

# CHAPTER I

## INTRODUCTION

### 1.1 Background of the study

Nepal's territory is gifted with huge quantity of hydro-potential, acknowledged beauties, diverse flora, fauna. Among them water is one source which comes from the commanding Himalayan Range. Hydro power is the leader source of electricity in this motherland. Water resources are vital natural resources for the economic steps forward of Nepal. Availabilities of plentiful water resources and geo-physical characteristic provide ample opportunities for hydropower fabrication in Nepal. Our motherland can stepladder forward if the hydropower trade is flourished and it is a vital input required to fuel the engine of financial growth and to fulfill the basic needs of the entire inhabitants of a country.

Hydropower has the prospective to uplift poverty, provide electricity to every household and even allow Nepal to sell electricity to other country. Energy differentiates a developed or developing economy from a developed economy. Data show that on an average an American consumes approximately 40 percent more energy than an Indian does. This stark gap in consumption levels may safely be attributed to the government's failure to maintain an appropriate ratio of hydro and thermal power and not properly harnessing hydropower that is possible only through the construction of large river valley projects. Apart from storing water, river valley projects not only produce electricity but also ensure cleanliness of the air in the method. The for the most part, critical input for agricultural, industrial production is hydropower, telecommunications and raising the superiority of life of individuals.

The government's own declarations sufficiently confirm that it is well conscious that the "marginal productivity" of power in the rest of the economy is far greater than the cost of power. This means that power in rest of the

economy is far greater than the cost of power and that power development ought to be the top most economic priority of the state. It also means that there is a chance for shortage financing of power projects, so that the required additions to aptitude to match require need not experience for want of resources. Only a rigid monetarist position would be firm on identifying the finances for power growth with required additions to capacity to match demand need not suffer for want of resources .only a dogmatic monetarist position would insist on identifying the finances for power development with required savings for the economy as a whole. Deficit financing in the case of power (if tight implementation schedules can be adhered to) need to be inflationary given the extremely high marginal product of power in industry and agriculture with the extra power availability, if output can go you. Hydropower projects in Nepal have been deemed to be costly primarily because of the fact that cost of access roads and power evacuation transmission lines are added on to the hydropower projects cost.

As well all know, most of the better hydropower projects sites are in remote mountainous locations requiring construction of access roads prior to projects construction. This along with the high voltage power evacuation system renders power from these projects comparatively expensive. This can lead to hydropower projects losing their competitive advantage with respect to other sources in the energy market. It is in this context that government of Nepal, donor agencies and multilateral lending agencies should change their focus towards development of trunk highways in the major river valleys of Nepal.

## **1.2. Hydropower in Nepal**

The ideal way to enlarge the average to larger magnitude hydropower projects in Nepal would be through private- public company. Since this scale of projects occupies big risks with more expensive risk- mitigating measure, sharing of risks, capital investment and benefits would be the preferred way to develop these projects. The private sector is taking greater strides towards financial

activities such as power project development and believes that it should have a greater role in the decision- making procedure of the government when it comes to national financial issues and also in bilateral and multilateral issues which have a direct impact on this business.

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.

### **1.2.1 The Potentiality of Nepalese Hydropower Region**

The hydropower sector clearly has tremendous potential for contributing to growth and development impact and benefits. It is estimated that Nepal has the capacity to generate 83,000 MW of electricity from hydropower. Of this, about 45,000 MW is considered financially feasible. At present, the installed capacity of hydropower is about 556.4 MW, less than 2 percent of the total financially feasible Capacity. Of this, 156 MW or about 28 percent, is produced by private public sector power producers. Taking advantage of the new policy of welcoming private foreign investment in this Sector, two joint-business companies involving important foreign investors have been generating and selling hydro power on the build-operate- transfer basis for some years now. Several private-public sectors projects are under construction.

Even then, it is estimated that the electricity accounts for a very small share of the total energy Consumption in the country. Fuel wood accounts for roughly 75 percent of the total energy consumption. Right now only a small percentage of the country's population, less than 20 percent, is using electricity for home

consumption. The excellent forecast for power exports of significant volume of electricity from Nepal to India. The time is right to explore the possibilities and invest in it. Moving in this direction would be in line with the increasing trade and financial cooperation between Nepal and India. There will also be significant markets for domestic consumption of electricity with financial growth and business and industrial expansion. As expected, the range of the project for FDI in Nepal right now in terms of generation capacity and or the size of investment are very large hydro-power projects. There is thus a wide range of investment opportunities. A bulky figure of well studied projects of various scales and size are already available for investment and the government is ready to invite private capital- domestic and foreign to take these on to invest in them.

In the past the planners have lost a lot of time talking about the hydro power potential to contribute to the country's prosperity, But with little real action and actual project implementation. However the last decades saw important beginning of a real change. With not only proper legislation and policy framework in place, but also the implementation of a number of small hydro power projects with Private Sector investment.

### **1.2.2 History of Electricity Production of Nepal**

Before a century, the electricity Production in Nepal started i.e. in 1911 A.D by the ambitious Rana Prime Minister Chandra Smasher to beam the Singh Durbar as a copy of European Style, Development Pharping hydropower station with a running capacity of 500 KW. The hydro electricity at the time was called Chandra Jyoti and it was used in the Kathmandu valley for only the aristocrats. The first revolutionary project of Pharping was established and built in 1911 AD whose capacity was 500 KW and second Sundarijal power project was established in 1935 AD with the capacity of 1350 KW. Until the time several industries were established in Tarai of Nepal. The Morang Hydropower

Company was established in 1940 AD and then Birgung Electric supply Co. And Dharan Electric power Co. Were established (Khatiwada,2007: 7).

### **Nepal Electricity Authority (NEA)**

Nepal Electricity Authority (NEA) was formed on August 16, 1985 (Bhadra 1, 2042) under the Nepal Electricity Authority Act, 1984, through the amalgamation of the Department of Electricity of Ministry of Water Resources, Nepal Electricity Corporation and related Development Boards. To remedy the inherent weakness associated with these fragmented electricity organizations with overlapping and duplication of works, merger of this individual organization became necessary to achieve efficiency and reliable service. The primary objective of NEA is to generate transmit and distribute adequate, reliable and affordable power by planning, constructing operating and maintaining all generation, transmission and distribution facilities in Nepal's efficiency and reliable service.

The primary objective of NEA is to generate, transmit and distribute adequate, reliable and affordable power by planning, constructing, operating and maintaining all generation, transmission and distribution facilities in Nepal's power system both interconnected and isolated.

