shareholder's return will magnified if the company's interest rate on debt is lower than rate of return on total capital employed.
- d) If the cost of debt is higher than rate of return on overall capital employed, shareholder return is reduce in employment of debt and there is threat of insolvency. High use of debt magnified shareholders returns as well as increases the risk of liquidation.
- e) Creditors treat equity as margin of safety, the leverage ratio help the creditors and financial institutions to measure the financial risk and the ability of company in closing debt, for the benefit of shareholders.

Leverage ratio may be calculated from the balance sheet item and determined the extent to which borrowed fund have been used to finance the company. Leverage ratios from the income statement measure the risk of debt. Leverage ratio can be analyzed on the following way:

4.2.1 Analysis of Long Term Debt and Shareholder's Equity

Long Term Debt

Long term debt includes debt owed for a period exceeding 12 months from the date of the balance sheet. It could be in the form of a bank loan, mortgage bonds, debenture, or other obligations not due for one year. A firm must disclose its long-term debt in its balance sheet with its interest rate and date of maturity. Amount of long-term debt is a measure of a firm's leverage, and is distinguished from long term liabilities.

Shareholder's Equity

Shareholder's equity is a firm's total assets minus its total liabilities. Equivalently, it is share capital plus retained earnings minus treasury shares. Shareholders'

equity represents the amount by which a company is financed through common and preferred shares.

Shareholders' equity comes from two main sources. The first and original source is the money that was originally invested in the company, along with any additional investments made thereafter. The second comes from retained earnings which the company is able to accumulate over time through its operations. In most cases, the retained earnings portion is the largest component.

Long Term Debt- Equity Ratio

The long term debt- equity ratio measures the long term financial solvency of a firm. The long term debt -equity ratio is calculated by dividing long term debt by shareholders equity.

Long term debt consists of debt owed for more than one year and total equity consists of equity capital, preference share capital and undistributed profit.

It is a measure of a company's financial leverage calculated by dividing its total liabilities by stockholders' equity. It indicates what proportion of equity and debt the company is using to finance its assets.

A high debt/equity ratio generally means that a company has been aggressive in financing its growth with debt. This can result in volatile earnings as a result of the additional interest expense.

If a lot of debt is used to finance increased operations (high debt to equity), the company could potentially generate more earnings than it would have without this outside financing. If this were to increase earnings by a greater amount than the debt cost (interest), then the shareholders benefit as more earnings are being spread among the same amount of shareholders. However, the cost of this debt financing may outweigh the return that the company generates on the debt through investment and business activities and become too much for the company to handle. This can lead to bankruptcy, which would leave shareholders with nothing.

In the following table long term debt to equity ratio is presented in quantitative term to show the movement of the trend from the year 2007 to 2011 of Reliance Spinning Mills Limited and Dugar Food & Beverages Pvt. Ltd.

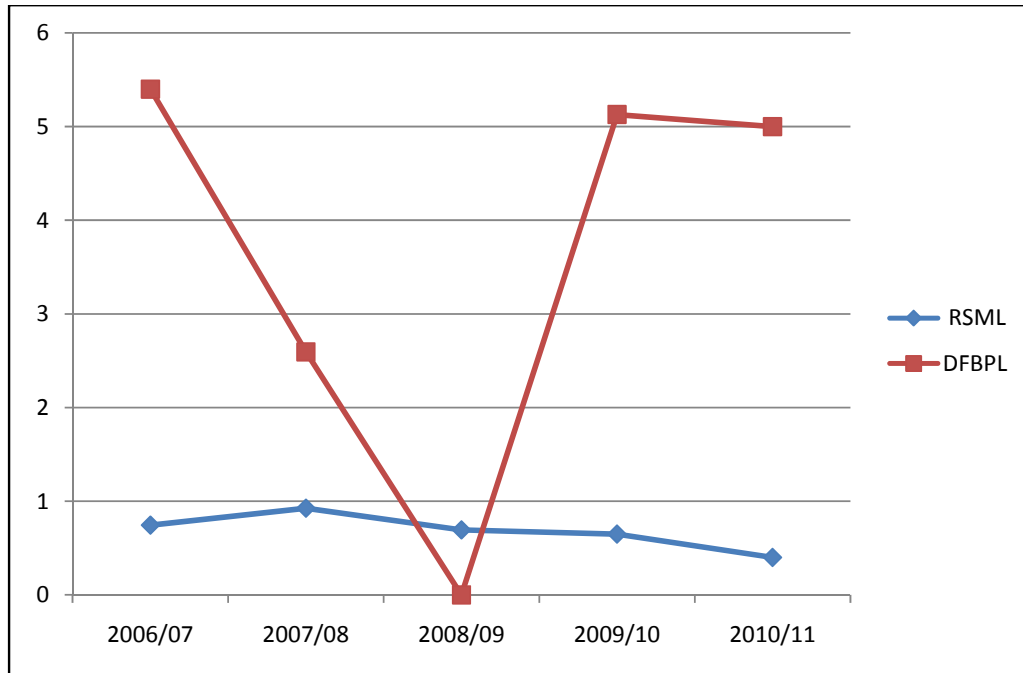
Table 4.1
Long Term Debt-Equity Ratio

Years	RSML	DFBPL
2006/07	0.744	5.400
2007/08	0.925	2.595
2008/09	0.694	-
2009/10	0.649	5.129
2010/11	0.400	5.000
Average	0.682	3.625
S.D.(6)	0.169	2.074
C.V. (%)	24.84%	57.21%

Source: Annual General Meeting Reports (2007-2011)

Table 4.1 RSML has an average 0.682 times of D/E ratio which means debt capital financing is 0.682 times higher than equity financing whereas DEF has an average of 3.625 times D/E ratio, which means debt capital financing is 3.625 times higher than equity financing. DEF has not used LTD in the year 2008/9 but RSML has regularly used LTD to maintain its capital position strong and to meet its financial needs.

Figure 4.1
Debt Equity Ratio



4.2.2 Analysis of Total Debt to Net worth Ratio

This ratio is calculated by dividing the total debt by net worth. Net worth consists of the entire share capital, reserve and surplus of the company, total debt consists of all types of long-term debt and current liabilities like bank loan, mortgage bonds, debenture, or other obligations not due for one year. The debt servicing capacities of the companies are calculated through debt to net worth ratio. This total debt to net worth ratio is composed using following formula.

$$\text{Debt to Net worth Ratio} = \frac{\text{TotalDebt}}{\text{NetWorth}}$$

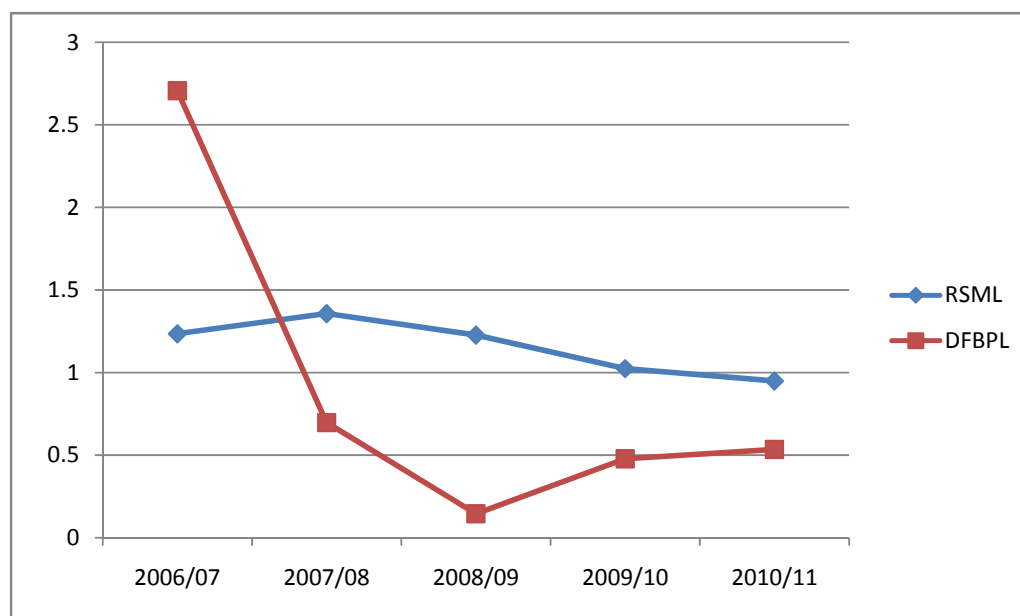
Table 4.2
Total Debt to Net worth Ratio

Years	RSML	DFBPL
2006/07	1.235	2.706
2007/08	1.357	0.697
2008/09	1.227	0.145
2009/10	1.024	0.478
2010/11	0.949	0.534
Average	1.158	0.912
S.D.(6)	0.150	0.915
C.V. (%)	12.93	100.32

Source: Annual General Meeting Reports (2007-2011)

A high ratio shows that large share of financing by creditors would suffer more in times of distress than the owner. The standard ratios 2:1, the long-term debt to net worth ratio of RSML is nearly an ideal one. During the study period, the average total debt to net worth ratio of RSML is 1.158, which is good although RSML can increase some debt. S.D. and C.V. on RSML is 0.150 and 12.93 respectively. Average total debt to net worth ratio of DFBPL during the study period is 0.915, which is lower than standard ratio. This ratio suggests that DFBPL must increase its debt on its capital structure. The S.D. and C.V. of DFBPL is 0.915 and 100.32 respectively.

