CHAPTER I
INTRODUCTION

1.1 General Background

The capital structure consist two words i.e. capital and structure. It means that capital as the funds collected from different sectors for mobilization of resources. While the term, structure is the management of capital as well as other components. In other word the capital structure is the combination of different long term sources of funds such as debentures, long term debt, preferred stock and common stock (equity share capital) including reserves and surplus (i.e. retained earnings).

The concept of capital structure has an important place in the theory of financial management. The term capital structure refers to the proportion of debt and equity capital. Thus, the financing decision of a firm relates to choice of proportion of debt and equity to finance the investment requirement. A proper balance between debt and equity is necessary to ensure a trade-off between risk and return to the shareholders. A capital structure with reasonable proportion of debt and equity capital is called optimal capital structure. However, it can be expected that if the capital structure decision affects the total value of the firm, a firm should select such a financing-mix, which maximize the shareholders' wealth. The optimal capital structure and its implication are more noticeable.

The firm's objective to maximize the wealth of the shareholder or return and equity is not meet by the Nepalese companies because in most of the companies there is no existence of debt in their capital structure and equity capital is only one sources of financing while in some cases the proportion of debt is very high which creates the excess burden of the firm. Use of debt financing in the capital structure is very poor in banking sector *(Shrestha, 2010).*

Development is closely depends upon infrastructure development like transportation, water supply, communication, and energy supply etc. these are most essential factor for economical development. Energy supply plays vital role on the development. Energy can be produce through traditional and carbon base source like coal, oil, gas, ethanol plants, hydrogen power and renewable source like wind, solar panels and hydro electricity. It is necessary to produce cheap energy at the same time we should consider environment. Hydro electricity is most favorable way to energy produce by considering environment and long term costing. But huge capital investment will require for resolving the current energy crisis.

Although bestowed with tremendous hydropower resources, only about 40% of Nepal's population has access to electricity. Most of the power plants in Nepal are run-of-river type with energy available in excess of the in-country demand during the monsoon season and deficit during the dry season.

Nepal's electricity generation is dominated by hydropower, though in the entire scenario of energy use of the country, the electricity is a tiny fraction, only 1% energy need is fulfilled by electricity. The bulk of the energy need is dominated by fuel wood (68%), agricultural waste (15%), animal dung (8%) and imported fossil fuel (8%). The other fact is that only about 40% of Nepal's population has access to electricity. With this scenario and having immense potential of hydropower development, it is important for Nepal to increase its energy dependency on electricity with hydropower development. This contributes to deforestation, soil erosion and depletion, and increased flooding downstream in the Ganges plain. Shortage of wood also pushes farmers to burn animal dung, which is needed for agriculture. Not only this, the development of hydropower will help to achieve the millennium development goals with protecting environment, increasing literacy, improving health of children and women with better energy. Growing environmental degradation adds a sense of urgency.

Potential for Development

There are about six thousand big and small rivers in three major river basins namely Koshi, Gandaki and Karnali including some southern rivers, and two border rivers, Mechi and Mahakali in Nepal. The basin wise potential for power generation is given in Table 1.1

Table 1.1: Basin wise Hydropower potential

River Basin	Capacity on small river courses	Capacity on Major River Courses	Gross Total (GW)	Economic potential (GW)
Sapta Koshi	3.6	18.75	22.35	10.86
Sapta Gandaki	2.7	17.95	20.65	5.27
Karnali and Mahakali	3.5	32.68	36.18	25.1
Southern Rivers	1.04	3.07	4.11	.88
Total	**10.84**	**72.45**	**83.29**	**42.14**

(Source: The Hydropower Development Policy, 2001)

Nepal has a huge hydropower potential. In fact, the perennial nature of Nepali rivers and the steep gradient of the country's topography provide ideal conditions for the development of some of the world's largest hydroelectric projects in Nepal. Current estimates are that Nepal has approximately 40,000 MW of economically feasible hydropower potential. However, the present situation is that Nepal has developed only approximately 600 MW of hydropower. Therefore, bulk of the economically feasible generation has not been realized yet. Besides, the multipurpose, secondary and tertiary benefits have not been realized from the development of its rivers.

There are different source of capital which can be used in the capital structure of the company. "Capital structure refers to a mix of different types of securities like common stock, preferred stock, long-term debt issued by a firm to finance its assets. A firm is said to be unlevered if it has no debt, while a firm with debt in its capital structure is leveraged, The choice of the mix of the capitals is the process of capital structure decision-making which is the most

important responsibility of the financial manager/senior management of the companies. The mixing of resources of capital reflects about the future policy of the company. It also makes clear about the risk averting or risk taking nature of the companies to reap the cream of the world market in the present context of the globalization. So, it is necessary to know about the different types of capital along with their advantages and disadvantages to make the sound capital structure decision. Equity capital is the most essential source of capital in the company, which gives the ownership of the company to the equity shareholders.

The company collects the capital by issuing the equity shares. The people who purchase the equity share are called equity shareholders and are the real owner of the issuing company. The company generally distributes the dividend to the equity shareholders as a return for their investment in the case of making profit. The company may not distribute its profit in the form of dividend to the equity shareholders. The management of the company may decide to retain the profit to make investment in the potential investment opportunities arising in the market. This type of profit retained is called retained earnings and is also the equity capital for the company. Hence the company has not the compulsory obligation to pay return in fixed rate for the equity shareholders. Reserved fund, general reserve, profit and loss a/c etc. are also taken as the sources of equity capital. When the company does not want to liquidate its ownership, it issues the bond debenture to collect debt capital for the purpose of increasing the return and wealth of the equity shareholders. The company generally collects the debt capital when there is the potential opportunity to increase the profitability of the company. As the debt capital bears the cost in the form of interest, it is regarded as the riskier source of capital. The use of debt capital has the advantage in the form of tax saving which decreases the cost. Interest to the debt capital should be paid periodically as the fixed charge to the lenders. The equity shareholders may earn certain amount as dividend only after the payment of fixed interest from the company's profitability to the lenders. In this way, the payment of fixed interest to debt affects the return to the equity

shareholders. This effect is known as leverage. There are two types of debt. These are long-term debt or short-term debt. The use of the short-term debt may be less expensive than long-term debt but short-term debt is riskier than the long-term debt. Hence, the use of the appropriate type of debt in the capital structure to make the sound leverage is the sound capital structure decision making. The company also uses another type of capital which has the characteristics of both equity and debt capital and is less risky than debt capital and more risky than equity capital. This type of capital is called hybrid securities and is known to be preference share capital. Depending upon the different types of the preference shares, the company has the fixed liability to pay the preferred dividend to the preference shareholders. But the company does not need to bear the fixed liability to pay the preferred dividend like in the case of interest to debt in the condition of not making the profit. So the company has the liberal fixed responsibility in using the preference share capital in the capital structure. The equity shareholders' profit can be calculated only after the payment of preferred dividend. But, the payment of preferred dividend is ranked after the payment of interest to the debt holders. Equity capital is mostly used in their capital structure of Nepalese traditional companies. Only few companies are using the debt. But the use of preference share capital is rarely found in Nepal. The good mix of all sources of capital is the important for maximizing the shareholder's wealth. The appropriate use different sources of capital reduce the overall cost of capital and the cost of product which helps to compete in the market and to foster the industrialization process for contributing to the national economy. Hence, the study of the capital structure is the most important for the manufacturing companies to increase their profitability. Study of capital structure of running company is most important before lunching new company. This helps to know ability of different kind of fund and its effects such as return, risk, flexibility, capacity and control. Every investor wants maximum return on lower risk. For this proposes achieve optimal capital structure should be select from available source of fund.

1.2 Focus of the Study

The main purpose of this study is to evaluate the capital structure of the listed hydro electricity company. There are three hydropower company listed on Nepal stock exchange. It is well known fact in Nepal is that, we have natural resource but investment capacity and technology is not enough. In this context, major question would be available source of capital rather than capital structure. But appropriate capital structure play vital role in case of long term profitability and survival of company. The capital structure decision is a major decision, which affects the overall cost of capital, total value of the firm and earnings per share. The optimum capital structure maximizes the total value of firm and earnings per share. Three listed hydro power producers companies in Nepal are Butwal Power Company Limited (BPCL), Chilime Hydropower Company Limited (CHPCL) and National Hydro Power Company Limited (NHL). Short description of above these companies is as follows. This study will also concern about the causes of bearing profit in previous some year and the about the increasing trends of profit in recent days.

The study specially focused with analyzing the following questions:

- Factors that should be considered for the appropriate Capital structure?
- Whether the financial source is available in market for maintain optimal capital structure or not?
- What is the relationship of leverage with different financial indicators (ratios)?
- Effect of Capital structure decisions on total value of the firm.
- Impact of Capital structure risk and return.

Finally the main focus of the study is the debt and equity position of the companies and its impact on the net income of the companies. This study also focuses about the dependency of value of the firm on the Capital structure.

1.2.1 Butwal Power Company Limited (BPCL)

Butwal Power Company was established on 29th December 1965, it converse into public Ltd on 17thFebruary 1983 and it privatization on 3rd January, 2003. After privatization of the company principal shareholders of BPCL are the

Private Shareholders (Shangri-la Energy Limited and Interkraft Norway) and Ministry of Water Resources, Nepal Government, etc. It Owns and operates the 12 MW Jhimruk Hydropower Plant, the 5.1 MW Andhi Khola Hydropower Plant, 14.9% of the shares in Khimti I Hydropower Plant (60 MW), 51.3% in Nepal Hydro and Electric Pvt. Ltd, 20% in HydroLab Pvt Ltd, 24% in JIDCO. It also owns 60% of the shares in Khudi Hydropower Company which has been in commercial operation since 30th December, 2006.

1.2.2 Chilime Hydropower Company limited (CHPCL)

Chilime Hydropower Company Limited (CHPCL) is a subsidiary company of NEA with 51% equity ownership. The Company was established in 1996. Chilime Hydroelectric project with installed capacity of 22.1 MW and located at Rassuwa district was built and commissioned by this Company on August 25, 2003 (2060/05/08 BS). The Project is now in fifth year of commercial operation. The project has delivered 528.63 GWh of electrical energy to NEA since August 2003. CHPCL is now executing four more hydroelectric projects which are at various stages of development. The feasibility study of two projects, upper Sanjen Hydroelectric project (11 MW) and Sanjen Hydroelectric project project (35) have been completed and application has been submitted for the power purchase agreement (PPA) with NEA. Both of these projects are located upstream of the existing Chilime HEP. CHPCL has also completed the feasibility study of Middle Bhotekoshi Hydroelectric Project (80 MW) located in Sindhupalchowk district. Local people of Sindhupalchowk district and other organization will be participating in the development of this project. CHPCL has Feasibility Study License of Rasuwagadi Hydroelectric project (75 MW) in the Rassuwa District. CHPCL is committed to develop more of medium and large scale hydroelectric projects in future with greater participation from various sectors in the country.

1.2.3 National Hydro Power Company (NHPC)

National Hydro Power Company has established by NB group in joint venture with Lyse Kraft AS of Norway in 1996. Lyse Kraft AS was founded in 1947 and is currently amongst the five largest power producers of Norway.

NHPC has currently completed a 7.5 MW Indrawati III Hydro Power Project which was commenced in 1999. This project is located east of Kathmandu. NHPC received the license to transmit the 7.5MW electricity from this project's location to Panchkhal substation, from where the sale of electricity to NEA will take place. The company is also promoting more Hydro Power Projects in the future for which feasibilities are being carried out.

1.3   Statement of the Problem

The capital structure concept has playing the subject of controversy since the publication of modigilani and millers' classical paper in 1958 (Modigilani and Miller, 1958:261-297). They hold the view that the cost of capital to a firm remains invariant to the capital structure changes. On the other hand, the traditional belief is that the cost of capital is the function of capital structure (Soloman, 1969:92-98). Many inmperical studies exist supporting and refuting the M-M and traditional view (Barges, 1963). In his studies he used simple regression technique to analyses the relationship between the average cost of capital and leverage and between the the stock yield and debt equity ratio and utilised cross section data from three different industries. The traditional view was supported as conclusion. 'Weston used M-M's cost of capital model for his sample of 59 utilities in 1959. He found regression coefficient of leverage to be positive and significant. However, when the multiple regressions were run, the result was constant with the traditional view (Weston, 1965:107-112).

Nepal is a country with high potential of hydro electricity and government has adopted open door policy but investment on this field is not satisfactory. Three

listed company is running their business. The problems can be stated by pointing out the following issues in the summarized form.

i.   Have companies been able to maintain appropriate capital structure?

ii. Is there any the financial inefficiency on these company?

iii. What is the existing capital structure position of these companies?

iv. Is there any effort to maximize value through capital structure?

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

vi. What is the comparative position of these companies in respect of their capital structure?

1.4   Objectives of the Study

Main objective of the study is to identify, analyze and interpret th right picture of the capital structure of selected companies in Nepal. Study will analyze the effect of financial leverage on returns and risk and also pick out the relationship between Capital structure and related variables. The specific objectives of the study are as follows:

i.   To know the composition structure and characteristics of capital structure of listed hydro power companies.

ii. To compute the correlation between long term debt and capital.

iii. To analyze the impact of debt financing on profitability.

iv. To provide recommendations on the basis of the study.

v.   To examine the relationship of leverage with different financial indicators (ratios).

1.5   Significant of Study

Nepal is a developing country has a limited resource for infrastructure development but enormous hydropower potential and highly scarcity of energy. In this context, Nepal must search source of investment, it should be foreign investment, mutual investment, private sector investment and government investment. In current scenario there are many profitability projects but capital investment is being main issue. We can take examples of upper Tamakosi,

where one strong investor Nepal telecom is looking for a share capital but other is asking for long term debt investment. This examples helps to know that money is not always problem for profitable projects but manage the financial interest of different investor is real challenge. Money can be arranged on profitable projects but capital structure would be issue. Study of capital structure of current running company, analyzing from different angle and find out advantage and drawback of that capital structure will help to take knowledge for future new company to find out optimal capital structure. We can find rare sector where company need not compete with each other for sale there product. Hydroelectricity is that industry where producers are free form competition to sale their product. Power can be sell through 'National electricity Authority' on mutual agreement because demand is higher than production. Here is only problem in initial investment, find out feasible projects and internal cost control and planning capital structure. The reasons of the need of the study can also be summarized by the following points:

i. This study will help to understand the capital structure of the Nepalese hydro power companies.

ii. This study provides the knowledge about capability (leverage) of the Nepalese power companies on their financial sources.

iii. This study provides the information towards the stakeholders and future investor of the companies.

iv. This study will provide the comparative knowledge of the return on the capital, cost of capital in the capital structure, correlation among the elements, relationships between two variables through regression analysis and dimensions of the capital structure.

1.6   Limitations of the Study

This study is mainly concerned with the Capital structure of CHPCL, BPCL & NHPCL. Study analyzes the impact of debt in the equity holder's profit and risk. As every study, this study will be limited by following factors.

i. The Capital structure is affected by several factors, but this study is mainly concerned with debt- equity composition and its impact on risk and return.

ii. The secondary data is basic input of the study and, thus, accuracy of conclusion derived from them highly depends upon the reliability of these data.

iii. This study may not be precise as it is to fulfill the partial requirement of the MBS program.

iv. In absence of sufficient information, various Capitalization rates will assumed for average market condition during past five years.

v. Another limitation of the study is time and resources constraints, many effective factors have been more detailed and effective in order to tie the study to its time boundary and limited resources.

1.7 Organization of the Study

This is the study of Capital structure of the CHPCL, BPCL and NHPCL. This study has five chapters. The first chapter is Introduction. This chapter will contain background, theoretical background, focus of the study, company's profile, statement of the problem, objective of the study, and importance of the study, limitation of the study, assumption of the study and organization of the study. The second chapter is Review of Literature. In this chapter, review of various related books, journals, other publications and also unpublished master level dissertations. The third chapter is Research Methodology. In this chapter, several tools and techniques employed for analysis are defined properly in the presentation of data. The fourth chapter is Presentation and Analysis of Data. This chapter will be about impact of Capital structure on return and risk of CHPCL, BPCL and NHPCL. This chapter consists of organizing, tabulating and assessing financial and statistical tools. The fifth chapter is Summary of Major Findings, Conclusions and Recommendations. This will be the last chapter about of major findings, prevailing issues and gaps of the corporation and suggestions to the companies that will help to improve companies in any way. Bibliography used in the study has been attached in the end of the thesis.

CHAPTER II

REVIEW of Literature

In this chapter, the review of various books, research studies and articles have been used to make clear about the concept of capital structure as well as to recall the previous studies made by various researchers. To make meaningful research study, the conceptual review has been done through the study of various books and articles. In addition, researches conducted by the previous researchers in the field of capital structure management have also been reviewed by studying their research work, thesis, dissertation etc. So, this chapter 'Literature review' has been divided into the following four section sections:

- Conceptual Framework
- Legal and Contractual Review
- Review of Journals and Articles
- Review of Thesis

2.1. Conceptual Framework

The conceptual framework is the framework of the literature of the research study, which includes concept and theories of capital structure and the different variables related to the capital structure of the companies. This provides the concept of the various determinants of capital structure of the company.

2.1.1. Concept of Capital Structure

"Capital is an important factor of a new and existed company or capital is the life blood for the existence of company. A new business requires capital for production and expansion. Capital is a scarce source and much more essential to maintain smooth operation of any firm. The required funds can raise form different sources and many different firms. The available capital and financial resources should be utilized so effectively that it could generate maximum

return. However all capital can be classified into two basic types- debt and equity." *(Brigham, Gape ski and Ehrhardt; 2001: 579).*

"Capital Structure 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" (*Western and Brigham; 1978:555*).

The higher the debt ratio, the greater the risk and thus higher the interest rate, if the company fall on hard times, and if its operating income is insufficient to cover the interest charges, the stockholders will have to make up the shortfall, and if they control, the company may be forced into bankruptcy. Good times just around the corner, but too much debt can keep the company from getting there and can wipe out stockholders in the process. These are the disadvantages of financing by debt capital. Shareholders are the actual owners of the firm. But preference shareholders have preference right to get return from the company than the equity shareholders. So equity shareholders receive the remaining portion of net return after paying the preference dividend to preference shareholders, which is predetermined. So the company should make the appropriate financial mix while raising capital.

Capital structure can be define as the mix of the long term source of fund such as equity share capital including all share holders fund, preference share capital, Bonds, debenture and long-term debt. Company should plan its capital structure to maximize the use of the funds and to be able to adapt more easily to change condition.

2.1.2. Optimum Capital Structure

The optimal capital structure is that combination of combination of debt and equity that maximizes the market value per share. That maximizes the value of the company or shareholders' wealth and minimizes the company's cost of capital. The value will be maximized or the cost will be minimized when the marginal cost of each source of the funds is same. The optimal capital structure

is the combination of debt, preferred stock and common equity that minimizes the weighted average cost of capital. Optimal capital structure is defined as the combination of debt and equity where the value the firm is maximized and the cost of capital will be minimize.

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

"An optimal capital structure would be obtained at the combination of debt and equity that maximize the total value of the firm or minimize the weighted average cost of capital". *(Pandey; 675:77)*

The optimum 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.