In addition to achieving above objective, NEAs Major responsibilities are:

- To recommend to Nepal Government, long term and short-term plans and policies in the power sector;
  - To recommended, decide and realize tariff structure for electricity consumption with prior approval of Nepal Government;
  - To arrange for training and study so as to produce skilled manpower in generation, transmission, distribution and other Sectors.
- (<http://www.nea.org.np/about-us.html>)

The Development of electricity in Nepal has been mainly based on the development of hydropower. The development of infrastructure has been

essentially carried out by the government, but the contributed a lot and set qualitatively important footing in this sector.

### **1.2.3 Power Purchase Agreements**

A power purchase agreements or (PPA) is a long term agreement to buy power from a company that produce electricity. It is a contract between power producer and NEA for buy & sales of electricity in context of Nepal. A power purchase agreement is also “behind” almost every power plant. A PPA is a contract involving the generation and sales of electricity, which is normally developed between the owner of a power plant generating the electricity and the buyer of the electricity. PPAs can be quite lengthy agreements that may exceed 100 page in length and take several months to even years to finalize. (Renewable Energy Technologies).

The basic information contained in a power purchase Agreement includes the following items:

- i. Definitions
- ii. Purchase and sale of contracted capacity and energy( such as steam, hot water and/ or chilled water in the case of cogeneration and tri-generation plans)
- iii. Operation of the power plant
- iv. Financing of the power plant
- v. Guarantees of performance
- vi. Penalties
- vii. Payments
- viii. Force Majeure
- ix. Default and early termination
- x. Miscellaneous
- xi. T&Cs (Source: [www.powerpurchaseagreements.com](http://www.powerpurchaseagreements.com))

In the middle of various documents, mandatory to help resolve the ensuing confusion between power producers and purchasers, the power purchase agreement (PPA) is the heart of any private –public power projects. It guarantees market for power produced by the Private- Public power projects and the tariff as it would be sold to the purchaser.

#### **1.2.4. Private-Public role in Hydropower Development of Nepal**

Following 1990 the government initiated the development of financial liberalization and declared its sincere belief in private Ltd. Growth limiting the role of the government only to the creation of conducive atmosphere for market regulated financial decision making. Hydropower development was the most important sector opened for private public participation which until then was under the exclusive domain of NEA. The Private –Public Partnership involves both Local and international Impact. The Following guiding policies have been promulgated for encouraging private-public sector participation especially in hydropower sectors.

- Hydropower Development Policy, 2001 A.D.
- Hydro power development Policy 1992
- Water resource act 1992
- Electricity act 1992
- Electricity regulation 1993
- Water resource regulation 1993
- Electricity Rules, 2050
- Electricity Rules, 2050
- Electricity Tariff Fixation Rules, 2050

(Source: [www.doed.gov.np/policy/hydropower\\_development\\_policy](http://www.doed.gov.np/policy/hydropower_development_policy))

The existing hydropower Companies/ Plants Operated by private public Sectors are listed below:

1. Butwal Power Company owns 5,100 KW Andhikhola hydropower plant and 12,000 KW Jhimruk Power plant.

2. Himal Power limited owns 60,000 KW Khimtikhola power plant, Dolakha.
3. Bhotekoshi Power Company owns 36,000 KW, Bhotekoshi power plant.
4. Chilime Power Company owns 20,000 KW, Chilime power plant.
5. National hydropower Company Owns 7,500 KW, Indrawati (iii).
6. Khudi Hydropower company owns 3,450 KW, Khudi hydropower plant.
7. Arun Valley hydropower Company (AVHP) owns 3,000 KW, Pilluwa Khola hydropower plant.
8. Sanima hydropower owns 2,500KW, Sunkoshi Small hydropower plant.
9. GITEC Nepal Limited; upper Modi: 14MW
10. Thoppakhola hydropower owns 1,650 KW, Thoppakhola power plant.
11. APCO Owns 1,500 KW, Chakukhola power plant.
12. Unique Hydel owns 980 KW, Baramchi hydropower plant.
13. Khoranga hydropower owns 995 KW, Phemekhola plant.
14. Gautam Buddha hydropower company owns 750 KW, Sisnekhola plant
15. Rairang hydropower development (RHPD) owns 500 KW, Rairang hydropower plant.
16. Kathmandu small hydropower owns 232 KW, Salinadhi plant.
17. Sange bidyut Company owns 183 KW, Sangekhola power plant.
18. National Hydropower Company, Indrawati Khola, 7.5 MW

Total installed capacity of private public sector plants is 156,340 KW in Nepal and 6 private plants are under constructions which are:

|              |                         |                  |
|--------------|-------------------------|------------------|
| 1.           | Mardikhola (Gandaki HP) | -3,100 KW        |
| 2.           | Lower Indrawati         | -4500 KW         |
| 3.           | Ridikhola (Ridhikhola)  | - 2400 KW        |
| <b>Total</b> |                         | <b>12,996 KW</b> |

More than 14 plants of total capacity of 15, 15,079 KW are planned and proposed from private Sector. (Source: Annual Report of NEA (Fiscal Year 2007/08))



## **1.2.5. Introduction of Sample Companies**

### **1.2.5.1. Butwal Power Company (BPC) Limited**

Butwal Power Company (BPC) was established in 1966 by a visionary Norwegian engineer Mr. Odd Hoftun. Mr. Hoftun, who led the construction of Tinau Hydropower Plant, had a vision for educating young Nepal in development of technical skills for harnessing the hydropower potential of Nepal's rivers to create opportunities for small businesses. He managed to raise support from his home country, and brought tons of equipment from Norway to Butwal in 1964. BPC was established with an aim to enhance capacity development in the hydropower sector. BPC pioneered various concepts for developing self competency in various facets of the hydropower industry like engineering, construction, operation, maintenance and manufacturing of hydroelectric equipment.

An agreement was reached between United Mission to Nepal (UMN) and Government of Nepal to set up an Institute of Technology and Industrial Development in Butwal – very commonly known as BTI. BPC provided opportunities for the skilled human resources from Butwal Technical Institute. Similarly, it played an instrumental role in establishing Himal Hydro and General Construction Company and Nepal Hydro and Electric Ltd. with a target to develop Nepal's indigenous capacity in hydropower construction. Hydrolab Private Limited was BPC's initiative in the field of hydraulic research projects. BPC Services Limited (BPCSL) was established in 2063/64 to provide operation and maintenance services to hydropower plants.