Figure 4.2
Total Debt to Net worth Ratio



4.2.3 Analysis of Interest Coverage Ratio

Interest coverage is a financial ratio that provides a quick picture of a company's ability to pay the interest charges on its debt. The "coverage" aspect of the ratio indicates how many times the interest could be paid from available earnings, thereby providing a sense of the safety margin a company has for paying its interest for any period. A company that sustains earnings well above its interest requirements is in an excellent position to weather possible financial storms. By contrast, a company that barely manages to cover its interest costs may easily fall into bankruptcy if its earnings suffer for even a single month. Interest coverage ratio used to determine how easily a company can pay interest on outstanding debt. The interest coverage ratio is calculated by dividing a company's earnings before interest and taxes (EBIT) of one period by the company's interest expenses of the same period. This ratio measures the debt servicing capacity of a company. Interest coverage ratio reflects the firm's ability to pay interest out of earnings. Too high ratio implies unused debt capacity or a firm's conservativeness in using debt to its best advantage, whereas low ratio imply 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.

It is computed by dividing net profit before interest and tax by interest;

$$\text{Interest Coverage Ratio} = \frac{\text{Net profit Before Interest and Tax}}{\text{Interest}}$$

The interest coverage ratio, also known as times interest earned, is a measure of how well a company can meet its interest-payment obligations. A high ratio is a sign of low burden of debt and lower utilization or borrowing capacity. The large the coverage is the greater the ability of the company to make the payment of interest to creditors. The comparative picture of manufacturing companies for interest coverage ratio has been presenting in the following table.

Table 4.3
Interest Coverage Ratio

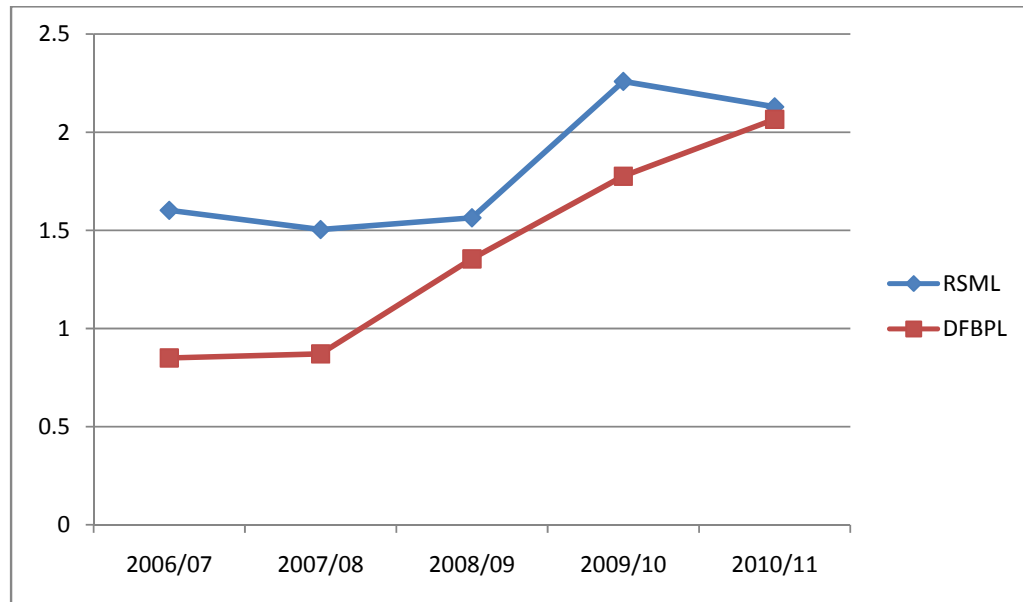
Years	RSML	DFBPL
2006/07	1.602	0.850
2007/08	1.504	0.871
2008/09	1.564	1.355
2009/10	2.259	1.776
2010/11	2.129	2.066
Average	1.811	1.384
S.D.(6)	0.316	0.483
C.V. (%)	17.46%	34.91%

Source: Annual General Meeting Reports (2007-2011)

The interest coverage ratios of manufacturing companies during the study period are presented in the above table. The interest coverage ratios of RSML are 1.602, 1.504, 1.564, 2.259 and 2.129 for the year 2007 to 2011 respectively. Similarly, the interest coverage ratios for DFBPL are 0.850, 0.871, 1.355, 1.776 and 2.066 for the year 2007 to 2011 respectively. Since the average interest coverage ratio of both RSML and

DBFPL are on the lower side which shows it is using excessive debt and does not have the ability to offer assured payment of interest to the creditors.

Figure 4.3
Analysis of Interest Coverage Ratio



4.3 Profitability Ratio

The strength of capital structure position of companies are calculated through the profitability ratio and other indicators i.e. correlation, regression.

4.3.1 Analysis of Return on total Assets.

Return on total assets is computed simply by dividing net profit after tax by total assets on after tax basis. This ratio is the measures of productivity of the assets, higher ratio shows the higher return on the assets used in the business thereby indicating effective use of the assets available and vice versa.

Thus, the ratio of return on total assets is calculated by taking five years balance sheet and P/L account of manufacturing company as given below.

Table 4.4
Return on Total Assets

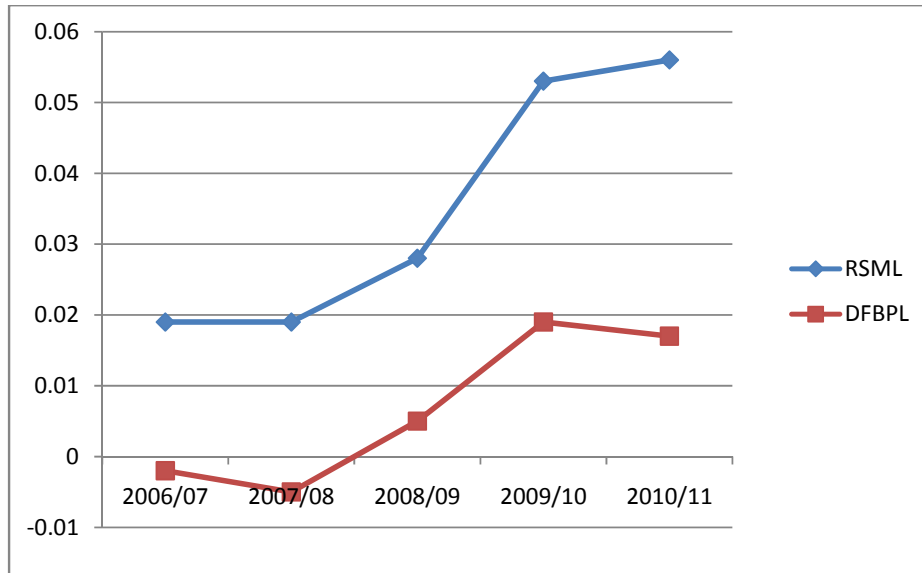
Years	RSML	DFBPL
2006/07	0.019	-0.002
2007/08	0.019	-0.005
2008/09	0.028	0.005
2009/10	0.053	0.019
2010/11	0.056	0.017
Average	0.035	0.007
S.D	0.016	0.010
C.V	46.49%	139.39%

Source: Annual General Meeting Reports (2007-2011)

Table No. 4.4 shows the return on total assets ratio of two manufacturing companies. The returns on total assets ratio of RSML are 0.019, 0.019, 0.028, 0.053 and 0.056 in the year 2006/07, 2007/08, 2008/09, 2009/10 and 2010/11 respectively. The ratio shows that the net profit of the company is very low as compared to its total assets. The average return on total assets ratio of RSML is 0.035. The SD and CV are 0.016 and 46.49 respectively.