2.1.3. Capital Structure Theory

Capital structure of a firm is a mirror in which one can see the actual image of the firm. The study of the leverage cannot be possible without the study of the capital structure. So, the capital structure of a company plays a vital role with regard to leverage. The leverage and the capital structure concepts are closely related linked to cost of capital and capital budgeting decisions. In fact, the long term debt and equity maintained by the firm for its investment is known as capital structure, where as leverage is the study of fixed charges, i.e. debt and preference share capital, of the firm's capital structure. So, the study of leverage and study of the capital structure are complementary, which is the analysis of proportionate relationship between debt and equity, "However, the capital structure can affect the value of a company by affecting either its expected earnings or cost of capital or both" *(Khan and Jain; 1998:488).*

As being the crucial in the process of financial decision making, capital structure concept and its effective analysis could be the basis for a company's future. Some companies do not make plan about their capital structure because they use to take the financial decisions without the formal planning. They collect the essential capital from different sources but they have to face considerable difficulties in raising fund to operation. Due to this reason, company may bear a loss in the long run. So, the capital structure decisions should be well planned and the financial manager should try to plan the optimal capital structure for a company.

In practice, the determination of capital structure is a necessary and responsible task. As being not an easy task to make the optimal capital structure, capital structure theories help to make the capital structure decision by its detailed study. Capital structure theories are the principles given by some finance experts about the financial decision making process. "The existence of the optimum capital structure is not accepted by all. There exist two extreme views and a middle position" (*Pandey; 1999:675*). Those are as follows:

- Net income approach
- Net operating approach
- Traditional approach
- Modigliani-Miller Approach

These two divergent views are the variations of the net income approach (NI) and the net operating income approach (NOI) as a originally developed by Durand (Durand, 1958). In 1958, a comprehensive analysis of capital structure by Franco Modigliani and Merton Miller published an article on the issue of capital structure irrelevancy. The article is considered to be the most significant work in financial research. In this article, M-M logically assert that the value of the firm or the cost of capital is independent of capital structure decision of the firm. However, two conflicting views exist on the relationship between capital structure and cost of capital or the value of the firm (Modigliani and Miller, 1958:261-297).

2.1.3.1. Net Income Approach (NIA)

Net Income Approach focuses the increase in total valuation of the firm through the reduction in the cost of capital leading to increase in the cost of capital leading to an increase in the degree of leverage. It is also known as dependent hypothesis of capital structure. The essence of this approach is that the firm can reduce its cost of capital by using debt. "The essence of the net income (NI) approach is that the firm can increase its value or lower the overall cost of capital by increasing the proportion of debt in the capital structure"*(Pandey; 1999:678).* The crucial assumption of this approach are of debt does not change the risk perception of the investors. Consequently, the interest rate on debt (K_d) and the equity capitalization rate (K_e) remains constant to debt.

Importance of net income approach is that the firm can increase its value or lower the overall cost of capital by increasing the proportion of debt in the capital structure. It supports the traditional theory of capital structure. This theory assumes that the cost of debt and cost of equity remain constant as change in the firm's capital structure.

A change in the capital structure will lead to the corresponding changes in the overall cost of capital as well as total value of the firm. If the firm adds cheaper debt to its capital structure, its cost of capital declines because debt is less risky than equity. On the other hand, the overall value of the firm increases. Thus, if the firm increases its leverage by increasing debt in capital structure, the overall cost of capital will decline which ultimately increases the value of firm.

$$capitalization\ rate\ (K) = \frac{Net\ Operating\ Income\ (EBIT)}{Total\ Value\ of\ Firm\ (V)}$$

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

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

As per assumptions of NI Approach, K_e and K_d are consistent and K_d is less than **Ke.** Therefore, **Ko** will decrease as D/V increase. It also implies that the overall cost of capital, **Ko,** will be equal to **Ke** if the firm does not employ any debt.

2.1.3.2. Net Operating Income Approach (NOIA)

Net operating income approach is the approach to the valuation of the earnings of a company. It is an irrelevant theory and it is just opposite of net income approach. According to this theory, the market value of the firm is not affected by the changing capital structure. The changes in leverage will not lead to any change in total value of the firm and market price of the share as well as overall cost of capital is independent of the degree of leverage.

The increase of debt capital in the capital structure does not affect the market price of the share and overall cost of capital. The increase in debt may be the reason for repurchase of share and is offset by the decrease in equity capital. Similarly the increase in equity capital may be the reason to write off the debt capital and is offset by the decrease in debt capital. Hence the total capital structure remains the same. So far the explanation of the net operating income approach has been purely definitional and it lacks behavioral significance. In this theory, market value of the firm can be calculated by capitalizing the net operating income at the overall cost of capital.

At the extreme degree of financial leverage, hidden cost becomes very high hence the firms cost of capital and its market value are not influenced by the use of additional cheap debt fund (Gitman and Pincheas 1975:791)

2.1.3.3. Traditional Approach

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

optimal capital structure exists when the cost of capital is minimal or the value of the firm is maximized.

"According to this approach, the value of the firm can be increased or the cost of capital can be reduced by a judicious mix of debt and equity capital" *(Pandey; 1999:683).* "The statement says that the debt funds are cheaper than the equity capital carries the clear implication that the cost of debt plus the increased cost of equity together on a weighted basis, will be less than the cost of equity which existed on equity before debt financing" *(Alexander; 1963: 11).* So, traditional position implies that the cost of capital is not independent of the capital structure and that there is an optimal capital structure.

According to the traditional approach, the manner in which the overall cost of capital reacts to change in capital structure can be divided into three stages (Soloman, 1969:84)

2.1.3.4. Modigliani Miller Approach

Modigliani-Miller is an irrelevant theory and it tells that the value of the firm does not change by simple changing the capital structure or leverage. It is identical to the net operating income approach but it is somewhat vaster than the NOI approach. There is the lack of conceptual and behavioral significance in NOI approach. But M-M approach supports the NOI approach relating to the independence of the cost of the degree of leverage at any level of debt-equity ratio (*Khan and Jain; 1998:11-11*). Until 1958, capital structure theory considered the loose assertions about investors rather than carefully constructed model, which could test by formal statistical analysis. In what has been called the most influential setoff financial paper ever published, Franco Modigliani and Merton Miller (MM) addressed capital structure in a rigorous.

Common Assumptions of capital structure theory
- There are no corporate or personal taxes and bankruptcy cost.
- The ratio of debt to equity for the firm is changed by issuing debt to repurchase

- Stock or issuing stock to payoff debt. In other words, a change in capital stock is affected immediately. In this regard, we assume no transaction costs.

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

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

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

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

- The firm is expected to continue forever.

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

S = *Total Market Value of Stock*

B = *Total Market Value of Debt*

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

Ke = *Equity Capitalization Rate*

Ko = *Overall Capitalization Rate*

Kd = *Cost of Debt Capital*

I = *Total Amount of Capital Interest*

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

EBIT = *Earning Before taxes*

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

$$Cost\ of\ debt\ (K_d) = \frac{Interest}{Debt} = \frac{I}{B}$$

$$Cost\ of\ equity\ K_e = \frac{EBIT - I}{S} = \frac{NOI - I}{S}$$

$$Value\ of\ debt\ (B) = \frac{Interest}{K_d} = \frac{I}{K_d}$$

$$Overall\ Cost\ of\ Capital\ (K) = \frac{NOI}{V}$$

$$\therefore Ko = Kd(B\,/V\,) + Ke(S\,/V\,)$$

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

$V = B + S,\ or$ $$V = \frac{NOI}{Ko}$$

2.1.4 Appropriate Capital Structure and its Feather

Numbers of factors influence the capital structure decision of the company. A totally theoretical model perhaps cannot adequately handle all those factors which affect the capital structure decision. These factors are highly psychological, complex and qualitative and do not always follow accepted theory, since capital markets are not perfect and the decision has to be taken under imperfect knowledge and risk. Appropriate capital structure is that combination which is most advantageous to the company. Appropriate capital structure achieved through properly analyzed and balanced used of all relevant factor. A sound or appropriate capital structure should have the following feather

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

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

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

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

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

These are general features of an appropriate capital structure. The particular characteristics of a company may reflect some additional features. The relative importance of these requirements may changes with shifting conditions:

2.1.5 Approaches to Establish Appropriate Capital Structure

Capital structure will be planned initially when a company is incorporated. The initial capital structure should be designed very carefully. The management of the company should set the target capital structure and subsequent financing decisions should be made with a view to achieve a target capital structure. The financial manager has also to deal with an existing capital structure.

The company needs capital to finance its activities continuously, every time when capital is needed, the financial manager should tests the advantages and disadvantages of various sources of finance and select the most advantageous source of capital. The following most common approaches to decide about the Capital structure are explained here.

2.1.5.1 EBIT – EPS Approach

This is a most common approach to establish appropriate capital structure. This approach analyzes the impact of various financial plans on earning per share. This approach analyzes that what is an effect of debt or preferred stock financing on earning per share. The common goal of companies is to maximize the shareholders' wealth i.e. earning per share. So, the company should select

that financial plan which maximizes the earning per share of the company.

One widely used means of examining the effect of leverage is to analyze the relationship before earning before interest and taxes (EBIT) and earning per share (EPS). Essentially, the method involves the comparison of alternative methods of financing under various assumptions as to EBIT. The EBIT –EPS analysis is an important tool in the hand of financial manager to get an insight into the firm capital structure management. He can consider the possible fluctuations in EBIT and examines their impact on EPS under different financial plans. "To decide about the appropriate source of funds to finance, the financial manager first develop various alternative financial plans and judge the impact on the earning per share, by calculating earning per share for some hypothetical level of EBIT. Note that interest in debt is deductible before taxes while preferred stock dividends are deductible after taxes. Then with the help of earning per share at different alternatives, it is essential to find out indifference point in EBIT. The indifference point of EBIT can be determined either graphically or mathematically". (Van Horne; 1985:285)

2.1.5.2 Valuation Approach

The cost of source of finance is the minimum return expected by its suppliers. The expected return depends on the degree of risk assumed by investors. A high degree of risk is assumed by share holder than debt-holders. In case of debt holders interest rate is fixed and company is legally bound to pay interest and return debt amount after certain period, whether profit or loss. But equity share holder are owner of the company they could not enjoy such facility. This feature makes debt is cheaper source of than equity. This is generally the cause even when taxes are not considered. The tax deductibility of interest charges further reduces the cost of debt. The preference share capital is also cheaper the equity capital, but not as cheap as debt. Thus using the component, or specific,

cost of capital as a criterion for financing decisions and ignoring risk a firm would always like to employ debt since it is the cheapest source of funds.

2.1.5.3 Cash Flow Analysis Approach

Cash flow analysis is another approach to establish an appropriate capital structure. In indicates the capacity of the firm to pay fixed charges on the basis of its ability of cash generation. When considering the appropriate capital structure, we should also analyze the cash flow ability of the firm to serve fixed charges. The greater the amount of senior securities the firm issues ant the shorter their maturity, the greater the fixed charges of the firm. Where, fixed charges include payment of interest, preference dividend, principal payment and lease payment. They depend on both the amount of loan securities and term of payment. The amount of fixed charges will be high if the company employs large amount of debt or preference capital with short-term maturity. Whenever the company thinks of raising additional debt, it should analyze expected future cash flows to meet the fixed charges. The inability to meet these charges, with the expectation of preference stock dividends may result in financial insolvency. The greater and more stable the expected future cash flows of the firm, the grate the debt capacity of the company. It is quite risky to employ fixed charge source of finance by those companies whose cash inflows are unstable and unpredictable to employ fixed charge source of finance by those companies whose cash inflows are unstable and unpredictable finance by those companies whose cash inflows are unstable and unpredictable. It is possible for high growth and high profitable companies to suffer from cash shortage if its liquidity management is poor. The cash flow analysis indicates when the firm will find it difficult to serve its debt. Therefore it is useful in providing good insights to determine the debt capacity, which helps to maximize the market value of the firm.

2.1.6 Factors Affecting Capital Structure

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

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

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

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

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

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

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

vii. **Control:** The effect of debt versus stock on a management's control position can influence capitals structure. If the company may decide to use debt, the firm's financial situation become week and the use of debt might be the subject for serious risk of default. However, if too little debt is used, management runs the risk of a takeover. Control considerations could lead to the use of either debt or equity, because the type of capital that protects management will vary form situation to situation. In any event, if management is at all insecure, it will consider the control situation.

viii. **Management Attitudes:** Since no one can prove that one capital structure will lead to higher stock prices than another, management can exercise its

won judgment about the proper capital structure, Portion of debt used in a firm largely depends on management attitudes.

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

x. **The Firm's Internal Condition:** A firm's own internal condition can also have a bearing on its target capital structure.

2.1.7 Theory of Cost of Capital

"The cost of capital is an important in formulating a firm's capital structure. It is one of the basis corner stones of the theory of financing management". (*Kuchhal, 1982:367*) It is a crucial part of a dynamic or ever changing financing and operational environment of the corporations.

There are different types of risks associated with each investment category. Therefore, it requires certain expected rate of return in order to provide funds. This required rate of return is called the opportunity cost to the investor for investing his scarce resources elsewhere with equivalent risk. Therefore, the concept of cost of capital has been paid increasing attention in recent years, especially as it affects the proper economic is an essential choice criterion for investment decision-making, accordingly, the theory of measurement of cost of capital is of fundamental importance in business finance.

"An investment projects for its acceptance must earn minimum rate of return equal to the cost of capital. In this sense, the cost of capital represents a standard for allocating the firm's fund in the optimal manner. In theory, it is the rate of return on a project on a project that will leave the market value of shares unchanged". (*Van Horne; 1994:101*)

The term cost of capital can also be defined in terms of hurdle rate concept and structural concept. The hurdle rate is the target rate of return, which must be surpassed of the capital use, is to be justified. Corporations while using the investment hurdle rate are communicating their expectations and assure

common effort to try to fulfill those expectations. Allowance must be made for the risks and uncertainties surrounding the follows, since investors insist on higher expected returns when asked to assume higher level of risks.

One of the requirement of the investment appraisal system is that prevent the investment of funds in projects where the target rate of return is less than the cost of capital. In the context of Nepalese company, the determination of this "hurdle rate' is not so much in practice but time and situation have already made corporate managers to be cautions and attentive in practicing this "hurdle".

The structural concept is the fundamental and mostly accepted criteria of investment appraisal system. The cost of capital is the extent of capital fund that could be made available through combinations of ownership capital, retained earnings, depreciation funds, reserves and so on. Funds that could be made available might be from the existing stock of funds or rose freshly from the market, or could be by way of commitment into the future. It is therefore, necessary that the company's using borrowed capital should be capable of generating liquid fund to meet the interest obligations.

2.1.8 Ratio Analysis

Financial manager of the company has to engage in making lots of decisions. He has to analyze the financial statements to find the financial sources, strengths and weaknesses of the company to make the decisions and to make future strategy.

'Ratio analysis is that tool which is used to analyze the financial statements. A widely used tool for the financial analysis is ratio analysis. It is defined as the systemic 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 condition can be determined". (*Khan and Jain; 1998:117*) By the use of it, the financial manager can find out the weaknesses of the company and take action to erase them out by making the rational decision. Hence ratio analysis helps to inform about the present situation of the firm and the

corrective action to be undertaken for eliminating the problems. The outsider investors also use ratio analysis to know about the financial surroundings of the company for the confirmation of their risk and return. This tool is also used to take the decision of the new investment or expansion of the firm by raising the extra or new sources of fund. In this way the capital structure is affected. And it is tried to make the balanced capital structure according to the analytical results from the ratio analysis. In order to bargain more effectively for outside funds, the management of a firm should interested in all aspects of financial analysis that outside supplier of capital use it in evaluating the firm. So it can be said that the ratio analysis is one of the tools of the company in making capital structure decision. The term 'ratio' means the relative and quotient of two mathematical expressions. Ratio can be broadly classified as follows:

- Liquidity ratio
- Leverage ratio
- Profitability ratio
- Activity ratio

2.1.9 Conceptual Framework of Leverage

Leverage is the most important and fundamental part in the study of capital structure. Capital structure is just the best-suited structure of different types of capitals for the benefit of the firm. Leverage refers to acquiring assets that have fixed costs and employing financial resources that have fixed cost (interest). Long term debt is one of the financing sources financed by outsiders. In general, the term leverage means, "Power gained by using lifting force". In the presence of lifting force, a small change in the quantity of one side may heavily affect other side. Similarly change in small unit of one source of capital will affect another source among the different sources of capital of company. Such type of effect is known as leverage in financial language.

While determining the capital structure, the nature of business, availability of the source and probability should be taken as the essential basis. Capital

structure is the ratio of the ownership capital and debt capital. The ownership capital might be favorable for one business organization but it might be unfavorable for another business organization at the same time. Same is the case for debt capital. Since it is the process of decision making of the right sources of capital, it is also known as capital structure decision. For the capital structure decision the knowledge of leverage is most essential.

The term leverage is quite commonly used to describe the firm's ability to use fixed cost assets or funds to magnify the returns to its owners. The effort to increase the return of the ownership capital by using the debt capital having low role of interest can be known as leverage. The leverage helps the financial manager of the company to increase the return of the ownership capital. Hence leverage places its great importance in the capital structure although it is a small part in the study of capital structure.

Leverage can be defined in terms of risk and return also. It is the result of change in level of return and risk whereas increase in leverage means the increasing rate of return and risk. So the leverage has positive relation with risk and return.

An effect of change of one of the capital source can be realized by the change in sales and profit of the company "A high degree of leverage implies that a large change in profit occurs due to a relatively small change in sales" *(Hampton; 1994: 157)*. The concept of leverage can be helpful to make the specific knowledge to have the potential capital structure decision that make the firm's best operation process. In conceptual analysis of leverage, the different types of leverage tools can be used for financial planning of capital structure.

2.1.10 Type of Leverage

The study of leverage to the capital structure of the firm will not be complete unless the knowledge of the types of the leverage is not applied. There are three

types of leverage related to the measurement of profit in order to operate the financial activities.

2.1.10.1 Operating Leverage

Business risk depends in part on the extent to which a firm builds fixed costs into its operations. If fixed costs are high, even a small decline in sales can lead to a large decline on return on equity. So, other things remains constant, the higher the firm's fixed costs, the higher its business risk. If the high percentage of total costs is fixed, then the firm is said to have a high degree of operating leverage. "In business terminology, a high degree of operating leverage, other factors held constant, implies that a relatively small change in sales results in the large change in ROE.

Other things held constant, a higher the operating leverage, the higher its business risk. Or the higher the degrees of operating leverage, the higher the operating risk. Where, "degree of operating leverage defines as the percentage change in operating income (EBIT) associated with a given percentage change in sales" *(Weston and Brigham; 1978:705).*

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

So, operating leverage refers to the use of fixed costs in the operation of the firm. If the firm has fixed costs, it would have operating leverage and percentage change in the operating profit would be more for the given change in sales. A firm will have higher operating leverage, if the total costs have greater percentage of fixed costs. "The concept of operating leverage was originally developed for use in capital budgeting. Still once a corporation's operating leverage has been established, this exacts a major influence on its capital structure decision.

2.1.10.2 Financial Leverage

Financial risk is depends upon the financial leverage of the firm. If the financial leverage exists financial risk will occur. Operating leverage affects the business risk whereas financial leverage affects the financial risk.

The use of fixed charges sources of funds, such as debt (short and long-term) and preference capital along with the owners' equity in the capital structure is described as financial leverage. Financial leverage can be defined as "the extent to which fixed income securities (debt and preferred stock) are used in the firm's capital structure" *(Pandey; 1999:658).*

Financial leverage affects the earning per share. When the economic conditions are good and firm's EBIT is increasing, its EPS increase faster with more debt in the financial structure. The degree of financial leverage is defined as the percentage change in earning per share that is associated with given percentage change in earning before interest and taxes (EBIT). DFL may be calculated by using any one of the following formulas:

$$DFL = \frac{Percentage\ change\ in\ EBT}{Percentage\ change\ in\ EBIT}$$

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

2.2. Legal and Contractual Review

This study is basically related with capital structure of Hydropower Company, governing act and policy of that industry plays vital role on determine capital structure. While studding legal and contractual review, this study is mostly concentrated on the invested related Provision of that law and policy.