After the privatisation of the company in 2003, the principal shareholders are Sangri-la energy limited, Interkraft Norway and Ministry of water resource Nepal. It is one of the pioneering hydropower developers in Nepal from private sector. The company owns and operates the 12 MW Jhimruk hydropower plant and the 5.1 MW Andikhola hydropower plant. Besides supplying power to the national electricity grid, the company has electrified more than 20,000

households through these power plants under its rural electrification program. It owns 14.9 percent of the shares in khimti hydropower plant (60 MW) and 48.6 percent of the shareholders in Nepal hydro and Electric Pvt. Ltd.

During the project development of Andikhola and Jhimruk, the Butwal power company has participated in the establishment of numerous organizations, including Himal hydro and general construction Ltd. It established an engineering consulting wing BPC Hydro consult with in BPC in 1986 to provide service in hydropower, water, irrigation and environment sector. With the privatization, the main shareholders of BPC Are:

**Table: 1.1**

**Main Shareholders of BPC**

| <b>S.N.</b>  | <b>Name</b>                              | <b>Ownership (%)</b> |
|--------------|--|----------------------|
| 1            | Shangri-La Energy Limited                | 68.95                |
| 2            | General Public / Individuals             | 10.00                |
| 3            | Government of Nepal                      | 9.09                 |
| 4            | Interkraft Nepal AS                      | 6.05                 |
| 5            | United Mission to Nepal                  | 2.79                 |
| 6            | Employees                                | 2.00                 |
| 7            | Nepal Electricity Authority              | 1.06                 |
| 8            | Nepal Industrial Development Corporation | 0.06                 |
| <b>Total</b> |  | <b>100</b>           |

Table: 1.1(Source: website of BPC, [www.bpc.com.np](http://www.bpc.com.np))

BPC has the vision to provide quality and Competitive Service to its Customers. Similarly the mission of the company is to supply electricity within its distribution areas in Nepal and expand its distribution to feasible areas. It will plan, build, acquire, own and operate electric power plans as well as

purchase electricity to meet its electricity needs; make strategic investments to support its interests; supply affordable electricity; and render professional services in its areas of expertise.

#### **1.2.5.2. Himal Power Limited (HPL)**

Himal Power Limited was established in 1992 when Butwal Power Company Limited, a company registered under the Company Act 2021 of Nepal, together with Norwegian companies Statkraft SF, Kvaerner Energy a.s. (now G.E. Hydro Norway) and ABB Energi a.s. (now ABB ALSTOM a.s.) registered a company under the Company Act 2021 of Nepal with an objective to build, own and operate the Khimti - I Hydropower Project.

In 1992, in order to make arrangements to expedite the construction of the Khimti I Hydropower Project, His Majesty's Government of Nepal (HMGN) entered into an agreement with Butwal Power Company to commence preparatory works for the project. HMGN and Himal Power Limited worked together to establish a Project Agreement to enable HPL to make the necessary arrangements to build the Project.

The original Project Agreement with HMGN and the Power Purchase Agreement with Nepal Electricity Authority (NEA) were signed on 30th March 1994. Both of these agreements had to be amended in order for HPL to be in position to finance the Project. Amendments were signed on 24th November 1994 and 15th January 1996. It took a further 19 months for HPL and their sponsors to arrange the necessary financial for the project. The Date of Financial Closing was achieved on 26th June 1996.

Himal Power limited was established in 1992 when Butwal Power Company together with Norwegian Companies Statkraft SF, ABB Energy a.s (now ABB Kraft), Kvaerner Energy a.s. (now GE Hydro) registered a company under the company Act 2021 of Nepal. Himal power limited has been granted a fifty

Year licence by Government of Nepal. As part of the power purchase agreement (PPA- valid for 20 Years), NEA will receive for free a 50 percent Share in the plant after the end of the PPA. The Khimti I hydropower plant was constructed during the period 1996-2000 by a consortium of statkraft anlegg AS and Himal Hydro.

The electro-mechanical works were done by a consortium of ABB Energy AS and Kvaerner Energy a.s. The Khimti I Hydropower Project began to the Commercial Production on July 11<sup>th</sup> 2000. HPL's Primary Task is to attend, and further develop, assets and interests in Nepal, especially with regard to production, maintenance and the administration of properties owned by the Company. This shall be done in both a short and long term perspective. The strict environment criteria as set out by the lenders (IFC, Norfund, NDF) make it crucial for HPL to set a high Priority on environmental issues as this pertains to the production and operation of the Khimti- I hydropower Plant.

As HPL,s Shareholders in Norway have strictly defined frameworks for all their activities abroad, HPL will strive to make such frameworks operational in a Nepalese foreign context. HPL will accordingly be careful not to come into conflict with the values and realization of goals as put forward by our institutional stakeholders. In addition to the investors, the international finance corporation (IFC). The Asian Development Bank (ADB), Eksportfinans a.s. the Norwegian agency for development cooperation (NORAD) and the Nordic Development Fund (NDF) have contributed to the financing of HPL.

## Share Status of Himal Power Limited Are:

**Table:1.2**

### **Main Shareholders of HPL**

| <b>Company</b>  | <b>Percent Shares held</b> |
|---|----------------------------|
| SN Power, Oslo, Norway  | 57.0712 %                  |
| Bergenshalvoens Kommunale Kraftselskap (BKK),<br>Bergen, Norway | 26.0444 %                  |
| Butwal Power Company, Kathmandu, Nepal                          | 16.8836 %                  |
| Arniko Investment Pvt. Ltd. Kathmandu, Nepal                    | 0.00023 %                  |
| Shangrila Energy Ltd. Kathmandu, Nepal                          | 0.00023 %                  |
| Beltron Investment Pvt. Ltd.                                    | 0.00020 %                  |
| Snow Lion Investment Ltd.                                       | 0.00020 %                  |

(Source: website of HPL, [www.hpl.com.np](http://www.hpl.com.np))

### **1.3 Focus of the Study**

Evaluation of financial Performance side of Butwal Power Company and Himal Power Limited has not been so focused up to now. And the research in this field is lacking. It would be a new and meaningful study in the study of hydropower sector. This analysis would be helpful to the concerned people, who are interested to get some ideas in this sector. It would also be helpful to the researchers as well as to the private and public sector for making policies and plans in the related field. Basically this research work is concerned with the financial performance evaluation of selected two hydropower companies.

### **1.4 Statement of the Problems**

Nepal has a huge hydropower feasibility; the forecast of attractive a wealthy country can be realized provided this energy source could be tapped prudently and efficiently at the earliest. As a leader of the countries power sector, NEA has the prime responsibility of taking necessary steps towards achieving this goal. The private sector must be sustained to have achievement in creation

energy plants; it needs enough income for its shareholders and employee. By keeping other factors constant, income can be increased by better performance which increases efficiency and effectiveness of human and non human production factors. BPC and HPL also have their own capital mix, management, employees and assets. This study tries to seek that the company's overall performance is good, better or worse.