The return on total assets ratio of DFBPL is (0.002), (0.005), 0.005, 0.019 and 0.017 in the year 2006/07, 2007/08, 2008/09, 2009/10 and 2010/11 respectively. The company has lower return as respectively to total assets. The company was suffering loss in year 2006/07 and 2007/08. The S.D and C.V of DFBPL are 0.010 and 139.39 respectively.

Figure 4.4
Return to Total Assets Ratio



4.3.2 Analysis of Profit Margin on Sales

Net profit margin on sales computed simply by dividing net profit after tax by amount of sales. It gives the profit per rupee of sales. Net profit is obtained by subtracting operation expenses and income tax from the gross profit. Net profit after tax is given on the profit and loss account of each manufacturing company. This ratio of profit margin on sale indicates the firm capacity to with stand adverse economic condition. A manufacturing company with a high profit margin ratio would be advantageous position to service in the face of falling selling prices, rising cost of production or declining demand for the production and vice verse. However, to analysis the position of profit margin on sales of the manufacturing company the following table is constructed. Increasing ratio is favorable as increasing ratio shows that the net profit is maximizing and operation cost is decreasing.

Table No. 4.5
Profit Margin on Sales Ratio

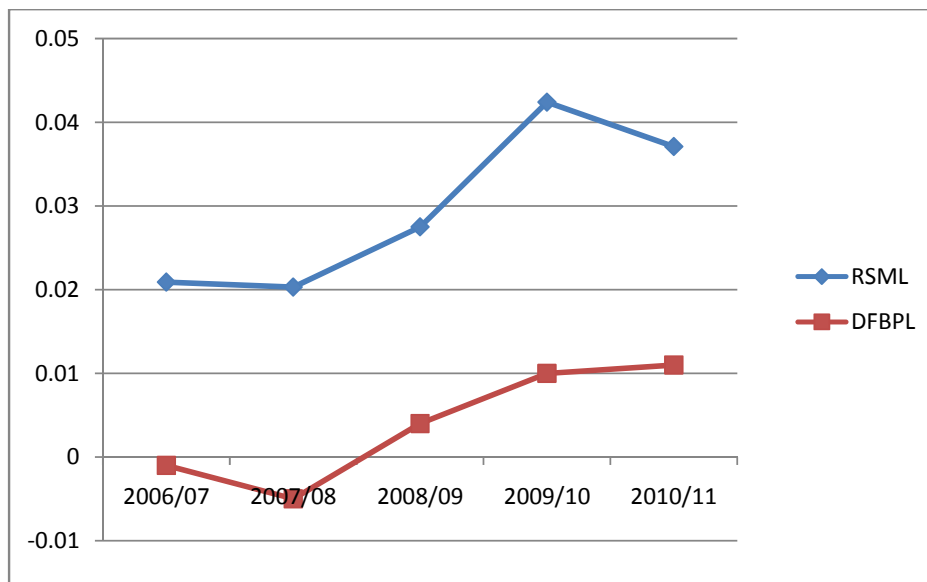
Years	RSML	DFBPL
2006/07	0.0209	-0.001
2007/08	0.0203	-0.005
2008/09	0.0275	0.004
2009/10	0.0424	0.010
2010/11	0.0371	0.011
Average	0.030	0.004
S.D	0.009	0.006
C.V	29.62%	162.30%

Source: Annual General Meeting Reports (2007-2011)

Table no.4.5 shows that the profit margin ratio of the selected manufacturing companies during the current study period. The average sales margin ratio of RSML is 0.030. The Company must try to increase its profit. SD and CV are 0.009 and 29.62% respectively.

The average sales margin ratio of DFBPL is 0.004 and the profit margin ratio is negative in the year 2006/07 and 2007/8, which indicates the company financial position is not good during that study period. SD and CV of DFBPL are 0.006 and 162.30% respectively.

Figure 4.5
Profit Margin on Sales Ratio



4.3.3 Analysis of Returns on Equity

$$ROE = \frac{\text{Netprofitaftertax}}{\text{Shareholdersequity}} \times 100\%$$

The return on equity is the measure of productivity of shareholders fund. It measures the rate of return on common stockholders' investment. It carries the relationship of return to shareholders equity. The shareholder equity includes common share capital, preference share capital, reserve and surplus. ROE is the best single measure of the company's success in fulfilling its goal. The ratio equals the net profit after tax divided by the common stockholder's equity. The ratio is regarded as very important measure because it reflects exclusively the return on the other. As the common shareholders are residual owners in the real sense of the world. They assumed the maximum rise and have the highest stake in company. So to judge whether the firm has earned a satisfactory return for its common shareholders or not, following table is constructed. This ratio shows the return on the owner's investment. This ratio also indicates how profitability the owner funds have been utilized by the firm and high ratio reveals the efficient use of owner investment and vice versa.

Table 4.6
Return on Equity (ROE)

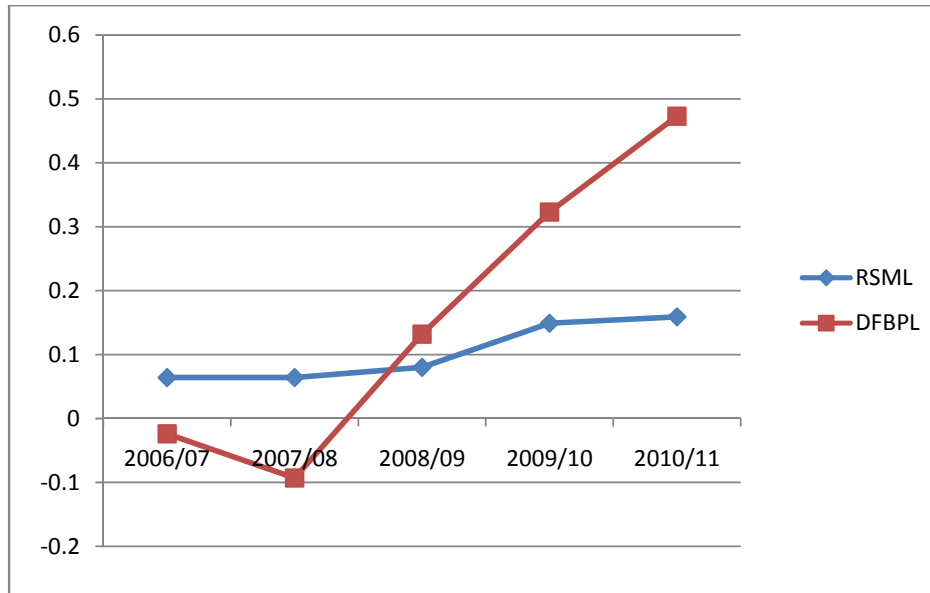
Years	RSML	DFBPL
2006/07	0.064	-0.024
2007/08	0.064	-0.093
2008/09	0.080	0.132
2009/10	0.149	0.323
2010/11	0.159	0.473
Average	0.104	0.162
S.D	0.042	0.211
C.V	40.44%	130.23%

Source: Annual General Meeting Reports (2007-2011)

Table 4.6 shows that the return on equity ratio of RSML is 0.064, 0.064, 0.080, 0.149 and 0.159 in the year of 2006/07, 2007/08, 2008/09, 2009/10 and 2010/11 respectively. The average return on equity is 0.104, which indicate the sound financial position on RSML, SD and CV are 0.042 and 40.44% respectively.

The return on equity ratio of DFBPL is better than that of RSML. The average return on equity is 0.162. SD and CV are 0.211 and 130.23% respectively. CV is very high. DFBPL return on equity is negative in the year 2006/07 and 2007/8. Lower ROE shows the weak performance of firms, in the maximizing the shareholder's equity.

Figure 4.6
Return on Equity (ROE)



4.4 Regression Analysis

a. To, show the degree of relationship between Net profit(NP) and Total debt(TD), net profit(Y) is assumed to be dependent on total debt(X) as follows:-

$$Y = a + bx$$

Or, NP = a + b.TD

Table 4.7

Regression Analysis between Net Profit (NP) and Total Debt (TD)

Company	Regression Equation of	Regression equation	Value of constant 'a'	Coefficient 'b'
RSML	NP(Y) on TD	$Y = 47,352.799 - 3.649x$	47,352.799	-3.649
DFBPL	NP(Y) on TD	$Y = -29.029 + 0.068X$	-29.029	0.068

Source: Annual General Meeting Reports (2007-2011), See in Appendix-9

The above table shows the regression coefficient 'b' is negative RSML which shows that one million increase in total debt leads to decrease in net profit by 3.649 millions. The value of constant 'a' i.e. 47,352.799 shows that net profit will be Rs 47,352.799 millions when total debt is zero.