2.2.1 Electricity Act, 2049

Electricity ACT-2049 is the governor act for survey, generation and distribution electricity some provision of this act which are mostly related to study are as follows:

This act has given some special authority and facility to the government on section '10' which mentions on following Sub-section:

1. The land, building, equipment and structure related to the electricity generation plant or transmission and distribution line established by the foreign national or corporate body as more than 50 Fifty percent of the total investment, shall be under the ownership of His Majesty's government after the expiry of the term as prescribed in the license.

2. The assets coming under the ownership of His Majesty's Government pursuant to sub-section 1) may be purchased by the prior licensee on the amount as assessed pursuant to sub-section 3) for generation, transmission or distribution of electricity and after acquiring such asset, such person, after entering into an agreement with His Majesty's Government, shall generate, transmit or distribute electricity according to the agreement so made.

3. His Majesty's Government shall constitute a committee comprising of at least five persons for the purpose of assessing the amount pursuant to sub-section 2).

4. The electricity generation plant, transmission or distribution line established by the foreign national or corporate body as up to fifty percent of the total investment or established without foreign investment shall be operated or managed by the prior licensee by entering into an agreement with Government after the expiry of the term as prescribed in the license on conditions as mentioned in the agreement so made.

This act provided some tax and charge facilities on section '12' and Facility of Foreign Exchange on section '13' they are as follows:

1. No income tax shall be levied to a person or a corporate body who is generating, transmitting and distributing hydro-electricity up to 1000 Kilowatt.

2. The licensee, who has obtained license for hydro-electricity generation, transmission or distribution shall be levied an income tax lessened by 10 percent than the corporate income tax levied pursuant to the prevailing law.

3. The licensee who has obtained license for hydro-electricity generation, transmission and distribution shall be exempted from income tax for fifteen years from the date of generation, transmission and distribution of electricity for commercial purpose.

4. The licensee, who has obtained license for hydro-electricity transmission or distribution, shall be exempted from income tax for ten years from the date of transmission or distribution of electricity.

5. If the licensee takes the responsibility to operate and manage the hydro-electricity generation plant, transmission or distribution line owned by His Majesty's Government or purchases the same, such licensee shall be exempted from income tax for five years form the date of such undertaking or purchase.

6. If he licensee reinvests in hydro-electricity generation plant, transmission or distribution line for its diversification of extension of installed capacity by 25 percent or more for modernization of technology and develops subsidiary industry such licensee shall be entitled to deduct 50 percent of the cost of new additional fixed assets from the net income earned from such hydro-electricity generation plant, transmission and distribution line. Such deduction shall be provided in lump sum or in installments within three years.

……………………………………….

Explanation

"Net Income" means net income assessed in accordance with the assessment procedure prescribed by prevailing law for the purpose of income tax.

7. Customs duties and sales tax shall be levied as per the prevailing schedule for the import of construction equipment, machines, tools and equipment required for repair and maintenance as well as the spare parts thereof for hydro-electricity generation, transmission or distribution which are produced and sold by local industries. Only 1 percent customs duties shall

be levied for the import of materials which are not produced in Nepal and no charge for import license and sales tax shall be levied for such imports.

Facility of Foreign Exchange**:** In case foreign currency has been invested in the generation, transmission or distribution of hydro-electricity as a loan or share capital, His Majesty's Government shall make available necessary foreign currency at the prevailing market rate of foreign exchange for repatriation of investment or repayment of principal or interest of loan.

Section '29' gives assurance of no nationalization of electricity projects sub sections of this section are as follows:

The land, building, equipment and structure related to electricity generation, transmission or distribution should not be nationalized. Provided that the land, building equipment and structure related to the generation, transmission or distribution of 1000 kilowatt or less of hydro-electricity, His Majesty's Government may, for the extensive public use take over such property and develop that itself.

Explanation: "Extensive Public Use" means the use, which serves benefits to larger population than the existing population benefited from it.
1. His Majesty's Government shall pay compensation, as prescribed, to the concerned person for the land, building, equipment and structure which is taken-over by His Majesty's Government pursuant to the proviso clause of sub-section 1).
2. The compensation payable pursuant to sub-section 2) shall be determined on the basis of current price after deducting wear, tear and depreciation) of the land, building, equipment and structure taken over by His Majesty's Government.

2.2.2 The Hydro power Development Policy, 2001

Objectives of hydropower development as per this policies are as follows:

1. To generate electricity at low cost by utilizing the water resources available in the country.

2. To extend reliable and qualitative electric service throughout the Kingdom of Nepal at a reasonable price.

3. To tie-up electrification with the economic activities.

4. To render support to the development of rural economy by extending the rural electrification.

5. To develop hydropower as an exportable commodity.

Provision Relating to Power Purchase

1. Except in cases where a private party itself also distributes the hydropower generated by it in the Kingdom of Nepal, a power purchase agreement has to be made to sell and purchase the hydropower generated. Provided, however, that it shall not be required to conclude a power purchase agreement for the electricity generated from the captive plant to be consumed in any specific industrial enterprise in Nepal.

2. Power purchase agreement should be transparent.

Management of Investment Risks

1. Hydropower project, transmission system and distribution system established by the private sector shall not be nationalized during the term of the license.

2. Exchange facilities shall be provided to the foreign person, firm or company making investment for the power generation, transmission or distribution project to be constructed by the private sector to repatriate the following amount from the Kingdom of Nepal in foreign currency at the prevailing exchange rate.

Provisions relating to Fees

Royalty: A hydropower generator shall pay the royalty as follows to His Majesty's Government after the commencement of electricity generation.

(a) Internal consumption project
   Table 2.1 shows the internal consumption project.

Table: 2.1
Internal Consumption Project

	Electricity Capacity	Up to 15 years		After 15 years*	
		Annual capacity Royalty, per kW	Energy Royalty, per kWh	Annual capacity Royalty, per kW	Energy Royalty, per kWh
1	Up to 1 MW	-	-	-	-
2	From 1 MW to 10 MW	Rs.100/-	1.75%	Rs. 1000/-	10%
3	From 10 MW to 100 MW	Rs.150/-	1.87%	Rs. 1200/-	10%
4	Above 100 MW	Rs.200/-	2.00%	Rs. 1500/-	10%
5	For captive use	Rs.1500/-	-	Rs. 3000/-	

(Source: The Hydropower Development Policy, 2001)

Provided, however, that if the excess electricity is sold to the electricity distribution system from the electricity center established for captive use, the energy royalty shall be charged on such electric power similar to a hydropower project with a capacity of more than 100 MW.

(b) Export-oriented hydropower project
   The Table 2.2 shows the export oriented hydropower projects.

Table: 2.2
Export-oriented hydropower project

	Type	Up to 15 years		After 15 years*	
		Annual capacity Royalty, per kw	Energy Royalty, per kwh	Annual capacity Royalty, per KW	Energy Royalty, per kWh
1	Export-oriented run-of- the- river project	Rs. 400/-	7.5%	Rs. 1800/-	12%
2	Export-oriented storage project	Rs. 500/-	10%	Rs. 2000/-	15%

(Source: The Hydropower Development Policy, 2001)
* After 15 years from the date of commercial operation.

c.. The royalty rates referred to in clause (b) above shall be applied on the projects built on commercial basis with installed capacity up to 1000 MW. In the case of the projects with capacities up to 1000 MW and built on noncommercial basis, 15% (fifteen per cent) of electricity and energy shall be charged as royalty per annum on the basis of monthly power and energy generation capacity from the date of commencement of production.

d. In the case of the export-oriented project with an installed capacity of more than 1,000 MW, the rate of royalty shall be settled by negotiations, also taking into account the grounds referred to in clauses (b) and (c).

e. In the case of the hydropower projects which sell energy for internal consumption and exports the remaining energy, the energy fee equivalent to that chargeable for the export oriented project shall be charged on the quantum of energy exported abroad.

f. The royalty shall have to be paid in the same currency in which the exported electricity is sold.

Registration Fee

A Registration fee of 0.0001 percent shall be charged for the registration of deeds related to a foreign loan for investment on projects concerning hydropower generation, transmission and distribution and on the registration of deeds conveyed to pledge the movable and immovable assets (such as shares of a project company) in the name of the foreign lender for such loan.

Facilities relating to Tax and Customs

The income-tax payable in operating the hydropower generation project, transmission system and distribution system shall be as provided for in the prevailing Income Tax Act.

- In the present situation where value added tax is not levied on the electricity tariff, value added tax shall not be imposed on the industrial machineries, equipment and spare parts imported, after obtaining permission, by a project so as to use them in the construction of hydropower project. If value added

tax is levied on the electricity tariff, value added tax shall also be accordingly imposed on the abovementioned materials and machineries, as well.

- Only one per cent customs duty shall be imposed on the devices, equipment, machineries and spare parts related therewith to be imported with permission by the project during the construction phase. Provided, however, that the value of such spare parts shall not exceed twenty per cent of the total value of the devices, equipment and other machineries to be imported.

- In cases where the machines required for such project during the construction period have been imported on the condition of taking them back, such machineries have to be taken back after completion of the project. In the event of failure or inability to take them back, custom duty shall have to be paid, at the prevailing rate, after completion of the project, as per the rules, on the remaining value after deducting depreciation.

2.3   Review of Related Journals and Articles

There are different tools of analysis available to an analyst. The tool be used in a particular situation depend on skill, training, intelligence and expertise of the analyst. If inappropriate tool is used, it may lead to faulty conclusions.

Pradhan, (2064) on *"Challenges and Issue on the Domestic Hydropower Projects"* has pointed out following major issue, challenge and conclusion that. The electricity tariff in Nepal is high, and is beyond the affordable capacity of many of the consumers. The reasons are manifold. The basic infrastructure is not well developed often includes infrastructures such as long approach roads, transmission lines and so on. The majority of equipment and materials also have to be imported, which requires foreign currency and transportation overland for a long distance from the port. The major share of the financing is long distance from the port. The major share of the financing for the projects is

from external loans and investments which are to be paid back in foreign currency escalate the tariff further. The challenges lie in developing cheap and reliable hydropower projects so as to keep the tariff within the reach of everyone. Nepal government is, therefore, undertaking power sector reform measures with a view to bring about improvements to remedy the situation. It is encouraging to note that the private sector is gradually entering the power market. The local banking sector's interest in forming consortiums with private developers as in the case of the piluwa, indrawati, sano sunkoshi and khudi projects also heralds a new dawn on the horizon despite present security situation. The main challenge to the private sector is the transfer of technical know how and easy access to the international markets for financing mechanisms.

The domestic demand over the forecast period of 25 years is relatively small, limiting many developments. The challenge lies in the ability to establish a number of energy intensive industries and transport system within the country for creating a greater demand for hydroelectricity, which will lead to a higher energy growth rate than the load forecast. A break-through along this line will provide ample opportunities for development of this clean and renewable energy.

Nepal own resources both in the public and private sector cannot meet the financial investment needed for hydropower development. A large investment is required from foreign development agencies and private sector entrepreneurs. Although significant foreign investment has been attracted in recent years, much still remains to be invested for meeting both internal demand and the significant potential for the export of power.

Phuyal, (2001), in his article "*Home-financed Chilime Hydel Project to go Public*" has explained that the Chilime power cost is cheaper by at least 60 per cent compared to the price of the power which stands at over Rs 5 currently generated by similar foreign developed and financed projects like the 60-MW

Khimti and the 36-MW Bhotekoshi power projects. Hydropower experts and officials closely following the developments expressed happiness and welcomed the Chilime-type initiative which, to quote them, "would save the nation from bankruptcy and lead towards self dependency and prosperity". Referring to chartered accountant-cum-energy expert Ratna Sansar Shrestha, the article adds that, the per unit price of locally-developed Chilime would climb to Rs 8 or 10 while the cost of Khimti and Bhotekoshi supplied power would shoot up to a whopping Rs 42 - more than five times that of Chilime - by 2016.

Pandey, (2003), in his article "Peoples power", has pointed out three main reasons why locally designed projects are less expensive:

- The cost of capital borrowed from local banks is at its lowest point in many years.
- Developers had complete flexibility in where they source their equipment and how they pick contractors, and they can get the best prices.
- Smaller projects mean fewer technical complications and the ability to breakdown contracts into small components that could be bid out among a large number of competitive Nepali, Indian and Chinese companies.

Pandey has added that besides being cheaper, local investments also benefit the national economy through much stronger backward linkages in construction and manufacturing.

Usually, it is only the equipment (25-40 percent of total cost) which has to be imported from overseas. Today, projects like Piluwa and Chilime are living proof that the paradigm shifts in Nepali hydropower planning have brought real change. These and other projects have extensive involvement of both in-country financial institutions and technical manpower. And the beauty is their cost of electricity generation is $1,500 per kW, less than half that of larger aid-funded projects.

In Modigliani and Miller (1958) study, they used the previous work of Allen (Allen, 1954:57-71) and Smith in support of their independence hypothesis. Allen's study was concerned with the relationship between security yield and financial structure for 43 large electric utilities, based on average figures for the year 1947 and 1948, while the smith's study was concerned with 42 oil companies to test whether Allen's striking results would be found in an industry with very different characteristics based on only single year 1953. In the first part of their work M-M tested their proposition I, the cost of capital is irrelevant to the firm's capital structure, by correlating after tax cost of capital, X/V with leverage, D/V. They used the following regression model to test their hypothesis (Modigliani and Miller, 1958:261-97).

$X=a+bd$

Where,

$X=X^t/V$

$$\frac{\text{Sum of interest, preferred dividend and shareholders after tax income}}{\text{Market value of all securities}}$$

$$D=D/V=\frac{\text{Market value of senior securities}}{\text{Market value of all securities}}$$

The regressions were as follows:

Electric utilities $X = 5.3 + 0.006\ d\ (\pm\ 0.008)$ $R^2=0.12$

Oil Companies $X = 8.5 + 0.006d\ (\pm\ 0.024)$ $R^2=0.04$

These results supports their hypothesis of independence or correlation co-efficeint is statistically insignificant and positive in sign. The regression line doesn't sanciest a curvilinear, 'u' shaped cost of capital-key of traditional view, when the data are shown in scatter diagram.

Barges (1963) conducted the empirical test of relationship between cost of capital and leverage and between stock yield and debt equity ratio with

improvement on some of the limitation of the M-M's empirical work.. For the study purpose, he utilized cross-section data from three different industries railroads, departmental store and cement industires.

For the railroad industries, he performed both yield as well as the average cost of capital test. The average cost of capital was computed dividing the three year average income before interest (1954-56) by the average total market value. He uses the ratio of long-term debt to total permanent capital at book value as the measure of financial structure. He fitted second degree (u-shaped curve to the data of 61 railroads. Results obtained as follows.

$$Y = 12.39-0.244x+0.00258x^2$$

The result suggested that the average cost of capital first tends to decline and then tends to rise as the debt capital increases in the capital structure. To bring much more homogeneity into the samples and exactness in the results, he selected fice (5) sub-samples from the railroad industries sample in such a manner that one important variable was held constant. The five sample selected in this way consist of 25 sample of small class I railroad (remain less than $50 million), 16 controlled railroad, 47 listed railroad, 21 eligible railroad and 36 large railroad (revenue more than $50 million). He fitted least square curves to each sub samples except large railroads samples and the significant results were obtained as follows (Barges, 1963).

$Y=a+bx_1$ ....(I)

$Y=a+bx_2$ ....(II)

Where,

Y=Stock Yield

X_1= Long-term debt/preferred stock plus common equity

X_2= Long-term debt plus preferred Stock/common equity.

The railroad industries results were as follows.

Model I $Y = 11.36+0.0194x_1$ $R^2=0.173$

Model II $Y = 10.30+0.02836x_2$ $R^2=.293$

2.4   Review of Related Thesis

In this section contain review of previous studies. It consists of thesis and dissertations done by previous master's level student as well as other research works related to the Capital structure of the firm and available related study on hydropower sector. In this section, the following research studies have been reviewed.

Gajurel, (2005)**,** on "*Capital Structure Management in Nepalese Enterprise*" has following research objectives:

- To determine structure and pattern of the capital structure.
- To examine the relationship of leverage with different financial indicators (ratios).
- To undertake an international comparison of debt ratios.
- To identify and analyze the determinants of capital structure.
- To investigate the extent to which the capital structure theories can explain capital structure choice by firms.
- To examine managements' views on various aspects of the capital structure.

He has taken 20 listed company for the period 1992-2004, he had used following tools.

Total Debt Ratio	=	Total Debt / Total Assets
Long Term Debt Ratio	=	Long Term Debt / Total Assets
Short Term Ratio	=	Short Term Debt / Total Assets
Non-Debt Tax Shield	=	Annual Depreciation / Total Assets
Assets Structure	=	(Fixed Assets + Investment) / Total Assets
Size	=	In(Sales)
Growth	=	Percentage change in sales i.e. $(St - St\text{-}1) / St\text{-}1$
Volatility	=	Standard deviation of EBITDA.
Profitability	=	EBITDA / Total Assets.

The major findings of that study were following:

Nepalese firms are found highly levered. The decomposition analysis shows that, on an average, the total debt ratio is 75% and it is 59% when restricted. The median statistics are 63% and 58% for total and restricted observations respectively. The long-term debt is found significantly low. The mean and median statistics of long-term debt are 28% and 19% and 92 it decrease to 24% and 16% respectively when restricted. The trend of long-term debt is decreasing since 1999. The short-term debt in total capital is significantly higher. The mean and median statistics of short term debt ratio are 47% and 38%; and it decreases to 35% for both mean and median when restricted. The speed of increase of short-term debt is higher since 1999. The high contribution of short-term debt ratio over total leverage and low contribution of long-term debt ratio over total leverage show the importance of short-term financing over long-term financing for Nepalese firms. The trend of total debt ratio supported by short-term debt ratio is increasing. It might be the cause of economic (business) cycle. The debt ratio tends to increase during recessions and fall during expansionary periods (Booth *et al.*, 2001, p. 91). The firms where government has majority ownership have higher leverage ratio and even more than 100% debt ratio. The government's guarantee for the loan would be the factor leading higher debt ratio. This evidence is consistent with early finding of Rajan and Zingales (1995) that firm in which the state has a majority ownership appeared to have higher leverage (p. 1735).

Pradhan, (2007) has studied on '*A Study of Capital Structure of Manufacturing Sectors and Hotels'*. Objectives of that study are as follows:

- To identify the Capital structure decision for BNL, ULNL, YYH and SH.
- To access the trend of change in Capital structure of BNL, ULNL, YYH and SH.
- To describe Capital structure, financial leverage and other relevant variables of the BNL, ULNL, YYH and SH.
- To identify the strength and weakness of the BNL, ULNL, YYH and SH.
- To know about the relationship between long-term debt and equity capital.

He had study 'Bottlers Nepal Ltd', 'Uni-liver Nepal Ltd.', 'Soaltee Hotel Ltd.' And 'Yak and Yeti Hotel Ltd.' for the period of five years. He had used following tools to analysis and interrupt data:

Financial tools

Debt –Equity Ratio	=	Total Debt / Total Equity
Debt Total Capitalization ratio	=	Total Debt / Total Capital.
Debt to Assets	=	Total Debt / Total Assets.
TIE Ratio	=	EBIT / Interest Expenses.
Degree of Financial leverage	=	% change in EPS / % change on EBIT.
Net Profit margin	=	Net Income / Sales.
Return on Assets	=	Net Income / Total Assets.
Return on equity	=	Net Income / Total Equity.
Return on Capital Employed	=	Net Income / Total capital Employed.