Investment is one of the majorities of vital functional areas of a business. It is concerned with generation, transmission, distribution and other function of any business including independent power products. The problem toward which this study's directed is to identify and analyze the financial strengths and weakness of hydropower companies of Nepal. Here BPC and HPL. Besides the study attempts to seek answer of the following questions.

- What is the financial positions and performance of the companies?
- Do the Financial Ratios most excellent describe the performance of these hydropower companies?
- What types of current steps are essential for recital improvement of Nepalese hydropower companies?
- Which company is more effective and efficient of financial performance?
- Do the private and public power producer companies feel secure to invest in the Nepalese hydropower sectors?

Financial Evaluation may not provide exact answer to these questions but it does indicate what can be expected in the future.

## **1.5 Objectives of the Study**

The study basically aims to evaluate the financial performance of Butwal Power Company Limited (BPC) and Himal Power Limited (HPL) and to suggest recommendation based upon it the specific objectives of the study will be:

- To analyze the financial performance of BPC and HPL.
- To sketch the strength and weakness of BPC and HPL.
- To examine the present trend of financial performance of BPC and HPL.
- To provide appropriate suggestions and recommendations.

## **1.6 Significance of the Study**

Examination of economical and financial location and declaration is a vital part of financial pronouncement making process of a business enterprise and it has great significance. Poor financial management affects adversely on liquidity turnover and profitability. It is required to measure the financial position of the business big or small. HPL is one of the promising names in the sector of power generation business and the first private sector of hydropower.

Nepal as a just beginning country needs more and more new energy success to meet the ever increasing demand for socio-economic development and industrialization of the country. In this back drop, hydropower is the only resource available abundantly in all hilly and mountainous parts of the country.

Access to electricity promotes new financial activities, empowers women by reducing domestic drudgery in firewood collection, improves health and education service and provides a cleaner and healthier home environment. This study attempts to present information and draw the attention of private and non governmental agencies that are willing to invest in hydropower projects in Nepal.

This comparative study also expects to provide some appropriate measures to solve financial problems of Nepalese private public sector hydropower companies if any researchers who are interested in the study of the financial performance of similar hydropower business may find this study of use.

## **1.7 Limitations of the Study**

The main purpose of this study is to conduct a crucial research on the financial performance evaluation of private Public hydropower sector for the partial fulfillment of MBS degree. In this way this study possesses some limitations that are mentioned as follows:

- The study covers a period 5 years from the first fiscal year 2005/06 to the recent fiscal year 2009/10 of BPC and HPL but the major focal point is on financial factors.
- The secondary data is basic input of the study and thus accuracy of conclusions derived from them highly depends upon the reliability of these data.
- Since the study is mainly concerned with BPC and HPL out of various hydropower companies in operation, the conclusion drawn from the study, and suggestions offered may not be applicable to any other private or public hydropower companies.
- Resources (Time, Money etc) are limited.
- This learnt may not be precise as it is to fulfill the partial requirement of the MBS program.

## **1.8 Organization of the Study**

The aim of the dissertation is to explain the financial position of Nepalese private or public hydropower companies, Here BPC and HPL. The study has been divided into five chapters devoted to some aspects of the study. The major chapters of the study are as follows:

### **Chapter One: Introduction**

This chapter includes brief introduction of selected two hydropower companies. In this chapter background of the study, focus of the study, statement of the problems, objectives of the study, limitation of the study and organization of the study are also mentioned. Hence this chapter deals with the first propose of the thesis incorporated with a view to explain in detail the



aspect of hydropower development and a brief overview of private or public hydropower companies.

### **Chapter Two: Review of literature**

The various available literatures concerning findings and recommendation of previous research work made in respect of NEA and any private public hydropower company/ plant. The chapter of conceptual framework and review of literature mainly includes related study on the same topics and introduces conceptual framework.

### **Chapter Three: Research Methodology**

Research methodology is discussed in the third chapter which includes the ways of research design, population sample and sources of data, Data collection Techniques, Data analysis tools and Research Variables.

### **Chapter Four: Data presentation and Analysis**

This chapter presents the analysis, interpretation and findings of results of financial performance of the data collected of the selected samples companies.

### **Chapter Five: Summary, Conclusion and Recommendations**

The last chapter of the study covers summary, conclusions of the study and recommendations and suggestions for the further improvement.

## **CHAPTER-II**

### **REVIEW OF LITERATURE**

#### **2.1. Theoretical Review**

The process of studying different education Materials which are related with the selected topic of the research is called “review of Literature”. In other words Review of Literature means to collect the necessary information about the research topic through the different sources. Moving through of literature is the process of learning and understanding the concept of the related topic. After selecting the topic of research, Researchers should study different Materials (like Books, Journals, Magazines, Newspapers, Articles, websites, reports and previous thesis etc) to collect the information’s about the subject Matter of the Study.

This chapter Reviews the available literature relating to hydropower sector and various expressed by various Scholars and researchers on the financial performance of private and public enterprises. The review of various books, research studies have been prepared to make understandable about the concept of financial performance analysis as well as to recall the theories and previous studies made by various researchers. Nepal being one of the rich countries in future hydropower sector, many important literatures are available in this field.

#### **2.1.1. Theoretical Framework**

##### **2.1.1.1. Financial Analysis**

The design to establish the comparative potency and weakness of a company, whether the company is financially sound and profitable relative to other companies in its industry and whether its position is improving or deteriorating over time is the financial analysis. Investors require these information in order to estimate future ready money flows from the company and to evaluate the riskiness of these flows. The company personalities need to be aware of their

company's financial positions in order to detect budding troubles and to strengthen weakness (Weston & Brigham, 1987: 259).

Financial Performance is the main indicator of the success or failure of a company and the focus of financial statements and significant relationship that exists between them. The financial analysis is the key tool for financial conclusion and starting point for making plan before using complicated forecasting and budgeting actions. The value of this approach is the quantitative relation that can be used to diagnoses strengths and weakness in a company's performance (Khan & Jain, 1999:4.1).

The financial statements contain summarized information of a company's financial affairs, organized systematically by the top management. These statements are used by investors and financial analysis is to examine the company's performance in order to make investment decision. Hence, financial performance analysis involves the use of various financial statements. (Pandey, 1999:29.30).

The financial statements are prepared from the accounting records maintained by the company. They make known about the financial information of a company throughout a financial year or fiscal year and give details what has actually happened and divided over the past few years, in the form of income statement and balance sheet (Pandey, 1999:29.30).