However, the regression coefficient 'b' is positive i.e. 0.068 of DFBPL which indicates that one million increase in total debt leads to increase in net profit by Rs 0.068 millions. The value of constant 'a' i.e. -29.029 shows that net loss will be Rs. 29.029 millions when total debt is zero.

b. To show the degree of relationship between ROE and debt ratio, ROE is assumed to dependent (Y) upon debt ratio (X). The regression line of ROE on debt ratio as follows:-

$$Y = a + bx$$

$$\text{Or, ROE} = a + b \cdot \text{DR}$$

Table 4.8

Regression analysis between Return on Equity (ROE) and Debt Ratio (DR)

Company	Regression equation of	Regression equation	Value of constant 'a'	Coefficient 'b'
RSML	ROE(Y) on DR(X)	$Y = 0.103 + 0.001X$	0.103	0.001
DFBPL	ROE(Y) on DR(X)	$Y = 0.013X + 0.157$	0.013	0.157

Source: Annual General Meeting Reports (2007-2011), See in Appendix-10

The above table shows the regression coefficient 'b' is positive i.e. 0.001 of RSML which indicates that one million increase in debt ratio leads to average increase ROE

by Rs. 0.001 millions. The value of constant 'a' i.e. 0.103 shows that ROE will be Rs 0.103 million when debt ratio is zero.

In the case of DFBPL, the regression coefficient 'b' is positive i.e. 0.157 which indicates one million increases in debt ratio leads to average increase in ROE by Rs. 0.157 million. The value of constant 'a' i.e. 0.013 shows that ROE will be Rs. 0.013 millions when debt ratio is zero.

c. To show the degree of relationship between Net profit (NP) and Long term debt(LTD), Net profit is assumed to dependent (Y) up on Long term debt (X). The regression line of Net profit on Long term debt as follows:

$$N.P. = a+b.Ltd$$

$$Y= a+bx$$

Table 4.9

Regression analysis between Net Profit (NP) and Long Term Debt (LTD)

Company	Regression Equation of	Regression Equation	Value of constant 'a'	Coefficient 'b'
RSML	N.P.(Y) on LTD(X)	$Y = 903.192-0.004X$	903.192	-0.004
DFBPL	N.P.(Y) on LTD(X)	$Y=341.737-0.898X$	341.737	-0.898

Source: Annual General Meeting Reports (2007-2011), See in Appendix-11

The above table shows regression coefficient of RSML 'b' is negative i.e. -0.004, which indicates that one million increase in LTD leads to average decrease in NP by Rs. 0.004 million. The constant 'a' 903.192 shows that net profit will be Rs 903.192 million when LTD is zero.

Similarly, the regression coefficient 'b' is negative i.e. 0.898 of DFBPL which indicates that one million increase in LTD leads to average decrease in NP by Rs. 0.898 million. The constant 'a' 341.737 shows that net profit will be Rs 341.737 million when LTD is zero.

4.5 Major Findings

The major findings of the study with respect to capital structure of the manufacturing companies are as follows.

1. RSML is found using less debt than its capacity whereas DFBPL is found to be using excessive debt.
2. Interest coverage ratio of both RSML and DFBPL are in lower side, which implies both companies are in weak position to pay the interest. This show both RSML and DFBPL are using excessive debt beyond their capacity.
3. Average return on assets of RSML and DFBPL both are in the lower side even negative some year.
4. Profit margin ratios for RSML and DFBPL shows that net profit is fluctuating and the profit margin ratio also decreasing whereas sales are increasing.
5. The average ROE of DFBPL is higher than RSML even though in early year DFBPL has negative ROE. The investors of the DFBPL are getting more returns from their investments. DFBPL has lowest ROE on average, it means, it cannot give adequate return to investors.
6. There is negative relationship between NP and LTD of both RSML and DFBPL. But in case of relationship between ROE and long term debt ratio there is positive relation for both RSML and DFBPL, The relationship between NP and Total Debt is positive for DFBPL and negative for RSML.

CHAPTER V

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary

Financial matter is at the center of each organization whether it is trading concern or an industry, the combination of sources of financing structure and cost of capital are measure factor affecting the calculation profitability and its financial strength. Capital structure is considered as that mix of debt and equity and to operate in long run prospect. A firm must concentrate in its proportion. A firm can raise required fund by issuing various types of financial instrument. Investors and creditors being the key supplier of capital, they hold greater degree of risk and hence have claims over firms assets and cash flow. Similarly, debt holders are also a source of financial fund, they have risk considering firm's cash flow is uncertain, and there is probability that it may default in its obligations to pay off its interest and principle.

As per the objective of this study, it tries to analyze the relationship between debt and shareholders' equity of manufacturing companies to provide suggestion based on findings. To fulfill this purpose, the study follows the analytical and descriptive research design. The research has been under taken to study and analyzed the capital structure of RSML and DFBPL. All these two manufacturing company are facing excess leverage ratio and low profitability. The research package has been divided into five parts or the chapter as introduction, Review of literature, Research methodology, Presentation and analysis of data and summary, conclusion and recommendation.

The first chapter comprises as focus of the study, statement of the problem, need of the study, statement of the study, objective of the study, limitation of the study and organization of the study.

The second chapter includes review of literature present of review of related articles, empirical study, and review of the thesis to this study.

In the third chapter, research methodology has been explained for the purpose of this study. The sources of data, population and sample of the study have also been described including procedure follows in data processing. For the purpose of the study, secondary data has been used.

In the fourth chapter, various financial tools and technique have been used to identify the position of capital structure management of the manufacturing companies. In this chapter ratio, analysis has been computed and the identification of capital structure of manufacturing companies.

In the last chapter, summary of analysis and conclusion derived from the study and some workable suggestion are also provided for improving the capital structure management of RSML and DFBPL respectively.

5.2 Conclusions

This research is concerned with the study of capital structure management of two selected manufacturing companies, i.e. RSML and DFBPL. The term capital structure refers to the long-term funds like debt and equity. The mix of capital structure, which leads to the maximum value and minimum cost of capital, is known as optimal capital structure. As the manufacturing companies has low debt equity ratio, it implies greater claims of owner than creditors. However, RSML has low long-term debt, most of financing is done by equity only, it provides a large margin of safety for equity holders but sometimes when equity financing is not enough company needs to use debt financing too and it result in tax benefit on interest as well. Depending on the need of finance and working capital company should use appropriate mix of debt and equity. However DFBPL is found to use excessive debt which has benefited the company too, to earn profit and to meet its financial needs but excessive debt is never good so it should try to minimize the amount of debt.

Profit margin on sales is the ratio of net income available to common stockholders on sales, Profit margin ratio for RSML is 0.030 and 0.365 for DFBPL on average. It shows that the net profit is fluctuating and profit margin ratio is decreasing where as sales is increasing. This indicates the company should make such policy to earn high amount of profit from the sales revenue by increasing operation efficiency and reducing production cost.

Thus, this research is conducted with the major objective of highlighting capital structure management of two manufacturing companies. The detailed observation is done by analysis of capital structure in terms of debt to shareholders equity ratio, total debt to assets ratio, interest coverage ratio and other relevant financial ratios.

Interest coverage ratio of DFBPL is low but is in improving. Moreover, interest coverage ratio of RSML is very high because it has low long term debt comparing to DFBPL. Interest coverage ratio measures the ability of the firm to meet its annual interest payments. Therefore, highest ratio shows that a firm can pay the interest easily. DFBPL should try to improve its interest coverage ratio by lowering the amount of debt whereas; RSML should maintain its existing ratio or should try to get benefit of some debt facility as it has interest coverage ratio on the higher side than average.

The average return on assets ratios of both RSML and DFBPL are on the lower side, which indicates that, the assets of these companies generating low profit. So they should try to make improvement on it. They should try to make effective and efficient use of the available assets to increase their productivity.

Total debt to net worth ratio of RSML is in considerable position. However, DFBPL has high long-term debt to earn maximum profit on future. So it should try to improve its debt to net worth ratio for the satisfaction of equity holders.

Return on equity of the manufacturing companies is in lower side. DFBPL has even negative return of equity on earlier years which means it cannot give adequate return to investors, But return on equity of both the companies are improving.

Recommendation

Finally, after having an overall analysis of capital structure management of Reliance Spinning Mills Limited and Dugar Foods and Beverage Pvt. Ltd. following recommendation is made for the future handling and improvement of the companies.