His major findings were as follows

The compositions of capital structure of the concerned companies have us uniformities. ULNL and BNL have no long-term debt in their capital structure where as SH hotel and Y& Y hotel have substantial long-term debt in the capital structure. In absence of long-term debt ULNL and BNL were able to earn profit during the whole study period but in absence long-term debt ULNL and BNL were able to earn profit during the whole study period but in presence of long-term debt both hotels were not able to considerable profit or were not able to take the benefit of leverage.

All the four companies are using equity as well as debt capital in their capital structure. However the total debt amount is increasing for ULNL while it is decreasing for BNL. From the leverage analysis ULNL and Y and Y have higher percentage of debt equity ratio. BNL has 72.76% of the assets finance by equity but ULNL has only 41.04% BNL and SH hotel use more than 50% equity capital of their assets whereas other sample companies use less than 50% equity capital.

Karki, (2008) has studied on "*A Study of Capital Structure of Capital Structure of Manufacturing Companies in Nepal"*. This study has covered five fiscal years from 2001/02 to 2005/06 with following objectives:

- To the composition structure and characteristics of capital structure of the sampled manufacturing companies.
- To make financial analysis of selected sample companies.
- To compute the correlation between long term debt and capital.
- To analyze the impact of debt financing on profitability.
- To provide recommendations on the basis of the study.

She has used financial and statistical tools to analyze data, they are as follows:

Financial tools

- Debt Equity Ratio in terms of Long-term Debt and Shareholders' Equity
- Long term Debt as a percentage of Total Debt
- Total Debt to Net worth Ratio
- Interest Coverage Ratio
- Return on Assets (ROA)
- Net Profit Margin
- DU-PONT Analysis
- Capital Structure Theories
- Overall Cost of Capital (Ko)
- Degree of Financial Leverage (DFL)

Statistical tools

- Average or Mean
- Standard Deviation (S.D.)
- Coefficient of Variation (C.V.)
- Correlation Coefficient (r)
- Probable Error (P.E.)

Conclusion of this study was that all five manufacturing companies namely BNL, UNL, NLOL, JSML and RJML are facing excess leverage ratio, low profitability and heavy accumulated loss. As the manufacturing companies has low debt equity ratio, it implies greater claims of owner than creditors. UNL and NLOL have no long term debt. Total financing is done by equity shares and short term debt. A high portion of equity provides a large margin of safety for them. BNL have low debt equity ratio. JSML have more debt equity ratio. From the shareholders point of view, it is not better. RJML has low debt equity ratio. It means that there is a disadvantage during the good economic position. All companies have higher overall capitalization rate and equity capitalization rate than return on equity and return on assets which indicates that it is not better and efficient to increase profitability of these companies. Profit margin ratio of BNL, UNL, NLOL and RJML are very low. These four companies are unable to get more profit from their sales. JSML has negative profit margin ratio which means that it is suffered from loss. Long term debt to total capital ratio of UNL and NLOL are zero. They have not used long term debt but they have been taking risk by using the short term debt only. BNL has used low long term debt. JSML has used more long term debt but RJML has used lower long term debt. From the findings of three companies, they have no sound financial condition. The debt to net worth ratio of UNL and NLOL are very low because of using short term debt only. It is very difficult to operate the company. BNL has low debt to net worth. JSML has high debt to net worth ratio but RJML has low which shows that all five manufacturing companies have not standard proportion of debt capital and equity capital.

Uprety, (2009) has studied on *"A Financial Performance Evaluation of Independent Power Produce of Nepal"*. Focus of this thesis is on Butwal Power Company and Chilime Hydro Power Company with the following objectives:

- To analyze the financial performance of BPC and CHPCL and draw comparative.
- Conclusions through financial analysis taking relevant variables.

- To identify major strengths and weakness of BPC and CHPCL.
- To find out the past and present challenges undergone by IPPs in Nepal.

Financials Tools

- Liquidity Ratio.
- Current Ratio.
- Quick Ratio.
- Assets Management Ratio.
- Fixed Assets Turnover Ratio
- Total Assets Turnover Ratio.
- Debtors Turnover Ratio.
- Dividend Per Share
- Average Collection Period.
- Debt Equity Ratio.
- Debt to Total Assets.
- Profitability Ratio.
- Return on Shareholders Equity.
- Return of Total Assets
- Earning Per Share.

Statistical Tools

- Arithmetic Mean.
- Co-efficient of Variation (CV).
- Co-efficient of correlation.
- Probable Error of Correlation Coefficient (PE).
- Least Square Linear Trend.
- Chi-Square Test.

Major finding of his study are as follows:
The current and quick ratios of the companies seem to be inconsistent. While CHPCL has failed to maintain conventional standard of liquidity position throughout the study period, BPC has failed to do so in last couple of years.

Liquidity position of CHPCL is feeble than that of BPC which shows the incapability of CHPCL to meet its current liabilities as compared to BPC. The fixed assets turnover ratios of both IPPs are inconsistent but satisfactory in terms of inclination. It seems that BPC has been able to utilize its current assets more appropriately as the difference in ratios of total assets turnover between

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the two IPPs is more significant. Similarly, while CHPCL seems to be operating under the risk of running out of inventory, BPC has a very humble rate of inventory turnover. Though the debtors' turnover ratios are almost equivalent, considering the average collection periods, it can be concluded that CHPCL suffers less from the problem of outstanding debt collection. Both IPPs are all equity financed and thus the risk of insolvency is minimized for these companies. Though BPC has considerably high operating expenses ratios and inconsistent trend in its net profit ratios the overall performance with respect to profitability is better than CHPCL. However, considering the return on shareholders equity, it is obvious that one would preferably invest in CHPCL rather in BPC. With almost the same coefficient of variation, CHPCL has twice higher EPS compared to BPC. However BPC, being more liberal in distributing the earnings in form of dividends, one might confuse to pick the preferable investment between BPC and CHPCL. The coefficient of correlation between sales and net profit after tax of BPC and CHPCL show positive and significant relation. It also reveals that CHPCL is slightly more successful than BPC to be able to yield more uniform profits out of its sales. The coefficient of correlation between sales and total assets of BPC and CHPCL show positive but that of CHPCL is insignificant relation. It also reveals that it is likely that increase in total assets is associated to increase in sales of BPC more than in sales of CHPCL. The coefficient of correlation between total assets and net profit after tax of BPC and CHPCL show positive but that of CHPCL is insignificant relation. It also reveals that the net profit after tax of BPC is more reactive than that of CHPCL to fluctuations in total assets. The growth trend analysis of total sales, net profit after tax and earning per share of CHPCL demonstrate a higher increasing trend than that of BPC. From the primary data analysis it can be concluded that ROE does show the performance of the IPPs, ratio analysis is used to analyze the performance, government assistance to IPPs in Nepal is adequate, present return of IPPs is higher than the expectation of investors and, the stock prices are influenced by whims and rumors rather than profitability reason.

Adhikari (2010) conducted the empirical study of M-M proposition in the Nepalese context. He used simple as well as multiple regression equation to test the relationship between cost of capital and capital structure with other explanatory variables. His study was based on-five listed financial companies for the data of 1976-77 to 1988-89. For the testing purpose, he used the following multiple regression equations.

$K_o = a + b_1L_1 + b_2 \log s + b_3G + b_4 D/P + b_5 E.V. + b_6 Liq.$

where,

K_o = Average cost of capital, L_1 = Levarage I, S = Size, G = Growth

D/P = Dividend payout ratio E.V. = Earnings variability Liq. = Liquidity

Using the above equation on his study, he concluded that the traditional proposition cost of capital is the function of leverage is accepted and again stated that the result is to enough to establish the relationship between cost of capital and capital structure because the co-efficient of determination was very small.

He also tried to test the M-M hypothesis that the use of leverage can lower the cost of capital, due to the tax deductibility of interest charges and concluded that there were no charges in the results between the previous and later. Therefore, he again supported the traditional belief.

Khanal (2010) conducted the study on the capital structure management of Nepalese companies. For the study purpose, he selected samples from industrial public enterprises of Nepal and used financial ratio and correlation analysis as the tool of analysis.

He concluded that capital investment and earnings were not co-related. Most of the public enterprises were in loss position. Debt equity ratio was not satisfactory. Financial performances of these companies were not good. Lastly,

he suggested that the management should reduced government subsidy and donation. They should improve their performance efficiency (Khanal, 2008).

Shrestha (2011) has also conducted the study of capital structure management of selected public enterprises. He used ratio analysis as the tool of analysis and found that the selected public enterprises under the study have a very confusing capital structure since the corporations are not guided by objective based financial plans and policies. He further added that in many instances aphorism becomes the basis of capital structure and most of them want to eliminate debt if possible to relieve financial obligation. There were neither the public enterprises nor government development criteria in determining capital structure and this is the reason as to why debt equity ratio become a ticklish problem. Lastly, he has also suggested that the debt-equity ratio should, either highly levered to create too much financial obligations that neither lie beyond capacity to meet nor should it be much low levered to infuse operational strategy to bypass responsibility without performance (Shrestha, 2011).

Sharma (2011) conducted the study on the topic of focus on capital structure, selected and listed public companies. She used data from 19 companies and study had covered different sectors manufacturing, finance, utility service and other allied area. She had found that most of these companies have debt capital relatively very higher than equity capital consequently most of them are operating at losses to the extent that payment of interest on loan has been and serious issues. Most of the losses are after charging interest on loan has been and serious issues. Most of the losses are after charging interest on loan. She has suggested that the government has to consider in public enterprises is that of evaluating the relationship between use of debt and its impact on overall earnings of public enterprises. So government should be sure in knowing how return will be maximized by using debt capital. Government having invested large amount of money in public enterprises, it should need to develop a suitable capital structure guideline to make public enterprises swore of its responsibility to repay the debt schedules. The other thing which needs to be

made publicity transparent that government money is not a cost less found. Government has to analyze cost and risk return off. Thus, capital structure needs to be made more determinate by realistic analysis of cost. In Last, she also concluded that most of public enterprises have no transparent capital structure and these companies are adhocly determined the capital structure without realistic parameter. Thus, policy makers have to be careful in developing suitable capital structure guidelines in making public enterprises as well as listed companies to be aware of financial accountability (Sharma, 2011).

Research Gap

From the review of above empirical works, it can be seen that stadium specific to the relationship between capital structure and cost of capital is almost non-existent in Nepal. Viewed in this way there is a need to carry out a study specific to the study of impact of capital structure on cost of capital. This kind of 'study is expected to provide useful information for policy implementation at both macro and micro levels. Above study are related with different industry rather than hydropower companies and one thesis deals about the profitability. Every industry have own optimal capital structure and every company have certain limitation according to availability of fund, situation, government rules and size of capital needed. Hydro power is huge projects need long term investment. It takes at least four to five years to generate income from date of initial investment and it takes long pay back period. Thus capital structure on hydropower and its feathers is difference than other companies. Above studies can give just idea and conceptual knowledge about the capital structure. This study tries to find out the effect of capital structure on its profit and risk. Sample companies are increasing equity capital every year and decrease debt, effect of this on profitability on the field of hydro power company and this study try to find out possible source fund which can diversify the capital structure. Above thesis has used "total capital" while calculating leverage but this study take based on capital employed.

CHAPTER III
RESEARCH METHODOLOGY

Research is a systematic and organized effort to investigate a specific problem that needs a solution. It is the process of a systematic and in-depth study or search of any particular topic, subject or area of investigation backed by the collection, compilation, presentation and interpretation of relevant details or data. It is a careful search or inquiry into any subject matter, which is an endeavor to discover or find out valuable facts which will be useful for further application or utilization.

Research methodology refers to the various sequential steps to be adopted by a researcher in studying problems with certain objective view. Research methodology is important to carry out a research, which describes the entire methodological approaches employed in the study. Therefore, this chapter focuses on research design, nature and sources of data, selection of samples, method of analysis and the methodological limitations of this study and described in consecutive sections.

3.1 Research Design

Research design is the plan, structure and strategy of the investigation conceived so as to obtain answers to research questions. Basically, the research design has two purposes. The first is to answer the research question and second is to control variance. A research design is the plan of attack: what approach to the problem will be taken? What methods will be used? and what strategies will be most effective? *(Wolf and Pant; 2005: 92)*

This study attempts to analyze the capital structure patterns and determinants of Nepalese hydropower companies. It tries to analyze and describe the magnitude and direction of relationship between leverage (dependent variable) and firm specific attributes viz.; non-debt tax shield, assets structure, profitability, firm

size, growth opportunities and earning volatility (independent variables). Hence, this study has followed both analytical and descriptive research design. Furthermore, it also follows the field research method to study capital structure from managerial perspective.

3.2 Population and Sample

There are three hydropower company listed on NEPSE. This study is directly related with the capital structure of that three companies related with same industry. This helps to compression on different aspect of among these companies. These companies are as follows:

- Butwal Power Company limited (BPCL).
- National Hydro Power Company Limited (NHPCL).
- Chilime Hydro Power Company Limited (CHPCL).

3.3 Data Collection Procedure

Once the purpose of statistical investigation has been defined, the next step is to collect the data which are relevant for analysis in a meaningful manner. Thus, the collection of data is considered as an integral part of the research activity. Most of the data used from secondary source i.e. annual report of concern firm, annual report of NEPSE security board and web site of Nepal share market and other different web sites.

3.4 Methods of data analysis

This thesis has covered fiscal year 2063/64 to fiscal year 2067/68. Collected data are analysis using following tools.

3.4.1 Financial Tools

Financial tools are those, which are used for the analysis and interpretation of financial data. They attempt to explore the financial state of a business and convey the strengths and weaknesses of its financial policies and strategies. Ratio analysis is used as the basic tool for this study in order to summarize the quantities of financial data and to make quantitative judgments about the

companies' financial performance. The importance of ratio analysis lies in the fact that it presents facts on a comparative basis and enables the drawing of inferences regarding the performance of a company *(Khan and Jain; 1999:4.33).* Among the financial tools 'Leverage Ratio/ Capital Structure Ratio/ Solvency Ratio' and 'profitability ratio' are mainly used in this study.

3.4.1.1 Leverage Ratio/ Capital Structure Ratio/ Solvency Ratio

The leverage ratio is one of the best ways to study the capital structure of the firm and utilities and appropriations of the sources of capital in the structure and leverage position of the firm. Leverage ratio measure the overall financial risk as well as the ability of the bank in using debt for the benefit of shareholders. It also throws light on the periodic payment of interest during the period of loan and repayment of principal on maturity. With this ratio, the solvency position of the firm can be examined. These ratios indicate the funds provided by owners and creditors. It is believed that there should be an appropriate mix of debt and owner's equity in financing the firm's assets to get more profit to the shareholders. The firm has a legal obligation to pay interest to debt holders, irrespective of the profits made or losses incurred by the firm. If the cost of debt is higher than the firm's overall rate of return, the earning of shareholders will be reduced. In addition, there is threat of insolvency. Use of debt magnifies the shareholders' earnings as well as increases their risk. Thus, there should be an appropriate mix of debt and owners equity in financing the firm's assets. Thus, leverage ratios are calculated to measure the firm's ability of using debt to shareholders' advantage and financial risk. This study mainly concentrates on financial leverage they are as follows:

i. **Total Debt Ratio**: This ratio shows the proportion of the interest-bearing debt in the capital structure. Total debt include short term debt and long term borrowing from financial institution, debenture, bond and other form of debt which should pay back with interest. It computes by using following formula:

$$Debt\ ratio = \frac{Total\ debt}{Total\ debt + Net\ worth}$$

OR

$$Debt\ ratio = \frac{Total\ debt}{Capital\ Employed}$$

ii. **Debt-Equity Ratio**: This ratio is calculated to know the contribution between lenders and owner in firm's capital. Debt and equity are two part of capital structure. One represents ownership and another represent credits. It computes as follows:

$$Debt - Equity\ ratio = \frac{Total\ Debt}{Net\ worth}$$

iii. **Capital Employed to Net worth Ratio**: This is alternative way of expressing the basis relationship between debt and equity. It is used to find out the quantity of net worth out of total capital. This can be found out by calculating the ratio of capital employed to net worth:

$$CE\ to\ NW\ ratio = \frac{Capital\ Employed\ (CE)}{Net\ Worth\ (NW)}$$

iv. **Total Liabilities ratio**: Total liabilities consists all interest bearing and non interest liabilities. This ratio is calculated to know exactly financial risk of the firm. Firm can acquire not interest bearing liabilities like credit from supplier, due payment, advance etc. this types of liabilities must fulfill by firm, so risk consist with all of them. Ratio with out considering non interest bearing liabilities could not give right figure of risk. So that current liabilities are included in calculation of total liabilities ratio. It computes as follows:

$$TL\ to\ TA\ ratio = \frac{Total\ Liabilities\ (TL)}{Total\ Assets\ (TA)}$$

iv. **Interest Coverage ratio**: Interest coverage ratio is used to test the firm's debt-serving capacity. This ratio shows the number of times interest charges are covered by funds that are ordinarily available for their payment. Since taxes are computed after interest, interest coverage is calculated in relation to before tax earning. Depreciation is non cash item. Therefore, funds equal to depreciation are also available to pay interest charge. Calculate of the interest coverage ratio as earnings before depreciation, interest and taxes (EBDIT) divided by interest.

$$Interest\ Coverage = \frac{EBDIT}{Interest}$$

v. **Degree of Financial Leverage**: financial efficiency is represented by the relation between EBIT and EBT. Degree of financial leverage is the percentage change in earning before tax associated with a particular percentage change in EBIT.

$$Degree\ of\ Financil\ Leverage\ (DFL) = \frac{\%\ change\ in\ EBT}{\%\ change\ in\ EBIT}$$

3.4.1.2 Profitability Ratio

The Profitability ratios are calculated to measure the operating efficiency of the company. Besides the management of the company, creditors and owners are also interested in the profitability of the firm. Creditors want to get interest and repayment of principle regularly. Owners want to get required rate of return on their investment." This study concentrates with profitability in relation to investment.

i. **Return on Equity (ROE)**

A return on shareholders equity is calculated to see the profitability of owners' investment. ROE is the tools which gives actual information about real rate of return on share holder's fund. The shareholders equity or net

worth will include paid-up share capital share premium and reverse and surplus less accumulate losses:

$$Return\ on\ Equity = \frac{Net\ Profit\ After\ Tax}{Net\ Worth}$$

ii. Return on Investment (ROI)

Investment represents pool of funds supplied by shareholders and lenders. Investment is representing by total assets. Profit after tax is affected by capital structure. ROI is calculated as follows:

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

3.4.2 Statistical Tools

Statistical tools present the relationship among certain variables based on past trend and help predict future values of one or more variable given the change in other associated variables. These tools are useful to researchers in order to draw liable financial conclusions from data available. In the course of the capital structure, the shareholders' equity and the debt capital are the most common variables. The relationships between them are the important subject for the analysis to determine the balanced capital structure. Hence the statistical tools are also used to analyze the capital structure for its effectiveness. Main statistical tools used in this study are mentioned below properly.

i. Standard Deviation (S.D.)

The standard deviation in finance is used to measures risk. It shows the deviation of actual mean with average mean. The standard deviation measures the absolute dispersion of variability of a distribution. A large standard deviation indicates that the data points are far from the mean and a small standard deviation indicates that they are clustered closely around the mean. Hence, here the standard deviation is used to measure volatility of

debt, net operating income (earning before interest, deprecation and tax) is taken as variables. The formula of standard deviation is as follows:

Standard Deviation $(\sigma) = \dfrac{\sqrt{\sum(x-\bar{x})^2}}{N}$

Where,

X = the variables.

$\bar{X}$ = mean variable

N = the number of variables under observation.