#### **2.1.1.2. Financial Statements**

Preparations of the financial statements are used by investors and financial analysts to examine the firm's performance in order to make investment decisions. Financial statement discloses financial information relating to any business concern during a financial year, which is presented in the form of income statement and balance sheet usually prepared at the end of each financial year. Thus, the Financial Statements include outlined information

organized systematically of the firm's financial affairs. Financial statement reports what has actually happened to earn and dividend over the past few years. Financial statements are prepared from the accounting records maintained by the enterprises. The basic objective of financial statements is to assist in decision making. Evidently comprise the income statement, and balance sheet.

### **Income Statement**

The income statement shows a conclusion of revenues and expenses of a firm for the specific time period, the period could be month, quarter, six months or a year depending on the time period for which revenues and expenses are summarized (Paudel, et al., 2007: 27).

### **Balance Sheet**

The balance sheet or statement of financial position portrays the financial structure of the company in terms of its financial resources and respective interests or claims on such researches. A balance sheet shows the financial position of a company by detailing. The sources of fund and the utilization of these funds properly classified and arranged in a specific manner. It communicates information about the assets and liabilities and owners, Equity of a company as on a specific date usually at the end of each financial year.

#### **2.1.1.3. Financial Statements Analysis**

The financial statement analysis reveals how far the dreams and ambitions of the top management have been converted into reality during each financial year. It involves a comparison of a firm's performance with that of other firms in the same line of business, which is often identified by the firm's industry classification. Generally speaking the analysis is used to determined the firm's financial position in order to identify its current strengths and weakness and to suggestions that might enable the firm to take advantage of its strengths and correct weakness (Weston & Brigham, 1987:259).

Essentially, the function of financial statements is to convey to the reader, in such form certain fundamental information regarding the financial health of a company at a particular point in time. The financial results of its operations for a given period of time, together with a review of the causes for change in components of the company's financial structure over a period of time (Lynch & Williamson, 1983:465).

#### **2.1.1.4. Kits of financial Statement Analysis**

Understanding and examination of financial statement can be done from side to side by a variety of techniques for analyzing relative financial statement fund flow; ratio analysis and rest of hypothesis techniques are widely used.

##### **2.1.1.4.1. Comparative Financial Statement**

The focus of the financial analysis is on key figures contained in the financial statements and significant relationship that exists between them. The financial location of a business so designed as to provide time prospective to the consideration of various elements of financial positions of embodied in such statements (Khan & Jain,1992: 79).

Vertical analysis and horizontal analysis are two ways of financial analysis. In horizontal analysis a series of statement relating to number of years are reviewed and analyzed. It is also known as dynamic analysis because it measures the change of position or trend of the business over a number of years. This study is based on horizontal analysis. The balance sheets and income statement which is alone are prepared in a comparative form because they are must important statements of financial position (Khan & Jain, 1992: 79).

#### **2.1.1.4.2. Comparative Balance Sheet**

The statement made at the final financial work is balance sheet and which is done at the end of each financial year to reflect the position of assets, liabilities and capital. Increase and decrease in different assets and liabilities as well as proprietaries equity or capital brought, about by the conduct of a business can be absorbed by a comparison of the balance sheet at the beginning and end of the period, such observation after yield considerable information which is valuable in forming an opinion regarding the progress of the enterprises and to facilitate comparison, a single device known as the comparative balance sheet may be used (Williams, et al., 2008).

It is the tool of financial statement analysis and the balance sheets of at least two years are evaluated and the changes between the data are indicated in complete amount as well as in percentage up or down. Thus it may be defined as the study of the same item, group of items and computed two or more balance sheet of the same business enterprises on different dates and the study of the defined of proportion computed from these figure on the different dates. Main advantage of this analysis is that it describes of particular nature of business enterprises and of the enterprises as a whole (Daniels, et al., 1980)

#### **2.1.1.4.3. Comparative Income Statement**

Profit and loss account or income statement shows the profitability of a firm. This statement helps in deriving meaningful conclusions as it is very easy to ascertain the change in sales volume, administrative expenses, selling and distribution expenses cost of sales etc and it is the interrelated statement with balance sheet (Jain & Narang, 1988:12).

It contains the same column as the comparative balance sheet and provides the same type of information the amount balance increase and decrease in money amounts and the percent of increase or decrease. It is the tool of financial

statement analysis which compares at least two years figures in terms of rupees and percentage increase or decrease (Jain & Narang, 1988:12).

#### **2.1.1.4.4. Funds Flow Analysis**

The statement of change in financial position prepared to determine only the sources and uses of fund between two dates of balance sheet is known as funds flow statement. It is prepared to summarize the change in assets and liabilities resulting from financial and investment transactions during the period as well as these change occurred due to change in owner's equity. It is also aimed to depict the way in which the company used its financial resources during the period (Pandey, 1999: 64).

There are three concept of fund: cash concept, total resource concept and working capital concept. The methods of preparing funds flow statement depends essentially on the sense in which the term fund is used. Total resource concept represents the total assets and resources as fund. And under working capital concept, the term fund refers only to working capital (Chadwick L, 1987).

In the light of information supplied by funds flow statements outsiders can decide whether or not to invest in the company. The utility of this technique stems from the fact that it enables shareholders creditors and interested parties to evaluate the use funds and, to determine how these uses were financed. It enables financial experts to detect the imbalance in the use of funds and undertake remedial measures. It is also helpful to the financial pattern of a company (The portion of growth financed internally and finance externally).

#### **2.1.1.5. Ratio Analysis**

Ratio analysis is defined as the systematic uses of ratio to interpret the financial statements so that the strengths and weakness of a firm as well as its historical performance and current financial condition can be determined. Powerful and

the most widely used tool of financial analysis is ratio analysis. A financial ratio is the relationship between two accounting figures, expressed mathematically or the term ratio refers to the numerical or quantitative relationship between two items/ variables. This type of relationship can be expressed as percentage, fraction and proportion of numbers (Khan&Jain, 2003:80).

A ratio is defined as “the indicated quotient of two mathematical expressions” and as the relationship between two or more things. In financial analysis, a ratio is used as a benchmark for evaluating the financial position and performance of a firm. The absolute accounting figures reported in the financial statements do not provide a meaningful understanding of the performance and financial position of a firm (Pandey, 1999:109).