1. For the operation of a manufacturing company, long-term debt is required and both the selected manufacturing companies have start using long term debt form their inception. It is good systems for the operation. The use of long term debt is on lower side for the RSML, so it should increase the use of long term debt in order to meet its financial need and take advantage of tax shield. However DFBPL has using long term debt in high proportion, financial risk of DFBPL has been created by long-term debt. Therefore, DFBPL has to reduce its long-term debt. Therefore, it is suggested that RSML should increase the long-term debt in order to meet its financial need and DFBPL should try to minimize over dependent on long-term debt. It is suggested that particularly DFBPL should increase the equity proportion in financing its assets to be in safe mode against liquidation
2. The profit for RSML and DFBPL is not correspondingly increasing as per the increase in sales. They should make policy to earn high amount of profit from the sales revenue by increasing operating efficiency and reduction in production cost, since their profit are not responding well to increase in sales.
3. Most of the Nepalese manufacturing companies are incurring loss. One of the causes for it is high operating cost of production. The management should give attention towards the minimization of administrative and operating expenses. The unskilled workers, overstaffing, unsystematic purchase of raw materials, unnecessary expenses, misuse of facilities, heavy expenses on overhead etc are major causes for high operating cost. The management of the company should eradicate these causes.
4. Capital structure of both RSML and DFBPL is not consistent so the management should try to make capital structure more consistent and try to

obtain optimal capital structure in order to minimize to cost of capital and to gain the maximum benefit as possible.

5. DFBPL should try to improve its interest coverage ratio as it is using excessive debt beyond its limit by putting creditors on risk. However RSML is using less debt being more conservative and not capitalizing on advantage of using additional debt facility.
6. ROA of both RSML and DFBPL are on seemed to be low so they should try to make effective and efficient use of the available assets to increase their productivity and increase its return.

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Appendix1

M/s Reliance Spinning Mills Ltd. (RSML)

	2006/7	2007/8	2008/9	2009/10	2010/11
Equity	8,500.000	8,500.000	8,500.000	8,500.000	8,500.000
Long Term Debt	6,325.400	7,861.820	5,895.290	5,514.280	3,400.900
Short term debt	6,827.260	7,477.160	6,882.520	5,500.110	8,000.000
Total debt	13,152.660	15,338.980	12,777.810	11,014.390	11,400.900
Current Assets	9,255.240	11,679.310	8,581.310	9,126.230	10,723.650
Fixed Assets	18,920.540	17,675.480	15,882.900	14,724.870	13,469.340
Current Liabilities	11,713.130	10,695.650	8,668.620	8,076.330	9,275.000
Net Worth	10,647.280	11,305.340	10,416.470	10,760.490	12,017.090
Sales	26,169.900	26,966.690	24,857.090	29,838.260	36,534.930
Interest	937.950	1,099.440	1,236.070	1,029.460	1,208.600
EBIT	1,502.310	1,653.490	1,933.130	2,325.210	2,572.560
EAT	548.150	547.310	684.150	1,265.230	1,355.150
Profit	548.150	547.310	684.150	1,265.230	1,355.150

Source: Annual Reports of Shareholders (2006/7-2010/11)

Appendix 1 A

M/s Reliance Spinning Mills Ltd. (RSML)

	2006/7	2007/8	2008/9	2009/10	2010/11
Equity	8,500.000	8,500.000	8,500.000	8,500.000	8,500.000
Long Term Debt	6,325.400	7,861.820	5,895.290	5,514.280	3,400.900
Short Term Debt	6,827.260	7,477.160	6,882.520	5,500.110	8,000.000
Total Debt	13,152.660	15,338.980	12,777.810	11,014.390	11,400.900
Long Term Debt - Equity Ratio	0.744	0.925	0.694	0.659	0.400
Current Assets	9,255.240	11,679.310	8,581.310	9,126.230	10,723.650
Fixed Assets	18,920.540	17,675.480	15,882.900	14,724.870	13,469.340
Total Assets	28,175.780	29,354.790	24,464.210	23,851.100	24,192.990
Return on Total Assets	0.019	0.019	0.028	0.053	0.056
Current Liabilities	11,713.130	10,695.650	8,668.620	8,076.330	9,275.000
Net Worth	10,647.280	11,305.340	10,416.470	10,760.490	12,017.090
Debt to Net Worth Ratio	1.235	1.357	1.227	1.024	0.949
Sales	26,169.900	26,966.690	24,857.090	29,838.260	36,534.930
Interest	937.950	1,099.440	1,236.070	1,029.460	1,208.600
EBIT	1,502.310	1,653.490	1,933.130	2,325.210	2,572.560
Interest Coverage Ratio	1.602	1.504	1.564	2.259	2.129
EAT	548.150	547.310	684.150	1,265.230	1,355.150
Profit	548.150	547.310	684.150	1,265.230	1,355.150
Profit Margin on Sales	0.021	0.020	0.028	0.042	0.037
Return on Equity	6.449	6.439	8.049	14.885	15.943
Debt ratio	0.467	0.523	0.522	0.462	0.471

Source: Annual Reports of Shareholders (2006/7-2010/11)

Appendix 2

M/s Dugar Food and Beverage Pvt. Ltd. (DFBPL)

	2006/7	2007/8	2008/9	2009/10	2010/11
Equity	100.000	100.000	100.000	100.000	100.000
Long Term Debt	540.000	259.520	-	512.880	500.000
Short term debt	374.360	452.620	288.790	-	400.000
Total debt	914.360	712.140	288.790	512.880	900.000
Current Assets	1,200.200	1,301.510	1,990.080	1,234.260	2,484.700
Fixed Assets	253.240	580.450	522.310	473.590	358.590
Current Liabilities	1,115.580	860.160	522.480	633.870	1,157.880
Net Worth	337.860	1,021.800	1,989.910	1,073.980	1,685.410
Sales	1,840.660	1,920.240	3,370.210	3,098.070	4,150.000
Interest	35.580	57.700	45.870	39.510	50.000
EBIT	30.260	50.280	62.150	70.180	103.290
EAT	(2.370)	(9.330)	13.210	32.330	47.330
Profit	(2.370)	(9.330)	13.210	32.330	47.330

Source: Annual Reports of Shareholders (2006/7-2010/11)

Appendix 2 A

M/s Dugar Food and Beverage Pvt. Ltd. (DFBPL)

	2006/7	2007/8	2008/9	2009/10	2010/11
Equity	100.000	100.000	100.000	100.000	100.000
Long Term Debt	540.000	259.520	-	512.880	500.000
Short Term Debt	374.360	452.620	288.790	-	400.000
Total Debt	914.360	712.140	288.790	512.880	900.000
Long Term Debt - Equity Ratio	5.400	2.595	-	5.129	5.000
Current Assets	1,200.200	1,301.510	1,990.080	1,234.260	2,484.700
Fixed Assets	253.240	580.450	522.310	473.590	358.590
Total Assets	1,453.440	1,881.960	2,512.390	1,707.850	2,843.290
Return on Total Assets	(0.002)	(0.005)	0.005	0.019	0.017
Current Liabilities	1,115.580	860.160	522.480	633.870	1,157.880
Net Worth	337.860	1,021.800	1,989.910	1,073.980	1,685.410
Debt to Net Worth Ratio	2.706	0.697	0.145	0.478	0.534
Sales	1,840.660	1,920.240	3,370.210	3,098.070	4,150.000
Interest	35.580	57.700	45.870	39.510	50.000
EBIT	30.260	50.280	62.150	70.180	103.290
Interest Coverage Ratio	0.850	0.871	1.355	1.776	2.066
EAT	(2.370)	(9.330)	13.210	32.330	47.330
Profit	(2.370)	(9.330)	13.210	32.330	47.330
Profit Margin on Sales	(0.001)	(0.005)	0.004	0.010	0.011
Return on Equity	(0.024)	(0.093)	0.132	0.323	0.473
Debt ratio	0.629	0.378	0.115	0.300	0.317

Source: Annual Reports of Shareholders (2006/7-2010/11)

Appendix 3

A. Calculation of Long Term Debt to Shareholders Equity Ratio of RSML

Year	Long Term Debt	Shareholders' Equity	Ratio
2006/7	6,325.400	8,500.000	0.744
2007/8	7,861.820	8,500.000	0.925
2008/9	5,895.290	8,500.000	0.694
2009/10	5,514.280	8,500.000	0.649
2010/11	3,400.900	8,500.000	0.400

Calculation of SD and CV of RSML

Year	Ratio(x)	X ²
2006/7	0.744	0.554
2007/8	0.925	0.855
2008/9	0.694	0.481
2009/10	0.649	0.421
2010/11	0.400	0.160
Total	Σx =3.411	Σx² =2.471