σ = is the symbol to represent standard deviation.

ii. Coefficient of Variation (CV)

Coefficient of variation also measure risk like standard deviation but Standard deviation is an absolute measure of variability; it is generally not suitability for comparing with different expected returns. In these cases, the coefficient of variation provides a better measure of risk. CV is calculated as follows:

$$C.V. = \dfrac{\sigma}{\bar{x}} \times 100\%$$

Where,

C.V = Coefficient of Variation

σ = Symbol to represent standard deviation.

$\bar{X}$ = Mean variable

iii. Correlation Coefficient

Correlation is a statistical tool which studies the relationship between two variables and correlation analysis involves various methods and techniques used for studying and measuring the extent of the relationship between the

two variables. Correlation is the analysis of the co-variation between two or more variables. Here correlation of debt employed and profit is calculated. The Correlation Coefficient can be calculated mathematically as follows:

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

Where,

r= correlation coefficient between two variables X and Y.

X= First variable

Y= Second Variable

N= No of observations

3.4.3 Graphical Approach

It is one quantitative method used to determine patterns in data collection overtime. It is used to detect patterns of change in statistical information over the time. This is the simplest and the easiest method of studying trend of fluctuations. In this method, points are plotted taking time along X-axis and the value of the variable under study along Y-axis. In this study graphical approach is presented and analyzed by line chart and bar diagram wherever it is necessary.

CHAPTER IV
DATA PRESENTATION AND ANALYSIS

In this chapter, the data have been analyzed and interpreted using financial and statistical tools following the research methodology as describe in the third chapter. It is already mentioned that Capital structure refers to a mix of different types of securities issued by firm. If firm has no debt, it is said to be unlevered, while a firm with debt in its capital structure is levered. This chapter proceeds with financial analysis and tabulation and then with statistical analysis. The financial analysis is done through data presentation and calculating through various financial ratios that reflect the relationship of variables affecting capital structure. This chapter is divided into four parts for analyze and presentation of data received mainly based from secondary sources, methods of analysis are as follows:

- Financial Analysis
- Statistical Analysis
- Graphical Analysis
- Major finding

4.1 Financial Analysis: In this section, data is presented for financial analysis. Data is analysed via ratio analysis i.e. leverages ratio and profitability ratio.

4.1.1 Leverage Ratio

Leverage ratio is also known as capital structure ratio or solvency ratio. Leverage ratio measures the overall financial risk as well as the ability of the firm in using debt for the benefit of shareholders. Leverage ratio indicates mix of funds provided by owners and lenders. Debt is more risky from the firm's point of view. It have legal obligation to pay interest on time and return back loans as per firm's commitment. If a firm fails to payback, debt holders can legally force the firm into liquidation. On other hand, equity holders (Owners)

have advantages of tax, control, Flexibility and low cost on using of debt financing. But owner's equity is treated as a margin of safety by creditors. If equity base is thin, the creditors risk will be high. Thus Leverage ratios are calculated to measure the financial risk and ability of using debt to share holder's advantage of the firm's Capital Structure. In this aspects following ratio will be analyzed of selected hydro power company.

Total Debt Ratio

Total Debt ratio provides knowledge about proportion of the interest –bearing Debt in the capital structure. 'Total debt include short and long-term borrowing from financial institution, debentures/bonds deferred payment arrangement for buying capital equipments, bank borrowing public deposit and any other interest-baring loan'.(pandey; 1999:188). Table 4.1 shows position of debt ratio in respective year. Total debt ratio is calculated as follows.

$$\text{Total Debt Ratio} = \frac{\text{Total Debt}}{\text{Capital Employed}}$$

Table 4.1

Total Debt Ratios of BPCL, CHPCL and NHPCL

Year	BPCL			CHPCL			NHPCL		
	Total debt	Capital Employed (Net assets) (In thousand)	Debt Ratio in %	Total debt	Capital Employed (Net assets) (In thousand)	Debt Ratio in %	Total debt	Capital Employed (Net assets) (In thousand)	Debt Ratio in %
2063/64	-	1,372,711	0	1,354,982	2,304,208	58.8	962,650	1,497,006	64.3
2064/65	-	1,293,199	0	591,000	2,079,311	28.42	939,358	1,501,432	62.6
2065/66	89,947	1,383,922	6.5	168,500	2,106,876	7.99	868,263	1,485,304	58.5
2066/67	183,956	1,575,011	11.68	-	2,361,626	0	849,128	1,486,881	57.1
2067/68	181,023	1,721,556	10.52	-	3,100,652	0	702,587	2,008,181	35

Source: Annual Reports of BPCL, CHPCL and NHPCL

BPCL has not employed as long term, debt shown on the table are currently liabilities of company which are bank loan and overdraft. It means there is not debt on permanent capital structure. BPCL has not interest bearing debt on fiscal year 2063/2064 and 2064/2065. Its debt ratio was 6.5%, 11.68% and 10.52% during 2065/2066, 2066/2067 and 2067/2068 respectively. These indicate there is no significant of bank interest risk.

CHPCL had 58.80% interesting bearing loan on fiscal year 2063/64. Above data shows the company starts to substitute its debt by share holder's fund. It increases its equity capital and reserve for substitute of debt effect of this strategy debt ratio decrease to 28.42% and 7.99% on fiscal year 2064/65 and 2065/66 respectively, then after there is not debt even short term bank loan.

NHPCL had 64.31% interesting bearing debt; its debt is slightly decreasing trend till fiscal year 2066/67. After issuing right share this company payback some its long term loan which decreases its debt ratio up to 35%.

Debt –Equity Ratio

Debt-Equity ratio is the contribution of lenders for each rupee of owner's contribution. Total debt is all interest bearing debt i.e. long term debt + short term interesting bearing debt. D/E ratio is computed as follows:

$$\text{Debt-Equity Ratio} = \frac{\text{Total Debt}}{\text{Net Worth}}$$

Table 4.2

D/E ratio of BPCL, CHPCL and NHPCL

Year	BPCL			CHPCL			NHPCL		
	Total debt (In thousand)	Net Worth (In thousand)	Debt Equity Ratio in %	Total Debt (In thousand)	Net worth (In thousand)	Debt Equity Ratio in %	Total debt (In thousand)	Net Worth (In thousand)	Debt Equity Ratio in %
2063/64	-	1,291,284	0	1,354,982	949,227	1.43	962,650	535,885	1.8
2064/65	-	1,205,520	0	591,000	1,488,311	0.4	939,358	546,282	1.72
2065/66	89,947	1,209,675	0.07	168,500	1,938,375	0.09	868,263	617,041	1.41
2066/67	183,956	1,289,390	0.14	-	2,361,626	0	849,128	637,753	1.33
2067/68	181,023	1,411,525	0.13	-	3,100,562	0	702,587	1,305,594	0.54

Source: Annual Reports of BPCL, CHPCL and NHPCL

Among three companies BPCL and CHPCL employing low quantity of debt financing, CHPCL used debt 1.43 times than equity on fiscal year 2063/2064 then after portion of debt is decreased. From fiscal year 2066/67 it has not employed debt capital. This is favorable condition to lenders due to there safety margin is too high. Case of NHPCL is different than other two companies in initial year is employment of debt is high; debt was 1.8 times more than its net

worth. That was not favorable because debt comes with risk. On the end of 2067/2068 its debt equity ratio is on 0.54. These data shows that Nepalese hydro power companies are equity oriented and unleveled, they focus on equity capital. Debt-Equity ratio is expressed on Figure 4.1.

Figure 4.1
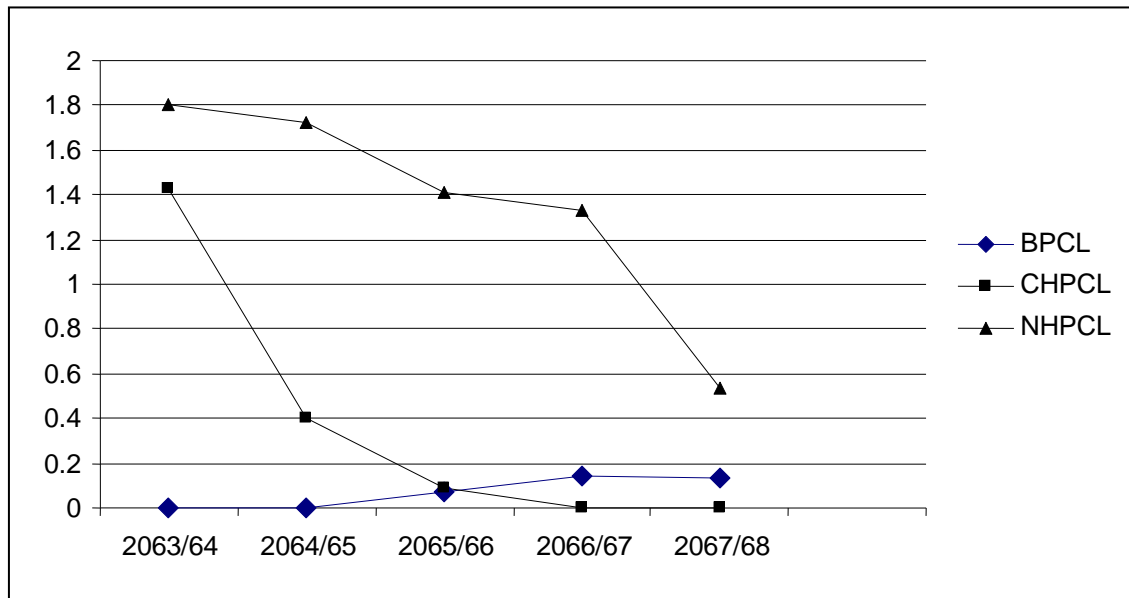**Debt-equity Ratio of BPCL, CHPCL & NHPCL**

Figure 4.1 present trends of debt-equity ratio of three listed hydro power company. It shows portion of debt is continuously going down. According to this we can conclude that hydro power companies are not interested on debt capital. Companies are decreasing their long term debt.

Capital Employed to Net Worth Ratio

This ratio is alternative way of expressing the basis relationship between debt and equity. This ratio express what quantity of net worth or shareholders fund is employed out of total capital employed. This ratio is calculated as follows:

$$\text{CE to NW ratio} = \frac{\text{Capital Employed (CE)}}{\text{Net Worth (NW)}}$$

Table 4.3
**Equity ratios of BPCL, CHPCL and NHPCL**

Year	BPCL			CHPCL			NHPCL		
	Capital Employed (Net assets) (In thousand)	Net Worth (In thousand)	Equity Ratio in %	Capital Employed (Net assets) (In thousand)	Net worth (In thousand)	Equity ratio	Capital Employed (Net assets) (In thousand)	Net Worth (In thousand)	Equity Ratio
2063/64	1,372,711	1,291,284	1.06	2,304,208	949,227	2.43	1,497,006	535,885	2.79
2064/65	1,293,199	1,205,520	1.07	2,079,311	1,488,311	1.4	1,501,432	546,282	2.75
2065/66	1,383,922	1,209,675	1.14	2,106,876	1,938,375	1.09	1,485,304	617,041	2.41
2066/67	1,575,011	1,289,390	1.22	2,361,626	2,361,626	1	1,486,881	637,753	2.33
2067/68	1,721,556	1,411,525	1.22	3,100,652	3,100,562	1	2,008,181	1,305,594	1.54

Source: Annual Reports of BPCL, CHPCL and NHPCL

Note: Grant aid in reserve' of BPCL is excluded on net worth

Table 4.3 clearly shows proportion of net worth on capital structure of respective company on respective years. Net worth of every company is increased in every year equity ratio as '1' detonates proportion of net worth is 100% on its capital structure. Every company's equity ratio is decreasing towards '1' expect Butwal Power Company; reason of this increase on equity ration of BPCL is exclude the grant aid on its net worth. Trends of equity is shown on Figure 4.2

Figure 4.2
Capital Employed to Net worth (Equity Ratio)
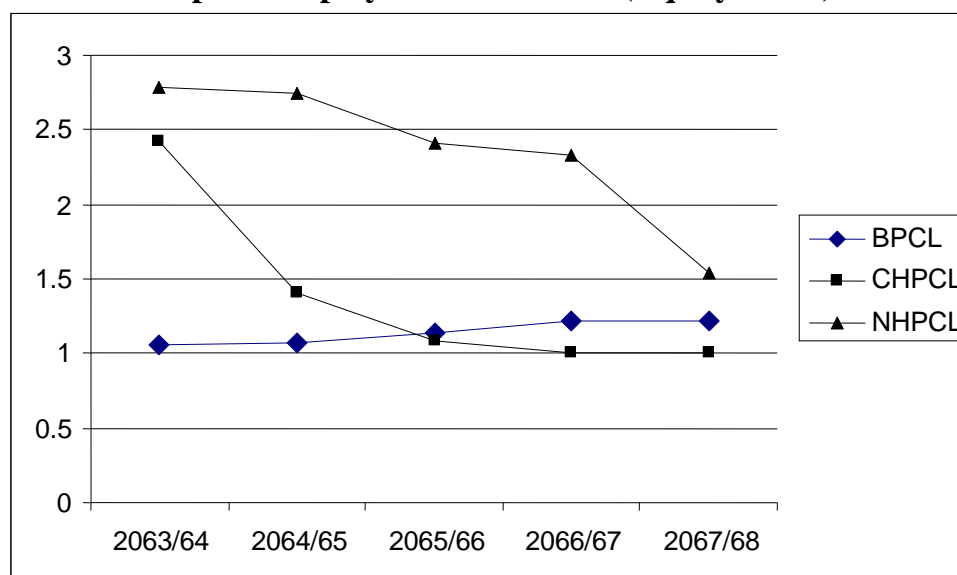
Total Liabilities Ratio

This ratio is calculated to know the contribution of external source on firm assets or how much risk is bearing. While computation of leverage, generally non interest bearing liabilities is excluded form its debts. But non-interest bearing current obligation plays important role on financial risk so that it is better to give some attention on this ratio. Firm should give some concern on this ratio; increment of this ratio is increment of risk. This is not favorable for future growth and debt. This ratio is computation by dividing total liabilities by total assets. Total liabilities ratio is calculated as follows:

$$\text{TL to TA ratio} = \frac{\text{Total Liabilities (TL)}}{\text{Total Assests (TA)}}$$

Table 4.4 shows their total assets and total liabilities with total total liabilities ration of respective company on respective year.

Table 4.4
Total Liabilities Ratio of BPCL, CHPCL and NHPCL

Year	BPCL			CHPCL			NHPCL		
	Total Liabilities (In thousand)	Total Assets (In thousand)	Total Liability ratio	Total Liabilities (In thousand)	Total Assets (In thousand)	Total Liability ratio	Total Liabilities (In thousand)	Total Assets (In thousand)	Total Liability ratio
2063/64	58,710	1,431,421	0.04	1,453,605	2,348,261	0.62	1,160,939	1,695,295	0.68
2064/65	443,879	1,740,078	0.26	918,476	2,401,627	0.38	1,174,145	1,638,696	0.72
2065/66	587,408	1,881,383	0.31	437,360	2,371,866	0.18	1,077,114	1,603,931	0.67
2066/67	595,872	1,986,927	0.30	504,089	2,861,062	0.18	849,128	1,486,881	0.57
2067/68	717,932	2,258,465	0.32	35,206	3,131,317	0.01	702,587	2,008,181	0.35

Source: Annual Reports of BPCL, CHPCL and NHPCL

Total liabilities ratio measures risk of firm on the view point of risk of shareholders. Total liabilities ratio of BPCL is in increasing trends but CHPCL and NHPCL are in decreasing trends. Table 4.4 shows CHPCL has very liabilities.

Figure 4.3

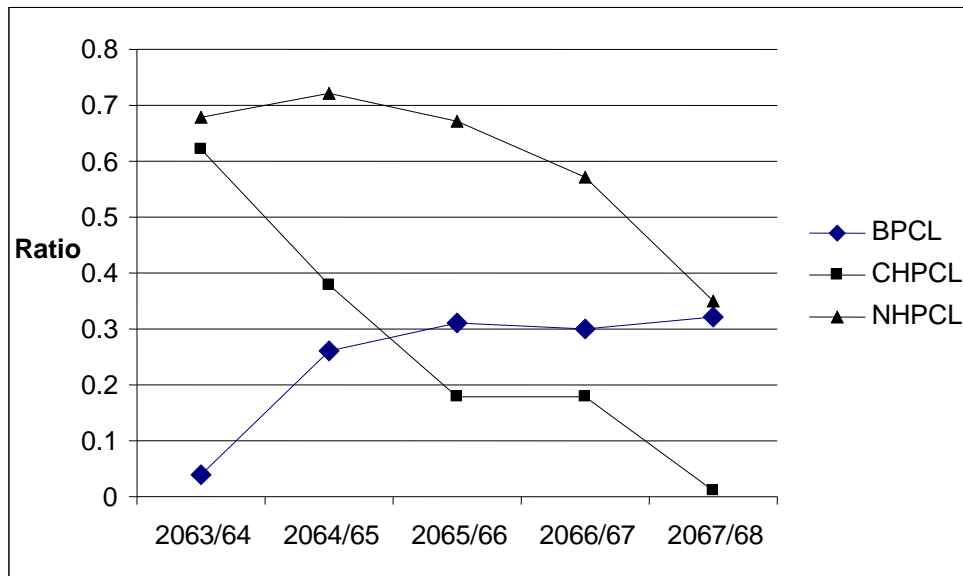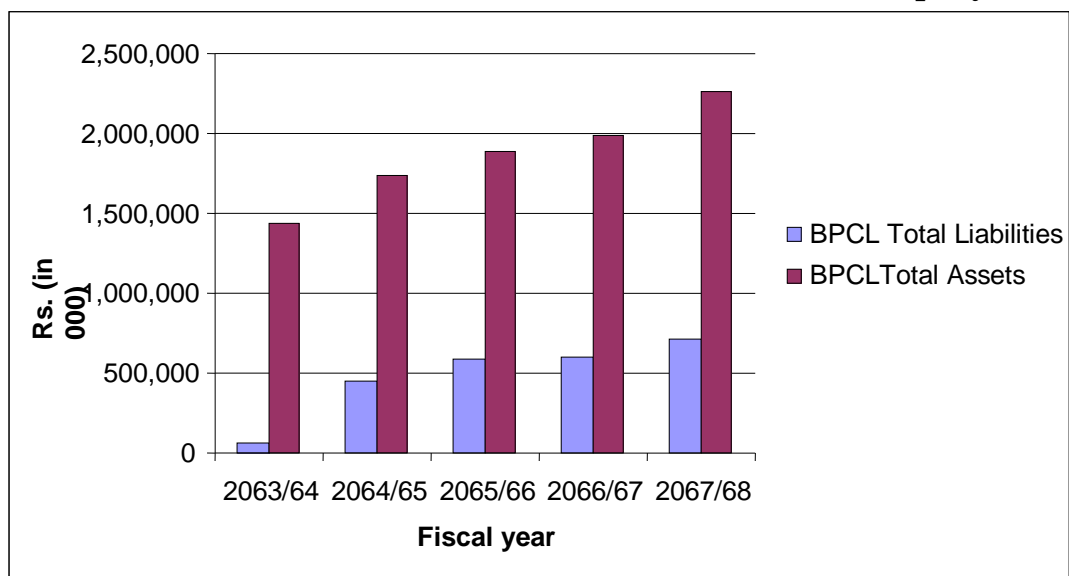**Total Liabilities Ratio of BPCL, CHPCL and NHPCL**