A huge number of ratios can be generated from the components of profit and loss account and balance sheet. There are sound reasons for selecting different kinds of ratios for different types of situations. Ratio can be classified for the purposed of exposition into four broad groups (Lynch & Williamson, 1983: 465)

### **I. Liquidity Ratio**

Liquidity ratios measure the ability of the firm to meet its current obligations. In fact analysis of liquidity needs the preparation of cash budgets and cash and fund flow statements, but liquidity ratios by establishing a relationship between cash and other current assets to current obligations, provide a quick measure of liquidity (Pandey, 1999:115).

Liquidity ratios are used to judge a firm’s ability to meet short- term obligations. From them, much insight can be obtained into the present cash solvency of a company and its ability to remain solvent of adversities.



Essentially, we wish to compare short term obligations with the short- term resources available to meet these obligations (Van Horne, 2004:351).

So liquidity ratios are used to measure the ability of a firm to meet its short-term obligations and from them the present Cash solvency as well as ability to remain solvent in the event adversities of the same can be examined. A very high degree of liquidity means resources of a firm is unnecessarily being tied up as idle assets in current assets, which is earning nothing (Lynch & Williamson, 1983:465).

The important liquidity ratios are:

**a. Current Ratio**

Current ratio measures the firm's short-term solvency. The current ratio is computed by dividing current assets by current liabilities. Generally 2:1 ratio is considered ideal ratio for a concern because it is wise to keep the current assets double to the current liabilities at all times. It indicates of idle funds and a lack of enthusiasm for work. If current assets are two times of the current liabilities, there will be no adverse effect on business operation when the payment of current liabilities is made .if the ratio is less than two difficulty, may be experienced in the payment of current liabilities and day to day operations of the business may suffer (Jain & Narang, 1998: 60).

**b. Quick Ratio**

Quick ratio is computed by dividing the liquid assets by total current liabilities. As a guideline 1.1 quick ratios is deemed adequate for most firms but it should not be relied dangerously. Liquid assets are those sets, which are readily converted in to cash include cash balance.

Quick ratio establishes a relationship between quick, or liquid, assets and current liabilities. An asset is liquid if in can be converted into cash immediately or reasonably soon without a loss of value (Pandey, 1999: 1150).

**II. Activity Ratio**

Activity ratio is concerned with measuring the efficiency in asset management and used to judge how effectively the firm is using its resources. In this sense, these ratios are also called efficiency ratios or asset utilization/ management ratios. Besides, such ratios are called turnover ratios because they indicate the speed with which assets are being converted or turned over in to sales. The greater the rate of turnover or conversion, the more efficient the utilization/ management if other thing being equal (Khan & Jain, 2003: 140).

**a. Debtors Turnover Ratio**

The debtor's turnover indicates the number of times on the average that debtor's turnover indicates each year. The liquidity position of the firm depends upon the quality of debtors to great extent. Generally, higher of the value of debtor's turnover is more efficient in the management of credit. Financial analysis applies two ratios to judge the quality of debtors. The first ratio is found out by dividing the credit sales by average debtors. The second ratio is found out by dividing total sales by the end balance of debtors.

**b. Total Assets Turnover Ratio**

Total assets turnover ratio is calculated by dividing the total sales by total assets. The total assets turnover ratio represents the ratio between total assets to sales. It reveals the efficiency in managing and utilizing the total assets. A high ratio indicates overtrading on fixed assets while a lower shows excessive investment.

**c. Average Collection Period**

It indicates how rapidly the debtors are collected and the average collection period measures the quality of debtors. Shorter the average collection period, the better will be the quality of debtors, because short collection period implies the indication of timely payment by the debtors. The average collection period is compared with the firm's credit terms to judge its credit and collection

efficiency. As a rule of thumb the average collection period should not exceed the period of payment.

### **III. Leverage Ratio/ Capital Structure Ratio**

The leverage or capital structure ratios may be defined as financial ratios which throw light on the long term solvency of a firm as reflected in its ability assure the long- term endives with regard to (i) periodic payment of interest during the period of the loan and (ii) repayment of principal of maturity or in predetermined instalments at due dates (Khan & Jain, 1999: 4.10).

Leverage ratios may be calculated from balance sheet items to determine the proportion of debt in total financing. Many variations of these ratios exist: but all these ratios indicate the same thing- the extent to which the firm has relied on debt in financing assets. Leverage ratios are also computed from the profit and loss items by determining the extent to which operating profits are sufficient to cover the fixed charges (Pandey, 1999:118).

Leverage ratios are calculated to measure long term financial position/ solvency of firm. The leverage ratios are as follows:

#### **a. Debt to Equity Ratio**

The relationship between outsiders claims and owner's capital can be shown in different ways and accordingly, there are many variants of the debt- equity ratio. The relationship between funds and owner's capital is a popular measure of the long- term financial solvency of a firm. This relationship is shown by the debt-equity ratio. This ratio reflects the relative claims of creditors and shareholders against the assets of the firm. Alternatively this ratio indicates the relative proportions of debt and equity in financing the assets of a firm (Khan & Jain, 1999: 4.11).

#### **b. Debt to Total Capital Ratio**

This ratio can be expressed in term of total debt to total assets ratio. It can be calculated in two forms. One form is related to long term debt with permanent capital of the firm. The permanent capital includes the common shareholders equity, preference shareholders equity and long term debt (non-current liabilities). The other approach to calculate the debt to capital ratio relates to the total debt with total capital of the firm. The total debt of the firm comprises both permanent capital plus current liabilities.

#### **c. Coverage Ratio**

The interest coverage ratio is the sum of the net profit before interest and taxes divided by interest charges. A higher ratio is desirable; but too high ratio indicates that the firm is very conservative in using debt. Hence coverage ratio is one of the most conventional ratios used to test the firm's debt- servicing capacity. A lower ratio indicates excessive use of debt, or inefficient operations.

### **IV. Profitability Ratio**

Such ratios are regarded as a central measure of the earning power and operating efficiency of a firm. Profitability is a measure of operating efficiency that can be measured by profitability ratio. It indicates degree of success in achieving desired profit levels, measure management's overall effectiveness as shown by the return generated on sales and investment. These ratios are composed of "a group of ratio showing the combined effects of liquidity, asset management and debt management on operating result" (Weston & Brigham, 1987:145).

These groups of ratios consist of many ratios. They are as follows:-

#### **a. Gross Profit Margin**

Gross Profit margin ratio indicates the percentage of profit after cost of production. It also indicates the efficiency of operation of the firm. Profit

margin falls when the cost of production increase. This occurrence, in turn may be due to lower sales prices or lower operating efficiency in relation to volume.

**b. Net Profit Margin**

This ratio is the measure of the firm's ability to turn each rupee sales into profit. If the net profit margin is inadequate the firm will fail to achieve satisfactory return on owner's equity. It also indicates the firm's capacity to withstand in adverse financial conditions. A firm with a high net margin would be in an advantageous position to survive in the face of falling sales price, rising cost of production or over in declining demand for the production.