Using Formula:

$$S.D (\sigma) = \sqrt{\frac{\sum X^2}{n} - \left(\frac{\sum X}{n}\right)^2} = 0.169$$

$$C.V. = \frac{S.D.}{X} \times 100\%$$

$$= 24.84\%$$

B. Calculation of Long Term Debt to Shareholders Equity Ratio of DFBPL

Year	Long Term Debt	Shareholders' Equity	Ratio
2006/7	540.000	100.000	5.400
2007/8	259.520	100.000	2.595
2008/9	-	100.000	-
2009/10	512.880	100.000	5.129
2010/11	500.000	100.000	5.000

Calculation of SD and CV of DFBPL

Year	Ratio(x)	X ²
2006/7	5.400	29.160
2007/8	2.595	6.735
2008/9	-	-
2009/10	5.129	26.305
2010/11	5.000	25.000
Total	Σx =18.124	Σx ² =87.200

Using Formula:

$$S.D (\sigma) = \sqrt{\frac{\sum X^2}{n} - \left(\frac{\sum X}{n}\right)^2} = 2.074$$

$$C.V. = \frac{S.D.}{X} \times 100\%$$

$$= 57.21\%$$

Appendix 4

A. Calculation of Total Debt to Net worth Ratio of RSML

Year	Total Debt	Net Worth	Ratio
2006/7	13,152.660	10,647.280	1.235
2007/8	15,338.980	11,305.340	1.357
2008/9	12,777.810	10,416.470	1.227
2009/10	11,014.390	10,760.490	1.024
2010/11	11,400.900	12,017.090	0.949

Calculation of S.D and C.V of RSML

Year	Ratio(x)	X ²
2006/7	1.235	1.526
2007/8	1.357	1.841
2008/9	1.227	1.505
2009/10	1.024	1.048
2010/11	0.949	0.900
Total	$\sum x = 5.791$	$\sum x^2 = 6.819$

Using Formula:

$$S.D (\sigma) = \sqrt{\frac{\sum X^2}{n} - \left(\frac{\sum X}{n}\right)^2} = 0.150$$

$$C.V. = \frac{S.D.}{\bar{X}} \times 100\%$$

$$= 12.93\%$$

B. Calculation of Total Debt to Net worth Ratio of DFBPL

Year	Total Debt	Net Worth	Ratio
2006/7	914.360	337.860	2.706
2007/8	712.140	1,021.800	0.697
2008/9	288.790	1,989.910	0.145
2009/10	512.880	1,073.980	0.478
2010/11	900.000	1,685.410	0.534

Calculation of S.D and C.V of RSML

Year	Ratio(x)	X ²
2006/7	2.706	7.324
2007/8	0.697	0.486
2008/9	0.145	0.021
2009/10	0.478	0.228
2010/11	0.534	0.285
Total	$\sum x = 4.560$	$\sum x^2 = 8.344$

Using Formula:

$$S.D (\sigma) = \sqrt{\frac{\sum X^2}{n} - \left(\frac{\sum X}{n}\right)^2} = 0.915$$

$$C.V. = \frac{S.D.}{\bar{X}} \times 100\%$$

$$= 100.32\%$$

Appendix 5

A. Calculation of Interest Coverage Ratio of RSML

Year	EBIT	Interest	Ratio
2005/6	1,502.310	937.950	1.602
2006/7	1,653.490	1,099.440	1.504
2007/8	1,933.130	1,236.070	1.564
2008/9	2,325.210	1,029.460	2.259
2009/10	2,572.560	1,208.600	2.129

Calculation of S.D and C.V of RSML

Year	Ratio(x)	X ²
2006/7	1.602	2.565
2007/8	1.504	2.262
2008/9	1.564	2.446
2009/10	2.259	5.102
2010/11	2.129	4.531
Total	$\sum x = 9.057$	$\sum x^2 = 16.905$

Using Formula:

$$S.D (\sigma) = \sqrt{\frac{\sum X^2}{n} - \left(\frac{\sum X}{n}\right)^2} = 0.316$$

$$C.V. = \frac{S.D.}{\bar{X}} \times 100\%$$

$$= 17.46\%$$

B. Calculation of Interest Coverage Ratio of DFBPL

Year	EBIT	Interest	Ratio
2005/6	30.260	35.580	0.850
2006/7	50.280	57.700	0.871
2007/8	62.150	45.870	1.355
2008/9	70.180	39.510	1.776
2009/10	103.290	50.000	2.066

Calculation of S.D and C.V of DFBPL

Year	Ratio(x)	X ²
2006/7	0.850	0.723
2007/8	0.871	0.759
2008/9	1.355	1.836
2009/10	1.776	3.155
2010/11	2.066	4.268
Total	$\sum x = 6.919$	$\sum x^2 = 10.741$

Using Formula:

$$S.D (\sigma) = \sqrt{\frac{\sum X^2}{n} - \left(\frac{\sum X}{n}\right)^2} = 0.483$$

$$C.V. = \frac{S.D.}{X} \times 100\%$$

$$= 34.91\%$$

Appendix 6

A. Calculation of Return on Assets Ratio of RSML

Year	EAT	Total Assets	Ratio
2005/6	548.150	28,175.780	0.019
2006/7	547.310	29,354.790	0.019
2007/8	684.150	24,464.210	0.028
2008/9	1,265.230	23,851.100	0.053
2009/10	1,355.150	24,192.990	0.056

Calculation of S.D and C.V of RSML

Year	Ratio(x)	X ²
2006/7	0.019	0.000
2007/8	0.019	0.000
2008/9	0.028	0.001
2009/10	0.053	0.003
2010/11	0.056	0.003
Total	$\sum x = 0.175$	$\sum x^2 = 0.007$

Using Formula:

$$S.D (\sigma) = \sqrt{\frac{\sum X^2}{n} - \left(\frac{\sum X}{n}\right)^2} = 0.016$$

$$C.V. = \frac{S.D.}{\bar{X}} \times 100\%$$

$$= 48.69\%$$

B. Calculation of Return to Assets Ratio of DFBPL

Year	EAT	Total Assets	Ratio
2005/6	(2.370)	1,453.440	(0.002)
2006/7	(9.330)	1,881.960	(0.005)
2007/8	13.210	2,512.390	0.005
2008/9	32.330	1,707.850	0.019
2009/10	47.330	2,843.290	0.017

Calculation of S.D and C.V of DFBPL

Year	Ratio(x)	X ²
2006/7	(0.002)	0.000
2007/8	(0.005)	0.000
2008/9	0.005	0.000
2009/10	0.019	0.000
2010/11	0.017	0.000
Total	$\sum x = 0.034$	$\sum x^2 = 0.001$

Using Formula:

$$S.D (\sigma) = \sqrt{\frac{\sum X^2}{n} - \left(\frac{\sum X}{n}\right)^2} = 0.010$$

$$C.V. = \frac{S.D.}{\bar{X}} \times 100\%$$

$$= 139.39\%$$

Appendix 7

A. Calculation of Profit Margin on Sales of RSML

Year	Profit	Sales	Ratio
2006/7	548.150	26,169.900	0.0209
2007/8	547.310	26,966.690	0.0203
2008/9	684.150	24,857.090	0.0275
2009/10	1,265.230	29,838.260	0.0424
2010/11	1,355.150	36,534.930	0.0371

Calculation of S.D and C.V of RSML

Year	Ratio(x)	X ²
2006/7	0.021	0.000
2007/8	0.020	0.000
2008/9	0.028	0.001
2009/10	0.042	0.002
2010/11	0.037	0.001
Total	$\sum x = 0.175$	$\sum x^2 = 0.007$

Using Formula:

$$S.D (\sigma) = \sqrt{\frac{\sum X^2}{n} - \left(\frac{\sum X}{n}\right)^2} = 0.009$$

$$C.V. = \frac{S.D.}{\bar{X}} \times 100\%$$

$$= 29.62\%$$

B. Calculation of Profit Margin on Sales of DFBPL

Year	Profit	Sales	Ratio
2006/7	(2.370)	1,840.660	(0.001)
2007/8	(9.330)	1,920.240	(0.005)
2008/9	13.210	3,370.210	0.004
2009/10	32.330	3,098.070	0.010
2010/11	47.330	4,150.000	0.011

Calculation of S.D and C.V of DFBPL

Year	Ratio(x)	X ²
2006/7	-0.001	0.000
2007/8	-0.005	0.000
2008/9	0.004	0.000
2009/10	0.010	0.000
2010/11	0.011	0.000
Total	$\sum x = 0.020$	$\sum x^2 = 0.000$