Figure 4.3 shows the trends and position of liabilities ratio, ratio of BPCL is in increasing trend. Ratio of CHPCL is almost 0 i.e. there is almost zero liabilities. NHPCL liabilities ratio is decreasing trend.
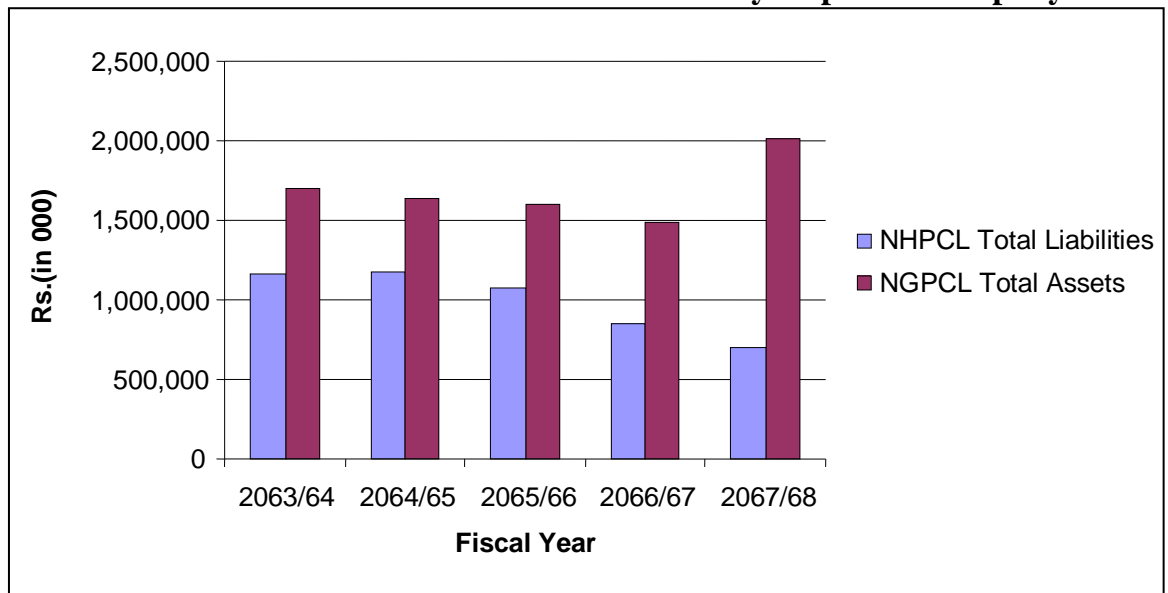
Figure 4.4
Total Liabilities and Total Assets of Butwal Power Company

Figure 4.5
Total Liabilities and Total Assests of Chilime Hydropower Company
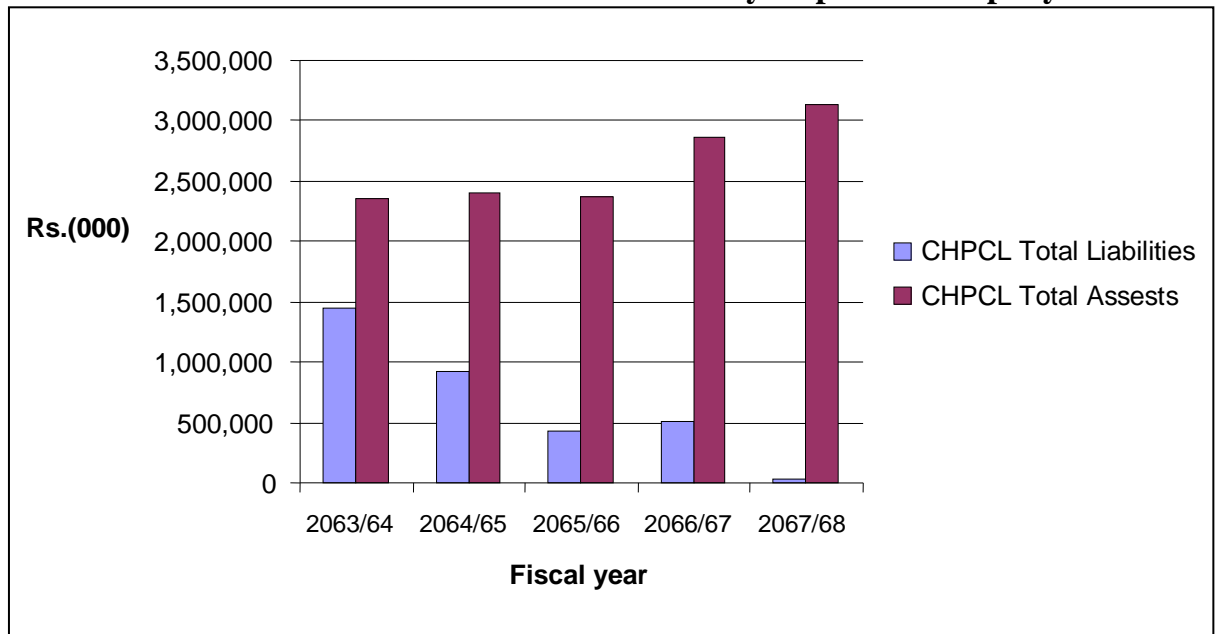
Figure 4.6
Total Liabilities and Total Assets of National Hydropower Company

Interest Coverage Ratio

Debt ratio describes static nature and fails to indicate the firm's ability to meet interest obligations. The interest coverage ratio used to test the firm debt-servicing capacity. This ratio shows the numbers of times the interest charges are covered by funds that are ordinarily available for their payment. 'Theoretically assume satisfactory coverage ratio should be 6 to 7 times'

(Dangol, 2057:383). "It should be obvious that a high level of debt is a problem for a company only if its future cash flows (earning being a large component) are uncertain. An analyst, therefore, may analyze the variability of the company's cash flows (or earnings) over time." (Pandey, 1999: 123) Interest coverage ratio is calculated as follows.

$$\text{Interest Coverage} = \frac{\text{EBDIT}}{\text{Interest}}$$

Table 4.5
Interest Coverage Ratio of BPCL, CHPCL and NHPCL

Year	BPCL			CHPCL			NHPCL		
	EBDIT (in thousand)	Interest (in thousand)	Interest Coverage Ratio	EBDIT (in thousand)	Interest (in thousand)	Interest Coverage Ratio	EBDIT (in thousand)	Interest (in thousand)	Interest Coverage Ratio
2063/64	245,666	Nil	-	616,191	127,240	4.85	172,990	124,220	1.39
2064/65	341,847	Nil	-	692,142	81,563	8.49	184,380	123,110	1.49
2065/66	319,649	5,266	60.70	816,289	45,025	18.13	219,950	96,790	2.27
2066/67	425,629	7,246	58.74	788,242	5,130	153.65	154,641	73,088	2.12
2067/68	373,625	7,913	47.22	842,627	Nil	-	139,580	69,465	2.01

Source: Annual Reports of BPCL, CHPCL and NHPCL

Table 4.5 shows there is not any problem of interest coverage on BPCL and CHPCL. But interest coverage ratio of NHPCL is low than standard coverage ratio. interest coverage of BPCL is 60.70, 58.74 and 47.22 for the fiscal year 2065/66, 2066/67 and 2067/68 respectively, there is no any interest on fiscal year 2063/64 and 2064/65 it means there is not any debt beared. It should be remembered that BPCL has not employed long term debt, all debt are short term debt. CHPCL and NHPCL both are going on same pattern of BPCL, that is minimize long term debt. CHPCL has makes its interest bearing debt on zero on fiscal year 2067/68. Interest of NHPCL is also going down. Coverage of three companies in graph on Figure 4.7

Figure 4.7
Interest Coverage Ratio of BPCL, CHPCL and CHPCL
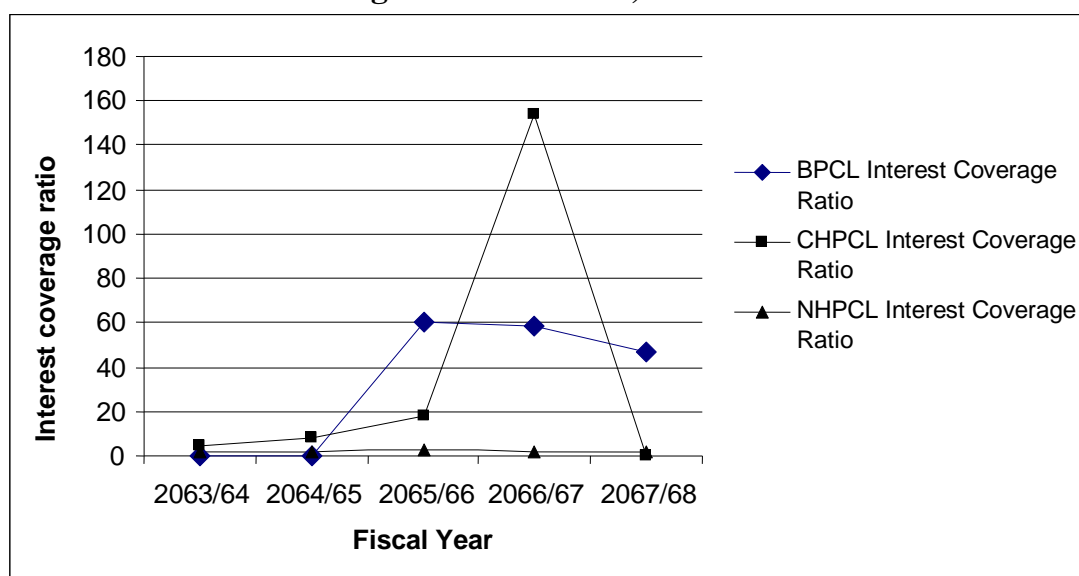
Degree if financial leverage

Degree of financial leverage is the percentage change in EBT with a particular percentage change in EBIT. This is calculated as follows:

$$\text{Degree of Financial Leverage (DFL)} = \frac{\%\text{ Change in EBT}}{\%\text{ Change in EBIT}}$$

Table 4.6
Degree of Financial Leverage of BPCL, CHPCL and NHPCL

| Year	EBT (In thousand)	EBIT (In thousand)	% Change in EBT	% Change in EBIT	DFL
BPCL					
2063/64	198,253	198,253	-	-	-
2064/65	291,888	291,888	47.23	47.23	1.00
2065/66	262,459	267,725	-10.08	-8.28	1.22
2066/67	363,280	370,526	38.41	38.40	1.00
2067/68	303,839	311,752	-16.36	-15.86	1.03
CHPCL					
2063/64	385,437	512,577	-	-	-
2064/65	507,759	589,322	31.74	17.97	2.12
2065/66	667,477	712,502	31.46	20.90	1.50
2066/67	679,372	684,502	1.78	-3.93	-0.45
2067/68	738,713	738,713	8.73	7.92	1.10
NHPCL					
2063/64	5,920.00	148,140	-	-	-
2064/65	16,620.00	139,730	180.74	-5.68	-31.84
2065/66	53,170.00	149,960	219.92	7.32	30.04
2066/67	12,088.00	85,176	-77.27	-43.20	1.79
2067/68	8,995	81,793	-25.59	-3.97	6.44

Source: Annual Reports of BPCL, CHPCL and NHPCL

On Table 4.6 degree financial leverage of all three companies for the fiscal year 2063/64 is not mention due to EBT and EBIT of 2062/63 is not available. DFL are 1, 1.22, 1, 1.03 of BPCL for the year 2064/65, 2065/66, 2066/67 and 2067/68 respectively. DFL of fiscal year 2064/65 is 1 i.e. debt is not employed on the period. Change of EBT and EBIT both are negative on 2065/66 but DFL is 1.22. As per data on Table 4.6 DFL is not so fluctuated of BPCL.

DFL of CHPCL are 2.12, 1.5, -0.45 and 1.1 for the fiscal year 2064/65, 2065/66, 2066/67 and 2067/68. it should be noticed that DFL of 2066/67 is negative because EBIT is less on that year than previous fiscal year which makes 3.93% negative change on EBIT but change on EBT is still positive this mean interest paid on 2064/*65 is decrease than previous year.

DFL of NHPCL are -31.84, 30.40, 1.79, 6.44 for fiscal year 2064/65, 2065/66, 2066/67 and 2067/68 respectively. Data shows DFL are highly fluctuated because its profit is in low range. Its EBIT is low, after interest deduction EBT remain very low show that change in percentage is high. Comparative DFL of three companies is in Figure 4.8.

Figure 4.8
Degree of Financial Leverage of BPCL, CHPCL and CHPCL
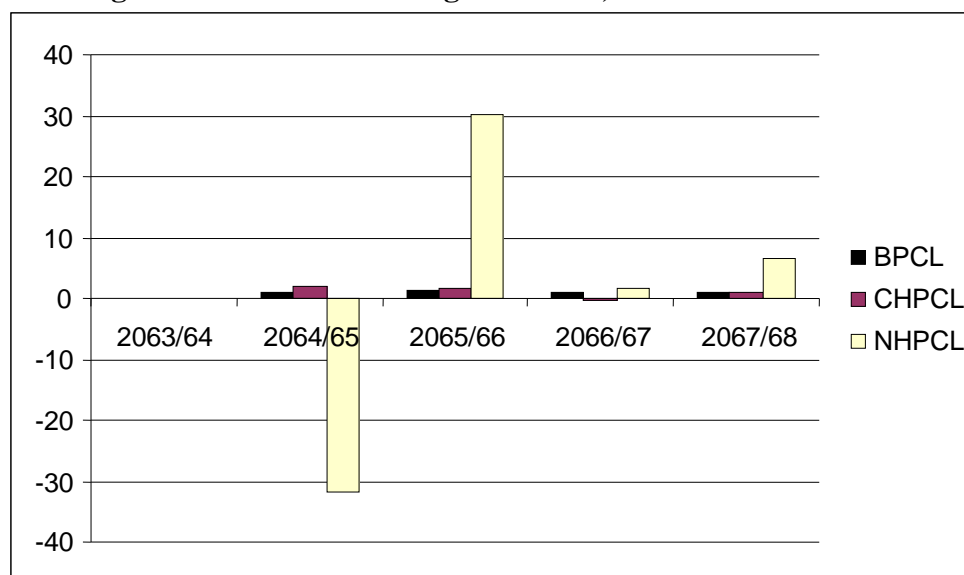
Degree of financial leverage answer the question of what is degree of effect on EBT change if EBIT change. If there high DFL i.e. high effect if low effect is low. When economic conditions are good the firm's EBIT increase, it affects EBT. This effect represent DFL denote EBT increase faster, low DFL denote effect will vice verse.

4.1.2 Profitability Ratio

Profitability ratios are a group of ratios showing the combined effects of liquidity, asset management and debt management on operating results. They are the measures of a company's earning capacity and operation efficiency. Profitability ratios of the company can be calculated in relation to sales and in relation to investment. It is true that higher the profitability ratios better the financial position and vice versa (*Weston and Brigham, 198:249*).

The profitability ratios are calculated to measure efficiency of company, creditors and owners are mostly interested in this ratio. Profitability can be measure on sales and investment side but this study concentrate return on investment ratio and return on equity ratio.

Return on Equity (ROE)

'A Return on shareholder's equity is calculated to see the profitability of owner's investment. The shareholder's equity or net worth will include paid-up share capital, share premium and reserve and surplus less accumulated'. (Pandey, 1999:136) ROE is calculated as follows:

$$\text{Return on Equity} = \frac{\text{Net Profit After Tax}}{\text{Net Worth}}$$

Table 4.7
**Return of Equity of BPCL, CHPCL and NHPCL**

Year	BPCL			CHPCL			NHPCL		
	NPAT	Net Worth	ROE	NPAT	Net Worth	ROE	NPAT	Net Worth	ROE
2063/64	197,761	1,291,284	15.32	385,437	949,227	40.61	5,920	535,885	1.10
2064/65	288,419	1,205,520	23.92	507,759	1488311	34.12	16,620	546,282	3.04
2065/66	252,840	1,209,675	20.90	667,477	1938375	34.43	53,170	617,041	8.62
2066/67	353,879	1,289,390	27.45	679,372	2,361,626	29.7	12,088	637,753	1.90
2067/68	291,592	1,411,525	20.66	738,713	3,100,562	23.83	8,995	1,305,594	0.69

Source: Annual Reports of BPCL, CHPCL and NHPCL
Note: 'grant aid in reserve' of BPCL is excluded on net worth.

Return of Equity of BPCL is increasing trend up to 2066/67 but it is decreased to 20.66% on 2067/68 because its NPAT decreased but net worth increase. CHPCL is highly profitable company, on the fiscal year 2063/64 its ROE was 40.61. But its ROE is continually decreased every year even profit increased in every year. In case of NHPCL its ROE is very low. There is 1.10, 3.04, 8.62, 1.9 and 0.69 ROE for the fiscal year 2063/64, 2064/65, 2065/66, 2066/67 and 2067/68 respectively. It's highest ROE is 8.62 in these five fiscal years. National hydropower return is less than risk free interest rate. At the same time other company of industry has given good return. This can be check on graphical approach on Figure 4.9.