**c. Return on Total Asset**

It throws light on the profitability of different source of funds, which are used to finances the total asset. Return on asset measures the profitability of the total funds or the total investment of a firm. The point is that the real return on the total assets is the net operating earning including interest. A more reliable indicator of the true return on assets is the net profit inclusive of interest.

**d. Return On Capital**

The analysis of overall profitability is the rate of return on capital, which relates the net profit with the amount invested by them. The rate of return on equity capital is to divide the net profit available to equity shareholders by number of outstanding equity share in order to calculate earning per equity share.

**e. Return On Shareholder's Equity**

This ratio indicates how well the firm has used the resources of the owners. The return on shareholder's equity measures the return on owner's fund. The return on shareholder's equity is net profit after taxes divided by shareholders equity (Welsch, 1994: 3).

### **2.1.1.6. Limitation of Ratio Analysis**

There is no doubt that financial ratios are powerful tools in analyzing the firm's financial statement. However, they should be used with extreme care and the analyst must work with his or her judgement because they suffer from some serious limitations. The basic problem associated with financial analysis is the lack of underlying theories to help us identifying which quantities to look at and which standard to use. The ratio analysis is widely used technique to evaluate the financial position and performance of a business. But there are certain problems in using ratios. The analyst should be aware of these problems. The following are some of the limitation of ratio analysis (Pandey, 1999: 153).

In addition, some specific limitations of ratio analysis are as follows:

#### **i. Requires Basis of Comparison**

The financial performance of a firm cannot be determined if there is no basis of comparison for the particular financial ratio. For example, we cannot say that the net profit margin of 15 percent is good or bad per se. It has to be compared against the ratio of similar firm or the ratio of industry average.

#### **ii. Differences in Interpretation**

Ratio analysis does not merely involve the application of a formula to financial data in order to calculate a given ratio. More important is the interpretation of the ratio value. But when it goes in hand of different analysts, each of them may interpret a particular ratio differently. Difference in interpretation exists as to what should be included into shareholder's equity whether preferred stock is to be included into shareholder's equity or long -term debt is contradictory because the use of preferred stock either as debt or as equity is determined by the purpose of analysis similarly, different analysts deal with the term ' Profit' in different ways.

**iii. Difference in Situation of Two Firms**

When we go for comparison between the ratios of two firms, the result may not be valid. It is because the situation under which one firm is being operated may differ from that of another firm. Similarly, the situation of a firm itself may be different at different points of time.

**iv. Change in Price Level**

Generally the different accounting figures drawn out from financial statements for ratio analysis are expressed in terms of their monetary value, which are assumed to remain constant. But in practice, prices do not remain constant as they go on changing as per price level changes.

**v. Short-Term Changes**

Ratios if not calculated frequently, may suffer from short- term changes. Ratios once calculated and analyzed may have to be adjusted as soon as the condition, under which the firm is being operated, change, This creates problem for an analyst, as he has to frequently involve in ratio calculations and analysis.

**vi. No Indication of the Future**

The basic concern of any analyst is the futurity of financial analysis is s/he has to determine the firm's financial position and performance in future. But as ratios are calculated on the basis of past accounting information, it results into what happened in past rather than what is going to happen in future.

As a matter of fact, ratio merely services quantitative information, the user of ratios need to understand certain qualitative aspects of the firm being analyzed. Therefore at the time of interpretation, the analysts need not to forget the qualitative aspects of raw financial data.

## **2.2. Review of Related Researches**

### **2.2.1. Review of Related Journals (Articles)**

Hydropower development has always been vital issue for lots of Nepalese writers and researchers. This Section/ topic is devoted to the review of some major articles published in Journals, reports, newspapers and articles concerning state and problems of hydropower development in the country and financial performance of private -public hydropower Companies or NEA.

**Pradhan (2064)**, in his article entitled “Challenges and issues on the domestic hydropower projects and perspective on export oriented hydropower projects” has the written about hydropower potential, hydropower generation, existing status, power demand forecast by 2020 for domestic scenario and power generation expansion (NEA and IPP). He said about hydropower potential of Nepal that, the Karnali and Mahakali river systems represents approximately 43 percent of Nepal theoretical hydropower potential and 55 percent of the technical/ economical potential.

Pradhan has added that, now the total installed capacity in NEA integrated system is 615 MW including the 152.613 MW hydro plants owned by the private sector and NEA’s thermal power (Diesel) of 55 MW. Although total hydropower capacity in the system is 556 MW, only about 452 MW can be generated from hydropower stations during the winter season when the power demand will be at its peak. During the time of power deflect; about 50 MW is imported from India as per the indo- Nepal power exchange agreement. Nepal and India have agreed in principle to increase this level of exchange from 50 MW to 150 MW. Nepal is also entitled to 70 million units of energy annually from Tanakpur in the far west under the mahakali Treaty. NEA continues to be sole purchase of independent power producer (IPP) Power. To date, twenty two Power Purchase Agreements (PPA’s) totalling 228.840 MW have been



concluded of which 152.613 MW have already been commissioned (as of July, 2011).

**Challenges and issues on the domestic hydropower projects and perspectives on export oriented hydropower Projects.**

The electricity tariff in Nepal is high, and is beyond the affordable capacity of many of the consumers. Around 40 percent of the population has access to some form of electricity, the majority of energy consumption being in the urban areas. In a steep terrain country like Nepal with dispersed villages in the hills and mountains, electrification is very costly. This situation poses challenges in managing the financial resources to expand the electrification network.

The reasons are manifold. The basic infrastructure is not well developed often includes infrastructure 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 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 every one. 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 Puluwa, Indrawati, and small 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 knowhow and easy access to the international markets for financing mechanisms.

Nepal's own resources both in the public and private sector can not 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.

Lastly, Pradhan has concludes that:

- Nepal with its tremendous potential of hydropower, has not been able to get rid of chronic problem of load shedding during winter whereas excess energy during summer seasons. This situation will be eradicated, if Nepal power system is synchronized with the Indian power system. The recent agreement between NEA and IL &FS for development of Nepal- India high voltage power interconnections will be a milestone.
- More generation projects on joint venture mode of public private partnership to be developed, so as to justify the high voltage interconnection between Nepal and India.
- In the medium/long term scenario Nepal should focus on meeting India's Hydropower generation targets around, 50,000 MW needed by 2011-12 via, displacement of capacity 5000 MW to 10,000MW from large scale hydropower projects in Nepal.
- More high voltage transmission lines to be developed within Nepal in the constrained corridors so as to interconnect the generation centers with the synchronized system with India. For this purpose 400 KV Transmission line from East to West of Nepal is to be planned and discussion between NEA and IL&FS has been already in initiated.