Using Formula:

$$S.D (\sigma) = \sqrt{\frac{\sum X^2}{n} - \left(\frac{\sum X}{n}\right)^2} = 0.006$$

$$C.V. = \frac{S.D.}{X} \times 100\%$$

$$= 162.30\%$$

Appendix 8

A. Calculation of Return on Equity of RSML

Year	Profit	Equity	Ratio
2006/7	548.150	8,500.000	0.064
2007/8	547.310	8,500.000	0.064
2008/9	684.150	8,500.000	0.080
2009/10	1,265.230	8,500.000	0.149
2010/11	1,355.150	8,500.000	0.159

Calculation of S.D and C.V of RSML

Year	Ratio(x)	X ²
2006/7	0.064	0.004
2007/8	0.064	0.004
2008/9	0.080	0.006
2009/10	0.149	0.022
2010/11	0.159	0.025
Total	$\sum x = 0.518$	$\sum x^2 = 0.062$

Using Formula:

$$S.D (\sigma) = \sqrt{\frac{\sum X^2}{n} - \left(\frac{\sum X}{n}\right)^2} = 0.042$$

$$C.V. = \frac{S.D.}{\bar{X}} \times 100\%$$

$$= 40.44\%$$

B. Calculation of Return on Equity of DFBPL

Year	Profit	Sales	Ratio
2006/7	(2.370)	100.000	-0.024
2007/8	(9.330)	100.000	-0.093
2008/9	13.210	100.000	0.132
2009/10	32.330	100.000	0.323
2010/11	47.330	100.000	0.473

Calculation of S.D and C.V of RSML

Year	Ratio(x)	X ²
2006/7	-0.024	0.001
2007/8	-0.093	0.009
2008/9	0.132	0.017
2009/10	0.323	0.105
2010/11	0.473	0.224
Total	$\sum x = 0.812$	$\sum x^2 = 0.355$

Using Formula:

$$S.D (\sigma) = \sqrt{\frac{\sum X^2}{n} - \left(\frac{\sum X}{n}\right)^2} = 0.211$$

$$C.V. = \frac{S.D.}{\bar{X}} \times 100\%$$

$$= 130.23\%$$

Appendix 9

Calculation of Simple Regression Analysis

1. Relationship between Net Profit and Total debt of Reliance Spinning Mills Limited

Year	T.D.(X)	N.P.(Y)	$x = (X - \bar{X})$	$x^2 = (X - \bar{X})^2$	$y = (Y - \bar{Y})$	$y^2 = (Y - \bar{Y})^2$	xy
2006/7	13,152.660	548.150	415.712	172,816.467	(331.848)	110,123.095	(137,953.196)
2007/8	15,338.980	547.310	2,602.032	6,770,570.529	(332.688)	110,681.305	(865,664.822)
2008/9	12,777.810	684.150	40.862	1,669.703	(195.848)	38,356.439	(8,002.741)
2009/10	11,014.390	1,265.230	(1,722.558)	2,967,206.063	385.232	148,403.694	(663,584.463)
2010/11	11,400.900	1,355.150	(1,336.048)	1,785,024.258	475.152	225,769.423	(634,825.879)
Total	$\sum X =$ 63,684.740	$\sum Y =$ 4,399.990		$\sum x^2 =$ 11,697,287.021		$\sum y^2 =$ 633,333.956	$\sum xy =$ (2,310,031.102)

Using Formula

Now,

For total debt

$$\bar{X} = \frac{\sum X}{N} = \frac{63,684.740}{5} = 12,736.948$$

For Net Profit

$$\bar{Y} = \frac{\sum Y}{N} = \frac{4,399.990}{5} = 879.998$$

Calculation of Standard deviation

$$\begin{aligned} \sigma_x &= \sqrt{\frac{\sum (X - \bar{X})^2}{N}} \\ &= \sqrt{\frac{11,697,287.021}{5}} \\ &= 1529.528 \end{aligned}$$

$$\begin{aligned} \sigma_y &= \sqrt{\frac{\sum (Y - \bar{Y})^2}{N}} \\ &= \sqrt{\frac{633,333.956}{5}} \\ &= 355.903 \end{aligned}$$

Calculation of correlation coefficient

$$\begin{aligned} r &= \frac{\sum xy}{\sqrt{\sum x^2 \sum y^2}} \\ &= \frac{-2,310,031.102}{\sqrt{11,697,287.021 \times 633,333.956}} \\ &= -0.849 \end{aligned}$$

Calculation of Regression equation between Total Debt and Net Profit

$$Y - \bar{Y} = b_{xy} (X - \bar{X})$$

$$\text{Or, } Y - 879.998 = -0.849x \frac{1529.528}{355.903} (X - 12,736.948)$$

$$\text{Or, } Y = 47,352.799 - 3.649x$$

Where,

$$b_{xy} = r \cdot \sigma_x / \sigma_y$$

2. Relationship between Net Profit and Total debt of Dugar Food & Beverages Pvt. Ltd.

Year	T.D.(X)	N.P.(Y)	$x = (X - \bar{X})$	$x^2 = (X - \bar{X})^2$	$y = (Y - \bar{Y})$	$y^2 = (Y - \bar{Y})^2$	xy
2006/7	914.360	(2.370)	248.726	61,864.623	(18.604)	346.109	(4,627.299)
2007/8	712.140	(9.330)	46.506	2,162.808	(25.564)	653.518	(1,188.879)
2008/9	288.790	13.210	(376.844)	142,011.400	(3.024)	9.145	1,139.576
2009/10	512.880	32.330	(152.754)	23,333.785	16.096	259.081	(2,458.728)
2010/11	900.000	47.330	234.366	54,927.422	31.096	966.961	7,287.845
Total	$\sum X =$ 3,328.17	$\sum Y =$ 81.170		$\sum x^2 =$ 284,300.038		$\sum Y^2 =$ 2,234.814	$\sum xy =$ 152.515

Using Formula

Now,

For total debt

$$\bar{X} = \frac{\sum X}{N} = \frac{3,328.17}{5} = 665.634$$

For Net Profit

$$\bar{Y} = \frac{\sum Y}{N} = \frac{81.170}{5} = 16.234$$

Calculation of Standard Deviation

$$\begin{aligned} \sigma_x &= \sqrt{\frac{\sum (X - \bar{X})^2}{N}} \\ &= \sqrt{\frac{284,300.038}{5}} \\ &= 238.453 \end{aligned}$$

$$\begin{aligned} \sigma_y &= \sqrt{\frac{\sum (Y - \bar{Y})^2}{N}} \\ &= \sqrt{\frac{2,234.814}{5}} \\ &= 21.141 \end{aligned}$$

Calculation of correlation coefficient

$$\begin{aligned} r &= \frac{\sum xy}{\sqrt{\sum x^2 \sum y^2}} \\ &= \frac{152.515}{\sqrt{284,300.038 \times 2,234.814}} \\ &= 0.006 \end{aligned}$$

Calculation of Regression Equation between Total Debt and Net Profit

$$Y - \bar{Y} = b_{xy} (X - \bar{X})$$

$$\text{Or, } Y - 16.234 = 0.006 \times \frac{238.453}{21.141} (X - 665.634)$$

$$\text{Or, } Y - 16.234 = 0.068(X - 665.634)$$

$$\text{Or, } Y = -29.029 + 0.068X$$

Where,

$$b_{xy} = r \cdot \sigma_x / \sigma_y$$

Appendix 10

Calculation of Simple Regression Analysis

1. Relation between ROE and Debt Ratio Reliance Spinning Mills Limited

Year	Debt Ratio(X)	ROE(Y)	$x = (X - \bar{X})$	$x^2 = (X - \bar{X})^2$	$y = (Y - \bar{Y})$	$y^2 = (Y - \bar{Y})^2$	xy
2006/7	0.467	0.064	(0.022)	0.000	(0.039)	0.001	0.000
2007/8	0.523	0.064	0.034	0.001	(0.039)	0.001	0.000
2008/9	0.522	0.080	0.033	0.001	(0.023)	0.000	0.000
2009/10	0.462	0.149	(0.027)	0.000	0.046	0.002	0.000
2010/11	0.471	0.159	(0.018)	0.000	0.056	0.003	0.000
Total	$\sum X = 2.445$	$\sum Y = 0.516$		$\sum x^2 = 0.004$		$\sum y^2 = 0.009$	$\sum xy = 0.000$