Figure 4.9
Return of Equity of BPCL, CHPCL and NHPCL
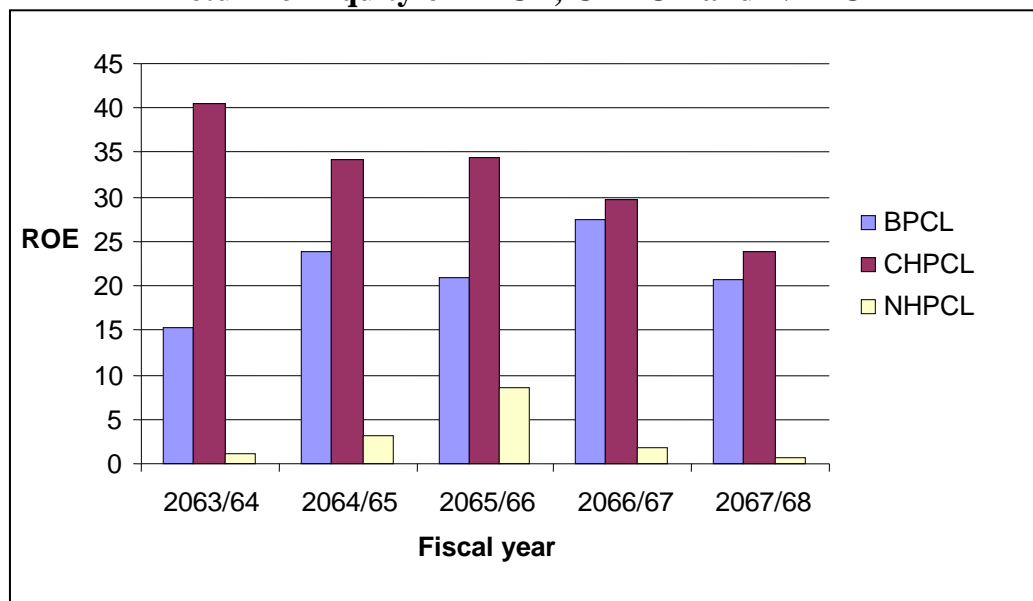
Return on Investment

Return on investment is computed to find out return of source utilization. High ratio means high return on its investment. ROI ratio denotes capability of income generation form available source. Total investment represent by assets. Return on investment is computed dividing net profit after tax by total assets. On the side of owner return on investment take measure concern. Table shows details about respective company and there NPAT, total assets and ROI. As per Table 4.8 ROI are 13.82, 16.58, 13.44, 17.81 and 12.91 for the fiscal year

2063/64 to 2067/68 respectively of BPCL. Like this ROI of CHPCL are 16.41, 21.14, 28.14, 23.75 and 23.59 for the fiscal year 2063/64 to 2067/68 respectively. NHPCL's ROI are 0.35, 1.08, 3.31, 0.81 and 0.45 for the fiscal year 2063/64 to 2067/68 respectively. High ratio of ROI indicates effective utilization of source and low ratio disclose infancy on utilization of source. In comparison of three companies CHPCL's management performance is good. ROI is calculated as follows.

$$ROI = \frac{\text{Net Profit After Tax}}{\text{Total Assets}}$$

Table 4.8
Return of Investment of BPCL, CHPCL and NHPCL

Year	BPCL			CHPCL			NHPCL		
	NPAT	Total Assets	ROI	NPAT	Total Assets	ROI	NPAT	Total Assets	ROI
2063/64	197,761	1,431,421	13.82	385,437	2,348,261	16.41	5,920	1,695,295	0.35
2064/65	288,419	1,740,078	16.58	507,759	2,401,627	21.14	16,620	1,638,696	1.08
2065/66	252,840	1,881,383	13.44	667,477	2,371,866	28.14	53,170	1,603,931	3.31
2066/67	353,879	1,986,927	17.81	679,372	2,861,062	23.75	12,088	1,486,881	0.81
2067/68	291,592	2,258,465	12.91	738,713	3,131,317	23.59	8,995	2,008,181	0.45

Source: Annual Reports of BPCL, CHPCL and NHPCL

Return of investment of BPCL is fluctuating in five years. CHPCL's ROI is increasing first 3 years then decrease for 2 fiscal year at all most same. In comparison other two companies NHPCL has worse ROI; there is less than 1 ROI in 3 years out of five years. Trend of ROI is in Figure 4.10

Figure 4.10
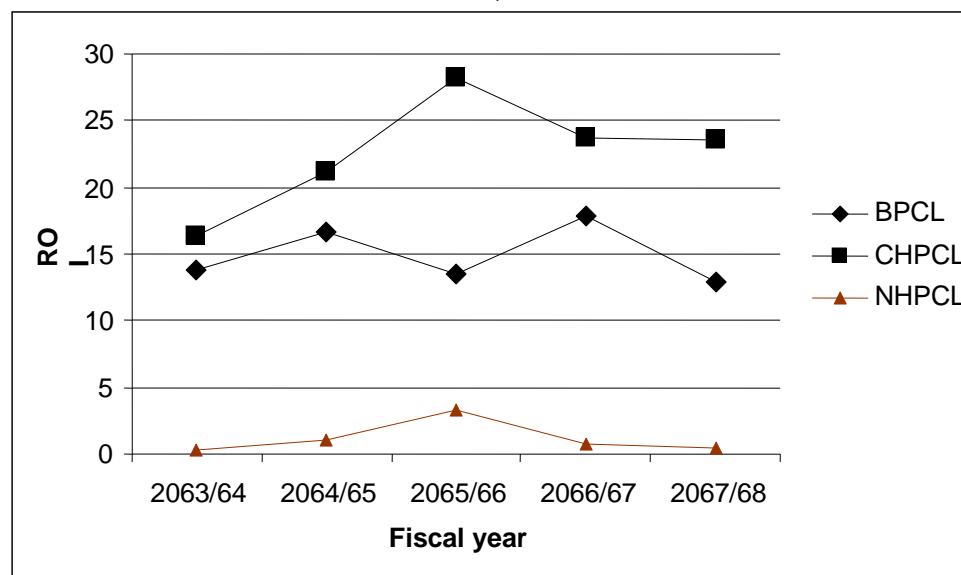**Return of Investment of BPCL, CHPCL and NHPCL**

Figure 4.10 clearly shows the performance of three companies and their earning trend. This trends shows performance.

4.2 Statistical Tools

Statistical tools present the relationship among certain variables based on past trend and help predict future values of one or more variable given the change in other associated variables. These tools are useful to researchers in other to draw liable financial conclusion from data available. The following statistical tools are used in this study.

Standard Deviation (σ)

The standard deviation measures the absolute dispersion of variability of a distribution. A large standard deviation indicates that the data points are far from the mean and is small standard deviation indicates that they are clustered closely around the mean. The standard deviation is used in finance to measure risk. In this study standard deviation is used for measures the risk of company. Standard deviation is calculated for measuring risk of 'earning before interest tax and depreciation' to assets on Table 4.9 standard deviations calculated as follow:

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

Table 4.9
Standard Deviation, Mean of BPCL, CHPCL and NHPCL

Company	BPCL	CHPCL	NHPCL
Standard Deviation(σ)	1.88	2.94	2.16
Mean	18.35	28.79	10.51

Source: Annual Reports of BPCL, CHPCL and NHPCL

According to Table 4.9 standard deviation are 1.88, 2.94, and 2.16 of BPCL, CHPCL and NHPCL respectively. Low standard deviation denotes low risk and high standard deviation denotes high risk. In comparison of three companies BPCL has low risk and CHPCL has high risk. But other financial analysis says CHPCL is the company which generates maximum return and NHPCL is not profitable company. Although NHPCL has low standard

deviation, we cannot say this has low risk because standard is in absolute measure of variability. We should not conclude only on the basis of standard deviation when mean of variable are not equal. Mean is assumed as expected rate of return. In this coefficient of variation (CV) should be check of three company.

Coefficient of Variation (CV)

CV is method of measuring the risk, it is computed by standards deviation divided by expected return (mean). CV shows the risk per unit of return and provides more meaningful basis compression. CV is calculated as follows.

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

Table 4.10
Standard Deviation, Mean and CV of BPCL, CHPCL and NHPCL

Company	BPCL	CHPCL	NHPCL
Standard Deviation(σ)	1.88	2.94	2.16
Mean	18.35	28.79	10.51
Coefficient of Variation(CV)	0.1024	0.1021	0.2055

Source: Annual Reports of BPCL, CHPCL and NHPCL

CV of BPCL and CHPCL is almost same and NHPCL has high. Lower CV denotes low risk and high CV denotes more risk. As per CV analysis CHPCL has low risk and NHPCL has comparatively high risk.

Correlation of Coefficient

'Correlation analysis is the statistical tools that we can use to describe the degree to which one of variable is linearly related to others variable. Two or more variables are said correlated if change in the value of one variable appears to be related or linked with the change in the other variable.' (Sharma & Choudhary, 2058: 405). Values of correlation of coefficient (r) lies between '-1' and '+1'. Correlation of coefficient is calculated by using following formula.

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

Table 4.11
Correlation of Coefficient of BPCL, CHPCL and NHPCL

Variables	BPCL	CHPCL	NHPCL
Total debt to NPAT	0.7012	-0.9727	0.0498
Capital employed to EBIT	0.5545	0.4793	-0.6226
Total Assets to Total Liabilities	0.9516	-0.7517	- 0.4851

Source: Annual Reports of BPCL, CHPCL and NHPCL

Table 4.11 analyzed the correlation between Total debt to NPAT, capital employed to EBIT and total assets to total liabilities. Variable of BPCL has positive correlation on all three computed variable. Positive correlation denotes if one variable increase other also increase or vice versa. Its total assets to total liabilities is highly correlated it means company's assets increased by debt rather than shareholders fund. Company has positive impact in increasing capital employed to its earning.

CHPCL has highly negative correlation between total debts to EBIT. Its debt is continually decreasing towards zero debt but profit increasing every year. This is against the leverage concept. Reason of this is tax facilities i.e. company should not pay income tax in Nepal till now it is very low production cost i.e. Rs. 21.01 per KWH. There is positive correlation between 'capital employed' to EBIT this means additional capital employed is generation more profit. It has negative correlation that means increase in assets is from shareholder fund rather than liabilities.
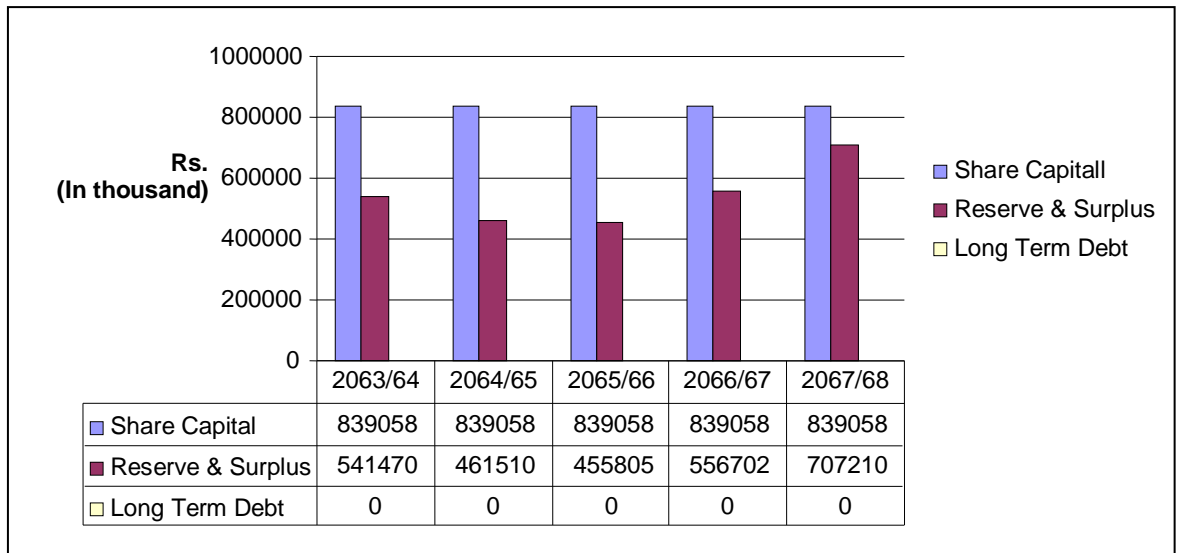
Both financial and statically indicators are against NHPCL. Debt employed has slightly positive correlation towards its profit it has negative effect of addition capital. Company increases its share capital but profit goes down. Company has negative correlation between total assets and total liabilities.

4.3 Graphical Analysis

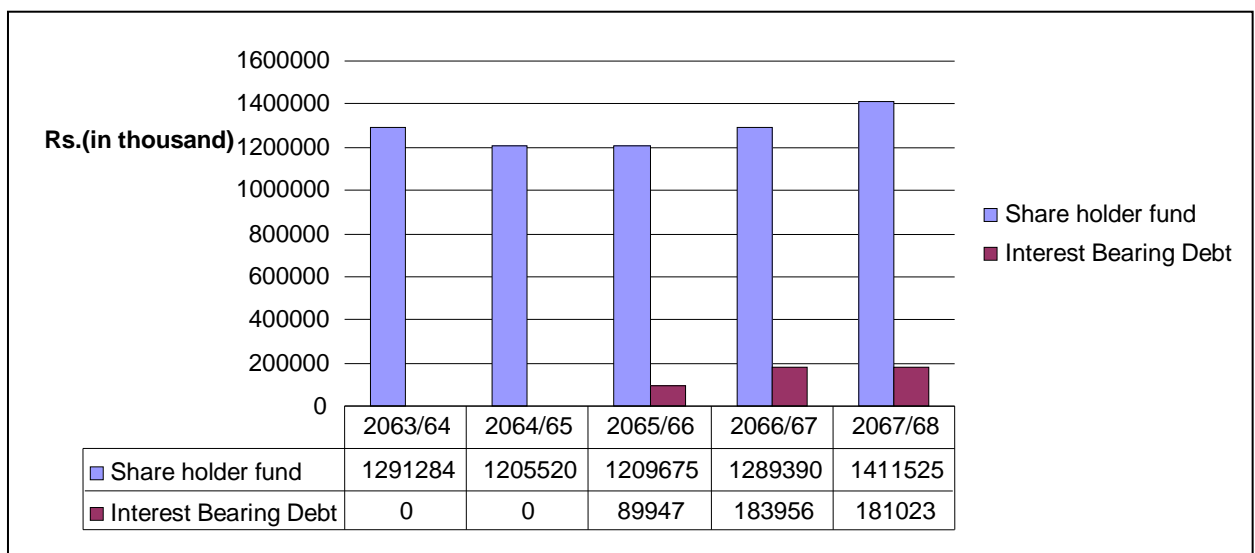In graphical analysis major determinates of capital structure are presented in each company wise.

Butwal Power Company

Figure 4.11
Capital Structure of BPCL

	2063/64	2064/65	2065/66	2066/67	2067/68
■ Share Capital	839058	839058	839058	839058	839058
■ Reserve & Surplus	541470	461510	455805	556702	707210
□ Long Term Debt	0	0	0	0	0

In Figure 4.11, there is long- term bar due to long term debt is not employed in capital structure. 'Grant aid in reserve 'is including on reserve and surplus.
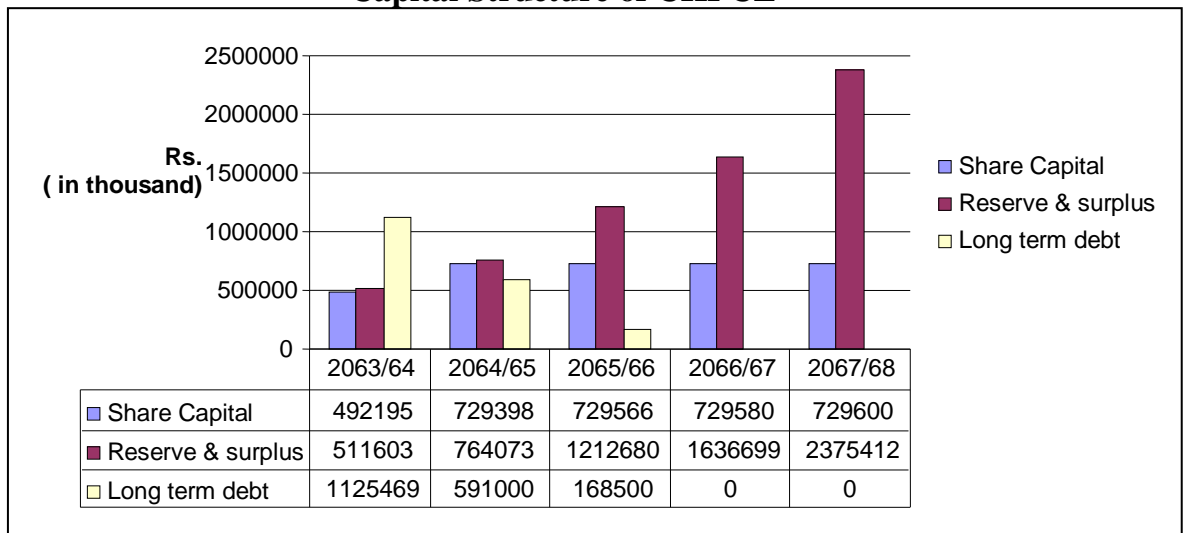
Figure 4.12
Share Holder Funds and Interest Bearing Debt of BPCL

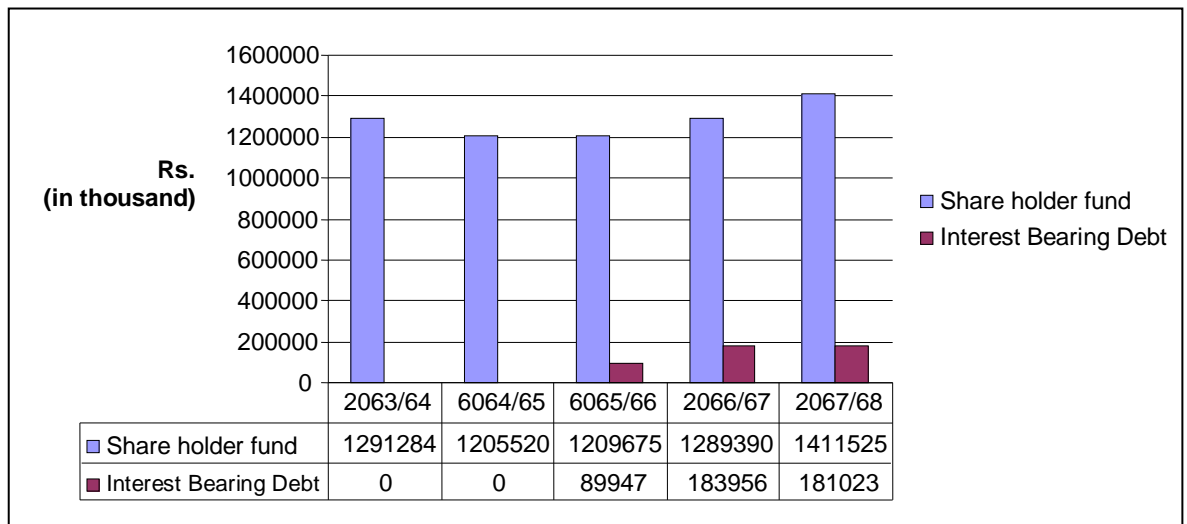|	2063/64	2064/65	2065/66	2066/67	2067/68
■ Share holder fund	1291284	1205520	1209675	1289390	1411525
■ Interest Bearing Debt	0	0	89947	183956	181023

In Figure 4.12 deferred revenue expenditure and Grant aid are excluded from share holder funds.