Using Formula

Now,

For debt ratio

$$\bar{X} = \frac{\sum X}{N} = \frac{2.445}{5} = 0.489$$

For ROE

$$\bar{Y} = \frac{\sum Y}{N} = \frac{0.516}{5} = 0.103$$

Calculation of standard deviation

$$\sigma_x = \sqrt{\frac{\sum (X - \bar{X})^2}{N}}$$

$$= \sqrt{\frac{0.004}{5}}$$

$$= 0.028$$

$$\sigma_y = \sqrt{\frac{\sum (Y - \bar{Y})^2}{N}}$$

$$= \sqrt{\frac{0.009}{5}}$$

$$= 0.042$$

Calculation of correlation of coefficient

$$\begin{aligned}r &= \frac{\sum xy}{\sqrt{\sum x^2 \sum y^2}} \\ &= \frac{0.000}{\sqrt{0.004 \times 0.009}} \\ &= 0.001\end{aligned}$$

Calculation of Regression equation between ROE and Debt Ratio

$$Y - \bar{Y} = b_{xy} (X - \bar{X})$$

$$\text{Or } Y - 0.103 = 0.001(X - 0.489)$$

$$\text{Or } Y - 0.103 = 0.001X - 0.000$$

$$\text{Or } Y = 0.103 + 0.001X$$

Where,

$$b_{xy} = r \cdot \sigma_x / \sigma_y$$

2. Relation between ROE and Debt Ratio of Dugar Food & Beverages Pvt. Ltd.

Year	Debt Ratio(X)	ROE(Y)	$x = (X - \bar{X})$	$x^2 = (X - \bar{X})^2$	$y = (Y - \bar{Y})$	$y^2 = (Y - \bar{Y})^2$	xy
2006/7	0.629	(0.024)	0.281	0.079	(0.186)	0.035	0.003
2007/8	0.378	(0.093)	0.031	0.001	(0.256)	0.065	0.000
2008/9	0.115	0.132	(0.233)	0.054	(0.030)	0.001	0.000
2009/10	0.300	0.323	(0.048)	0.002	0.161	0.026	0.000
2010/11	0.317	0.473	(0.031)	0.001	0.311	0.097	0.000
	$\Sigma X =$ 1.739	$\Sigma Y =$ 0.812		$\Sigma x^2 = 0.138$		$\Sigma y^2 = 0.223$	$\Sigma xy =$ 0.003

Using Formula

Now,

For total debt

$$\bar{X} = \frac{\sum X}{N} = \frac{1.739}{5} = 0.348$$

For Net Profit

$$\bar{Y} = \frac{\sum Y}{N} = \frac{0.812}{5} = 0.162$$

Calculation of standard deviation

$$\sigma_x = \sqrt{\frac{\sum (X - \bar{X})^2}{N}}$$

$$= \sqrt{\frac{0.138}{5}}$$

$$= 0.166$$

$$\sigma_y = \sqrt{\frac{\sum (Y - \bar{Y})^2}{N}}$$

$$= \sqrt{\frac{0.233}{5}}$$

$$= 0.211$$

Calculation of correlation coefficient

$$\begin{aligned} r &= \frac{\sum xy}{\sqrt{\sum x^2 \sum y^2}} \\ &= \frac{0.003}{\sqrt{0.138 \times 0.223}} \\ &= 0.017 \end{aligned}$$

Calculation of Regression equation between ROE and debt ratio

$$Y - \bar{Y} = b_{xy} (X - \bar{X})$$

$$\text{Or } Y - 0.162 = 0.013 (X - 0.348)$$

$$\text{Or } Y - 0.162 = 0.013X - 0.005$$

$$\text{Or } Y = 0.013X + 0.157$$

Where,

$$b_{xy} = r \cdot \sigma_x / \sigma_y$$

Appendix 11
Calculation of Simple Regression Analysis

1. Relationship between Net Profit and Long-Term Debt of
Reliance Spinning Mills Limited

Year	LTD(X)	N.P.(Y)	$x = (X - \bar{X})$	$x^2 = (X - \bar{X})^2$	$y = (Y - \bar{Y})$	$y^2 = (Y - \bar{Y})^2$	xy
2006/7	6,325.400	548.150	525.862	276,530.843	(331.848)	110,123.095	(615.860)
2007/8	7,861.820	547.310	2,062.282	4,253,007.048	(332.688)	110,681.305	375.150
2008/9	5,895.290	684.150	95.752	9,168.446	(195.848)	38,356.439	99.240
2009/10	5,514.280	1,265.230	(285.258)	81,372.127	385.232	148,403.694	10.830
2010/11	3,400.900	1,355.150	(2,398.638)	5,753,464.255	475.152	225,769.423	(270.550)
Total	$\sum X =$ 28,997.690	$\sum Y =$ 4,399.990		$\sum x^2 =$ 10,373,542.72		$\sum y^2 =$ 633,333.956	$\sum xy =$ (401.180)

Using Formula

Now,

For total debt

$$\bar{X} = \frac{\sum X}{N} = \frac{28,997.690}{5} = 5,799.54$$

For Net Profit

$$\bar{Y} = \frac{\sum Y}{N} = \frac{4,399.990}{5} = 880.000$$

Calculation of Standard deviation

$$\begin{aligned} \sigma_x &= \sqrt{\frac{\sum (X - \bar{X})^2}{N}} \\ &= \sqrt{\frac{10,373,542.72}{5}} \\ &= 1,440.385 \end{aligned}$$

$$\begin{aligned} \sigma_y &= \sqrt{\frac{\sum (Y - \bar{Y})^2}{N}} \\ &= \sqrt{\frac{633,333.956}{5}} \\ &= 355.903 \end{aligned}$$

Calculation of correlation coefficient

$$\begin{aligned} r &= \frac{\sum xy}{\sqrt{\sum x^2 \sum y^2}} \\ &= \frac{-401.180}{\sqrt{10,373,542.72 \times 633,333.956}} \\ &= -0.001 \end{aligned}$$

Calculation of Regression Equation between Long Term debt and Net Profit

$$Y - \bar{Y} = b_{xy} (X - \bar{X})$$

$$\text{Or, } Y - 880.000 = -0.004 (X - 5,799.54)$$

$$\text{Or, } Y = 903.192 - 0.004X$$

Where,

$$b_{xy} = r \cdot \sigma_x / \sigma_y$$

2. Relationship between Net Profit and Long-Term Debt of
Dugar Food and Beverage Pvt. Ltd.

Year	LTD(X)	N.P.(Y)	$x = (X - \bar{X})$	$x^2 = (X - \bar{X})^2$	$y = (Y - \bar{Y})$	$y^2 = (Y - \bar{Y})^2$	xy
2006/7	540.000	(2.370)	177.520	31,513.350	(18.604)	346.109	(615.860)
2007/8	259.520	(9.330)	(102.960)	10,600.762	(25.564)	653.518	375.150
2008/9	-	13.210	(362.480)	131,391.750	(3.024)	9.145	99.240
2009/10	512.880	32.330	150.400	22,620.160	16.096	259.081	10.830
2010/11	500.000	47.330	137.520	18,911.750	31.096	966.961	(270.550)
Total	$\sum X =$ 1812.400	$\sum Y =$ 81.170		$\sum x^2 =$ 215,037.773		$\sum Y^2 =$ 2,324.81	$\sum xy =$ (401.18)

Using Formula

Now,

For total debt

$$\bar{X} = \frac{\sum X}{N} = \frac{1812.400}{5} = 362.48$$

For Net Profit

$$\bar{Y} = \frac{\sum Y}{N} = \frac{81.170}{5} = 16.23$$

Calculation of Standard Deviation

$$\begin{aligned} \sigma_x &= \sqrt{\frac{\sum (X - \bar{X})^2}{N}} \\ &= \sqrt{\frac{215,037.773}{5}} \\ &= 207.383 \end{aligned}$$

$$\begin{aligned} \sigma_y &= \sqrt{\frac{\sum (Y - \bar{Y})^2}{N}} \\ &= \sqrt{\frac{2,324.81}{5}} \\ &= 21.141 \end{aligned}$$

Calculation of correlation coefficient

$$\begin{aligned} r &= \frac{\sum xy}{\sqrt{\sum x^2 \sum y^2}} \\ &= \frac{-401.18}{\sqrt{215,037.773 \times 2,324.81}} \\ &= -0.092 \end{aligned}$$

Calculation of Regression equation between Long-term debt and N.P.

$$Y - \bar{Y} = b_{xy} (X - \bar{X})$$

$$\text{Or, } Y - 16.23 = -0.898 (X - 362.48)$$

$$\text{Or, } Y = 341.737 - 0.898X$$

Where,

$$b_{xy} = r \cdot \sigma_x / \sigma_y$$