Chilime Hydro Power Company
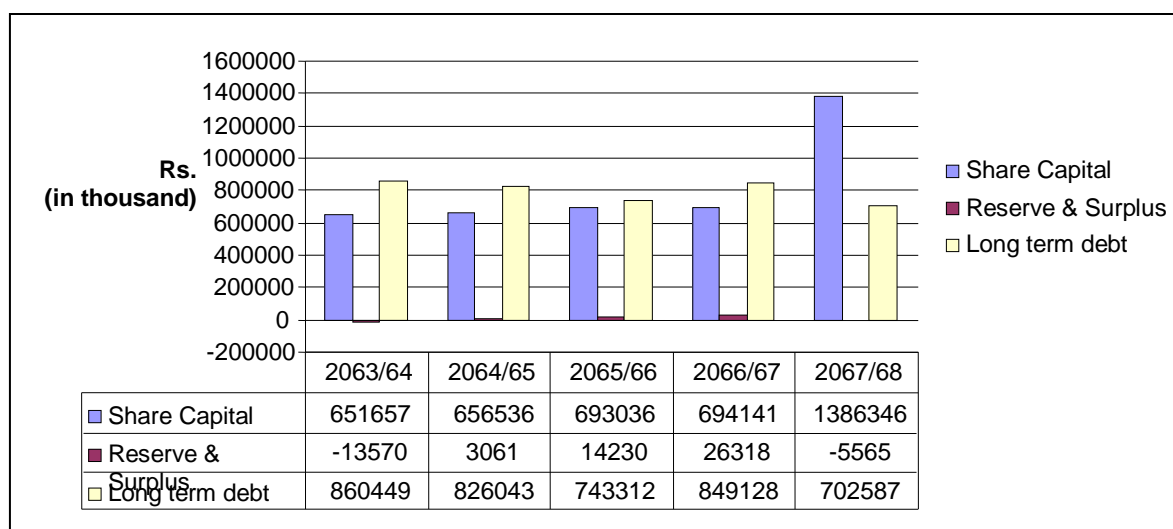
Figure 4.13
Capital Structure of CHPCL

	2063/64	2064/65	2065/66	2066/67	2067/68
Share Capital	492195	729398	729566	729580	729600
Reserve & surplus	511603	764073	1212680	1636699	2375412
Long term debt	1125469	591000	168500	0	0

Figure 4.14
Share Holder Funds and Interest Bearing Debt of CHPCL

	2063/64	6064/65	6065/66	2066/67	2067/68
Share holder fund	1291284	1205520	1209675	1289390	1411525
Interest Bearing Debt	0	0	89947	183956	181023

National Hydro Power Company

Figure 4.15
Capital Structure of NHPCL

	2063/64	2064/65	2065/66	2066/67	2067/68
■ Share Capital	651657	656536	693036	694141	1386346
■ Reserve & Surplus	-13570	3061	14230	26318	-5565
□ Long term debt	860449	826043	743312	849128	702587

Figure 4.16
Share Holder Funds and Interest Bearing Debt of NHPCL

	2063/64	2064/65	2065/66	2066/67	2067/68
■ Share holder fund	949227	1488311	1938375	2361626	3100562
■ Interest Bearing Debt	1354982	591000	168500	0	0
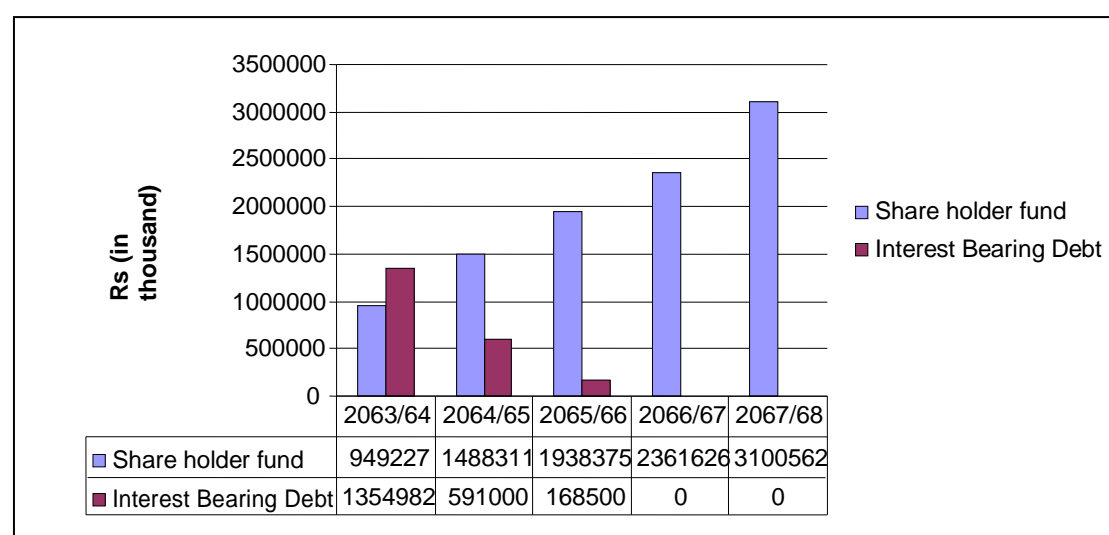
4.4 Major Findings

At the time of this study started, three hydro powers listed on Nepal Stock Exchange. Three hydro powers are running in same industry in Nepal. But their initial stage of capital stricture is very different to each others but all company's capital structure is moving on same trends i.e. replace long term debt by equity. Major findings are as follow:

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a. BPCL had not employed debt financed in first two year and there is not long term debt till date. It started to borrow short term loans and overdraft from fiscal year 2065/66 and slightly increase in latest year. Debt year ratio seen on Table 4.1 is just because of short of loan. It can conclude that BPCL is equity base company. CHPCL had both long term and short term debt in first year. It was levered firm in first year. It reduces its long term debt and payback all short term debt in second year. Its debt ratio decrease from 58.8% to 28.42%, on first two year. There are not interesting bearing debts in its balance sheet. Now this company becomes totally unleveled company. NHPCL had more than 50% debt in company. On fifth year it reduce it debt up to 35% of capital employed. All three companies had different capital structure if first faze but all three are going same trends to minimize long term borrowing. Main reason of this is tax holiday period. Hydro power project gets tax exempted till 10-15 years form its production date.

b. Debt equity ratio analyzes data like debt ratio but on another side, it looks the percentage of interest bearing debt on basis of net worth or shareholder's funds. Actually net worth is the surety of safety margin of debt. While acquisition of loan forms creditors net worth and debt get more importance. Debt equity ratio less than 1 means total debt is less than shareholder equity and more than 1 is vice verse. BPCL has less than 1 debt equity ratio from first year till date. CHPCL has more than 1 debt equity ratio for the first year. NHPCL brings down this ratio 0.54 in fifth year. This data says Nepalese hydro power companies are safe for lenders point of view of debt equity ratio.

c. Capital employed to net worth ratio does not give different information than first leverage tools. Its analyzes firm's financial strength. All three companies have sound net worth.

d. Debt ratio and debt does not consider non interest bearing current liabilities. But is plays considerable role in firms risk and profitability.

Total liabilities ratio provides actual knowledge of firm's risk. Nepalese hydro power companies have remarkable non interest bearing current liabilities for example BPCL has no long term debt and less short term interest bearing debt but it has remarkable current liabilities i.e. 31.79% of total assets. CHPCL has no interest bearing debt but it has 17.62% CL in forth year. Around 1% CL lies in fifth year. In case of NHPCL it has more than 55% total debt ratio first four year. In fifth year it reduces this ratio up to 35 %. These data proves that there is no default risk in these data proves that there is no default risk in these three company although low profit earning by NHPCL.

e. Coverage ratio has important information about firm's solvency. Coverage ratio denotes firm's interest paying capacity. Before borrowing company should calculate its operating profit of EBIT weather it is sufficient cash inflow for interest pay and debt return. BPCL and CHPCL is reducing loan so that there are no problem on this ratio. But NHPCL has just 2.1 coverage ratio which is lower than standard coverage ratio. If this situation of earning going on same trends it will face serious financial risk.

f. Company run for profit, its final target is always profit. If firm became unable to earn profit in long run that cannot be continue. Mostly firm shows profit on EPS but EPS does not reflect real rate of profit because EPS is calculated on basis of no of equity share. But share holder do not get all earning of company as dividend they get certain percentage of profit as per board decision. Remaining profit is reinvested and mention on reserve and surplus so that profit should be calculated on the basis of new worth of company. This reflects real rated of earning on share holders fund. BPCL has 15.32%, 23.92%, 20.90%, 27.45% and 20.66% ROE for the year 2063/64 to 2067/68 respectively. CHPCL has 40.61%, 34.12%, 34.43%, 28.77% and 23.873% ROE for the year 2063/64 to 2067/68 respectively. Among three companies BPCL and CHPCL have good ROE is ignorable. This company is earning very low.

g. Return on investment ratio is another tool of measuring earning; ROE measure the percentage of earning on the basis of equity but ROI measure on basis of total assets. Total assets represent total available source or total investment on certain company. On the basis of total assets CHPCL is the largest company than other two. According to table 4.8 CHPCL's ROI is 16.451, 21.14, 28.14, 23.75 and 23.59 of fiscal year 2063/64 to 2067/68 respectively. Company's total assets is increasing every year with this profit is also increasing. But ROI is decreased after 2066/67. This data and ROI help to conclude that there is positive impact of increasing assets but ROI is not increasing same ratio. Like this BPCL is also increasing its assets but its profit fluctuating, on fiscal year 2066/67 increment of assets is noticeable but this could not able to increase profit.. Return on NHPCL is not good, its total assets are slightly decreasing trends till fiscal year 2066/67 but profit is increasing trends in first three year. ROI 3.31 in 2066/67 this is the highest ROI on this five years. But its profit takes down trends from 2066/67 and 2067/68. NHPCL increases its total assets by 35% but its profit decreased by 258.55% at time its ROI is 0.45.

h. This study used statically tools risk and correlation analysis. For calculation of risk standard deviation of earning before depreciation, interest and tax to total assets is used. As per standard deviation BPCL has lowest risk and CHPCL has highest risk i.e. 1.88, 2.94 and 2.16 standard deviation of BPCL CHPCL and NHPCL respectively. As general concept high risk should bear for high return. For this CV can give appreciate answer which one has comparatively lower risk?

i. According to table 1.10 CV of BPCL, CHPCL, and NCPCL are 0.1024, 0.1021 and 0.2055 respectively. BPCL, CHPCL has almost same risk but NHPCL has comparatively highest risk.

j. Correlation of coefficient describes degree of interrelation of two variables. If one variable is increasing or decreasing trends what will be

the effect, reflect by another variable, is it moves on constant, increase or decrease trends. This study check correlation of total debt to NPAT, capital employed to EBIT total assets total to liabilities. There are 0.7012, -0.9727 and 0.0498 correlations of coefficient of BPCL, CHPCL, and NHPCL. This correlation tried to get answer of question what was the effect of increasing or decreasing of interesting bearing debt on firms' net profit after tax. BPCL has positive correlation, CHPCL has negative correlation and NHPCL has almost no correlation. General assumption is a debt has positive correlation with NPAT in profitability firm because of tax shield on debt. In Nepal, hydro power company gets 10 years tax holiday form commercial production. Due to this facilities effect of debt is not seen on NPAT. What ever effect sheen on NPAT is just form low cost of debt and other operation efficiency/ inefficiency.

k. Correlation of coefficient of capital employed to EBIT is use to see profitability of firm of additional capital. Is additional capital contributing on increasing on increasing EBIT or is not. Positive correlation of coefficient denotes increasing or decreeing capital, increase or decrease EBIT on same trends. BPCL and CHPCL have 0.5545 and 0.4793 this means there is positive effect of increasing capital employed. There is 0.6226 correlation of coefficient of NHPCL. This means increasing capital is not able to increase profit.

l. Correlation between total assets to total liabilities of BPCL CHPCL and NHPCL are 0.9516, -0.7517 and -0.4851 respectively. This correlation describes contribution of liabilities on firm's assets. BPCL liabilities are increasing with its assets but CHPCL and NHPCL assets increase but their liabilities are decreased. This negative correlation shows that assets is increasing form shareholder fund.

CHAPTER V
SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary

The study has not aimed to find out optimal and appropriate capital structure. Factors of appropriate capital structure had studied on lecture review and aim is to know how far this factor is applicable and applied on Nepalese hydropower companies is studied. Thesis has taken following objectives:

- To know the composition structure and characteristics of capital structure of listed hydro power companies.

- To compute the correlation between Total debt and profit.

- To analyze the impact of debt financing on profitability.

- To provide recommendations on the basis of the study.

- To examine the relationship of leverage with different financial indicators (ratios).

For achieve objectives, financial, statistical and graphical tools are used to analyze the date. Leverage and profitability ratio are employed to know characteristic and profitability of the company. These tools also help to know management attitude towards the different source of capital how they are applied. Statistical tools are used to correlation between different variables like borrowing and profit after tax. Mean standard deviation, coefficient of variance are used to know risk and profit. Graphical approach is used to see overall trends of different ratio, comparative analyses with three companies and quantity of different types fund employed for capital.

Capital structure refers combination of fund, which is collected from different source for investment to generate profit. Generally combination of debt and equity is known as a capital structure. Equity can be classified into two types on the basis of their right on returns, right on decision and control over company. One of these is equity share. Equity shareholders are real owner of company. They have right on vote on general meeting. Board of directors is

selected among them. Equity shareholders get all profit after dividend for preference share holders. Other types share holders is preference share holder, they have right to get first priority on dividend which is on per determine percentage. But dividend to preference shareholder is not legal obligation in case of company fails to earn profit. Debt holders are creditors for company. They get interest for their debt. Repayment of debt and interest is the legal obligation for company. If company fails to pay interest and debt, debt holders could take legal action which may compel company up to liquidation. Cost of debt is lower than equity shareholders and it has tax shield benefit but this benefit comes with risk. Managing of risk and securing of benefit is objective of capital structure decision.

This thesis is on listed hydro power company. Capital structure of hydropower company is decided under consider the facility and provision as mention on electricity act which have some special provision for hydro power project electricity act has given tax facility for certain year and company can get tax exempted form tax office under per-order process. Hydropower Company should handover its project to government after 50 years if there is more than 50% investment done by corporate sector and foreign investor.

Nepal is developing country has not enough infrastructures like road and power. Hydro power projects almost only one source of electricity in Nepal. Nepal is facing high scarcity of power. In this condition one element of capital structure decision i.e. sales or growth should not consider because here is not problem of sales, all production will sell without effort. On other side Nepal is a country having highly potential of hydropower i.e. roughly 83000 MW and half of them are economical feasible. Around 1% of total capacity has been utilized. This proves that growth on both side demand and source of production is enough.

Butwal Power Companies (BPCL), Chilime Hydro Power Company (CHPCL) and National Hydro Power Company (NHPCL) are listed on NEPSE. Debt

equity composition and their strategy are different as per information mention on their balance sheet. BPCL had not borrowed any form of debt in first two years then after it start to borrow short term debt. CHPCL had remarkable debt in fiscal year 2063/64 in latest years it started to replace interest bearing debt form share holders equity. Company has issued share for increasing capital and it has no interest bearing debt on fiscal year 2067/68. NHPCL is that company which has interest bearing debt from first year to last year. Although three companies have taken but their capital structure is different with each other which give reason to study on different leverage.

Conclusion

After analysis financial statement, it is clearly known that Nepalese hydro power companies are trend to be an unlevered company. Their capital structure contains most part by share holder's equity. In initial year of five years two companies CHPCL and NHPCL were employed long term debt but CHPCL totally eliminated interest bearing debt and NHPCL has reduce its debt in capital structure by issuing right share on latest year. BPCL has not employed long term debt from starting. Reducing of debt shown effect on ROE which is decrease on latest year. BPCL and CHPCL have not risk from debt side but unable to achieve the expected profit desire by shareholder is also risk. Major conclusions are as follows:

- BPCL had not employed debt financed in first two years and there is not long term debt till date. It started to borrow short term loans and overdraft from fiscal year 2066/67 and slightly increase in latest year. CHPCL has no debt on final two years. NHPCL had more than 50% debt in company. On fifth year it reduce it debt up to 35% of capital employed. All three companies had different capital structure in first faze but all three are going same trends to minimize long term borrowing.

- BPCL has been less than 0.2 debt ratio from first year to till date. CHPCL more than 1 debt ratio last four year. NHPCL brings down this

ratio 0.54 in fifth year. This data says Nepalese hydro power companies are safe for lenders on point of view of debt equity ratio.

- Capital employed to net worth ratio analyzes firm financial strength. All three companies have sound net worth.

- BPCL has no long term debt and less short term interest bearing debt but it has remarkable current liabilities i.e. 31.79% of total assets. CHPCL has no interest bearing debt but it has 17.62% CL in forth year. Around 1% CL lies in fifth year. In case of NHPCL it has more than 55% total debt ratio first four year. In fifth year it reduces this ratio up to 35%. These data proves that there is no default risk in these three company although low profit earning by NHPCL.

- BPCL and CHPCL is reducing loan so that there are no problem on interest coverage. But NHPCL has just 2.1 coverage ratio which is lower than standard coverage ratio. NHPCL has solvency risk although it has enough shareholders fund; its earning capacity is very low.

- BPCL has 15.32%, 23.92%, 20.90%, 27.45% and 20.66% ROE for the year 2063/64 to 2067/68 respectively. CHPCL has 40.61%, 34.12%, 34.43%, 28.77% and 23.83% ROE for the year 2063/64 to 2067/68 respectively. 1.10%, 3.04%, 8.62%, 1.90% and 0.69% % ROE for the year 2063/64 to 2067/68 respectively. Among three companies BPCL and CHPCL has good ROE but last year both companies ROE is decreased than previous year due to only increase on shareholders equity ROE shows importance of leverage because cost of debt is lower on comparison of equity CHPCL's ROE is ignorable. This company is earning very low.

- On the basis of total assets CHPCL is the largest company than other two. According to table 4.8 CHPCL's ROI is 16.41, 21.14, 28.14 23.75 and 23.59 of fiscal year 2063/64 to 2067/68 respectively. Company's total assets is increasing every year with this profit is also increasing.

But ROI is decreased after 2066/67. This data and ROI help to conclude that there is positive impact of increasing assets but ROI is not increasing same ratio. Like this BPCL is also increasing its assets but its profit is fluctuating, on fiscal year 2067/68 increment of assets is noticeable but this could not able to increase profit, its NPAT is decrease than previous year. Return of NHPCL is not good, its total assets are slightly decreasing trends till fiscal year 2066/67 but profit is increasing trend in first three year. ROI 3.31 in 2065/66 this is the highest ROI on this five years. But its profit takes down trends form 2066/67 and 2067/68. On fiscal year 2067/68 NHPCL increase its total assets by 35% but its profit decreased by 25.55% at time its ROI is 0.45.

- As per standard deviation BPCL has lowest risk and CHPCL has highest risk i.e. 1.88, 2.94 and 2.16 standard deviation of BPCL, CHPCL and NHPCL respectively. Here risk is not form debt for but from expect return. In case of different expected return CV can give appropriate of comparatively lower risk. According CV of BPCL, CHPCL and NHPCL are 0.1024, 0.1021 and 0.2055 respectively. BPCL, CHPCL has almost same risk but NHPCL has comparatively highest risk.

- BPCL has positive, CHPCL has negative and NHPCL has almost no correlation on total debt to NPAT. General assumption is a debt has positive correlation with NPAT in profitability firm because of tax shield on debt. In Nepal, hydro power projects gets 10-15 years tax holiday from commercial production. Due this facilities effect of debt is not seen on NPAT. What ever effect sheen on NPAT is just form low cost of debt and other operation efficiency/inefficiency.

- BPCL and CHPCL have 0.5545 and 0.4793 this means there is positive effect of increasing capital employed. There is -0.6226 correlation of coefficient of NHPCL. This means increasing capital is not able to increase profit.

- Correlation between total assets to total liabilities of BPCL, CHPCL and NHPCL are 9.516, -0.7517 and -0.4851 respectively. This correlation describes contribution of liabilities on firm's assets. BPCL liabilities are increasing with its assets but CHPCL and NHPCL assets increase but their liabilities are decreased. This negative correlation shows that assets is increasing form shareholder fund.

Recommendations

This thesis analyses capital structure and its effects on its profit of BPCL, CHPCL and NHPCL. All three companies are not getting benefit form leverage. All three companies are earning profit. The recommendation can be made as follows:

- BPCL and CHPCL is earning profit and it has not borrowing long term debt. Cost of debt is lower than equity; it can take benefit debt financing. NHPCL's profit is very low this company coverage ratio is very low, so that it cannot be recommend taking advantage of leverage this company should control operating expense to meet its interest expenses rather than increase shareholder fund by issuing right share.

- Both BPCL and CHPCL should expand production via investing more hydro power project through debt financing as per their financial condition both can borrow as much as their shareholder fund to maintain leverage.

- If companies could not borrow debt and expand their projects, it is better to distribute dividend rather than retain earning because their ROI is decreasing after SHF addition.

- CHPCL should not add other additional shareholder equity if it is not able to expand its projects or add new projects.

- Hydro project need huge finance; one bank alone cannot provide all finance so company should issue debenture to public for extent there projects.

- From the conclusion, Nepalese hydro power companies have not properly using the concept of Capital Structure and cost of capital in practice. Theories developed by the scholars have not able to attract the management of the Nepalese hydro power company. Thus, overall structural scenarios of the hydro power companies are in confusing state. Therefore, it is recommended that the management of the hydro power company should be clear about the generation of fund needed to the investment. It means that the knowledge of capital structure and cost of capital plays vital role in uplifting the financial position of the hydro power companies.

- The analysis of cost of capital is very important in making investment at different projects because of cutthroat competition. Therefore the management of the hydro power companies always well informed about the sources of capital, their reliability and their cost. The manager should not have to take any financial decision randomly and always keep in mind the view of cost of capital concept and theories of capital structure, which help the manager in taking right decision.

- There is lack the theoretical knowledge regarding the capital structure in Nepalese hydro power companies. They have not given significant attention to the capital structure matter. Capital structure is a serious matter. It affects profits, Value of the firm, cost of capital etc., so it is recommended that these sample hydro power companies should follow the theoretical aspects of the capital structure management or give bit more attention in this matter and try to manage their activities accordingly.

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