**Shah (2008)** has viewed on his article entitled "Banker's Perspectives on hydropower Development in Nepal: Problems and Prospects". He has written now it is a great opportunity to invest in the development of Nepalese hydropower sector and traced out on the possibilities and problems associated with it. In his Words "The financial sector has identified hydropower

development as a lucrative financing opportunity. The success stories of few hydropower projects developed by independent power producers in the recent past have also helped to create positive market interest and response. On the other hand, the risk is relatively high in this sector due to its technical nature, the necessity of huge funds and longer gestation as well as repayment periods. The financial sector is entering the energy sector gradually by taking some exposure, preferring to share the risk amongst various banks and developing consortium financing.

The funds available in the local market are able to support projects with a capacity of 20-50 mw only; for mega projects we will have to seek help from foreign institutional investors. As such, a new market for debentures, bonds or even mutual funds will open. This will spread the return to mass. In the event of an open market, by the year 2010 international banks will also enter Nepal. This, in turn, will increase the capacity of financial sector. Therefore, now is the right time to start lending in the sector to gain required experience and hold in the market.

Nepalese Banks have also started to make alliances with Indian counterparts who will not only increase their capacity to lend but will provide the technical expertise. Recently PTC India Ltd. has agreed to enter into an agreement to work together with Nabil Bank Ltd for power purchase sector development in Nepal. They have further appointed Nabil Bank Ltd to liaise with other local banks to enter into similar agreements, which they intend to sign up with Nabil Bank Ltd. This has opened up a new avenue for sharing of expertise and has also increased the total capacity to lend.

**Bharadwaj (2064)** has written an article entitled “Some Thoughts on Hydropower Development in Nepal”. In this article he has focused on the opportunities, challenges and issues. He has added about opportunity on hydropower in Nepal that “From the study of 229 potential projects of different

size in Nepal a technically feasible capacity of 42,133MW has been derived. Among these 229 identified potential sites there are 157 projects between 10-100 MW, 47 between 100-300 MW; 20 between 300-1000MW; and 5 above 1000 MW. Total they make 176,764 GWh/Year generations potential. Till now only 585 MW (less than 2% of the financially feasible capacity) has been harnessed. Availability of various sizes (Pico, Micro, Mini, small, Medium to large) ranging from few kilowatts to as big capacity as of 10,800 megawatts sites adds further attraction to different domestic as well as international investors. The Karnali & Mahakali River Basin that lies in the western part of Nepal has the largest potential (36.180 MW technically feasible and 25,125 MW financially Feasible and the largest single scheme identified so far in Nepal the Karnali Chisapani storage scheme (10,800 MW) lies in this basin. The basin not only has highest potential but also has the highest percentage of financially feasible potential (59.63%). The basin with second largest potential is SaptaKoshi River basin with 20,650 MW technically and 10,860 MW financially feasible potential”.

**Table: 2.1**

**Theoretically & Economically Feasible Hydropower potential of Nepal**

| <b>River Basin</b> | <b>Theoretical potential (MW)</b> |               | <b>Economically Feasible Potential (MW)</b> |               |
|--------------------|-----------------------------------|---------------|---|---------------|
| Sapta Koshi        | 22,350                            | (26.83%)      | 10,860                                      | (25.78%)      |
| Sapta Gandaki      | 20,650                            | (24.79%)      | 5,270                                       | (12.51%)      |
| Karnali & Mahakali | 36,180                            | (43.44%)      | 25,125                                      | (58.63%)      |
| Southern Rivers    | 4,110                             | (4.94%)       | 878   | (2.08%)       |
| <b>Total</b>       | <b>83,290</b>                     | <b>(100%)</b> | <b>42,133</b>                               | <b>(100%)</b> |

(Source: Hamro Sampada, Year7, Issue-10, 2064BS)

Nepal not only has potential for hydropower development but also has secured market place to sell the electricity. The electricity hungry Indian Market also secures Power Export Possibilities.

He has also focused about the challenges of hydropower development of Nepal, he said that Hydropower development in Nepal not only opportunities but also packed with numerous challenges. The political instabilities and frequent changing government policies regarding the tax structure further repels the investment in hydropower development. The complex environmental sensitive add further difficulties in getting government approvals. At the same time the requirements of of environmental mitigation works are becoming extra financial and managerial burden for the project. Though there are ample opportunities in domestic as well as Indian market to sell the generated electrical energy but it is not that simple and easy. Securing a long term power purchase agreement with NEA and with Indian Power trading corporation is another hurdle. As the hydropower project requires large initial investment the availability of fund in local financial institution is also not developed to the required extent. Though the list of difficulties is very long and frightening but they are still manageable and are within the reach of the developers.

### **Way out thoughts**

First of all the country as a whole must realize that the hydropower development in the country is the most important issue and it must be kept in highest priority. In this regards the recommendations put forward by the independent power producers association (IPPAN) are most relevant. Some of the relevant issues are enumerated below:

#### **1. Income Tax Holidays**

Investment in the hydropower sector involves considerable risks with a long gestation period. Therefore, in order to attract investors in this sector, the

income tax holiday for the period of 15 years from the date of commercial operation as per HDP 1992 and the Ea 1992, should be continued.

## **2. Income Duty Facility**

The provisions concerning import duties (Custom duty, Vat and other duties) facilities in accordance to the sub-section (7) of section 12 of the EA 1992 needed to be elaborated to remove the perplexity. Because of the lack of clarity in these issues, the provisions are interpreted in a discretionary manner by the various authorities and leads to unnecessary financial burden to investors which were not anticipated as per the spirit of HDP 1992.

## **3. Tax of Small Nature**

The provision in order to have specific tax regime to the companies in hydropower business has to be introduced so as to make sure that once there is the agreement for project development, no new tax (as in the past) such as local development tax, octroi, SAARC game fee, etc are introduced and tax authorities do not go and make tax demand to the developer who already has the development agreement under specific legal regime. This is vital in order to alleviate the risk- level of the investors so that Nepal does not lose the confidence of the investors although small sums may be collected through these imposed taxes.

## **4. VAT Exemption**

VAT tax regime at present very complex, not only in the view of the layman but also in eyes of expert. VAT itself is of complex nature. Tax regimes of this nature do jeopardize the entire investment and reduces the pace of hydropower development. Hence, a new provision concerning exemption of VAT on entire hydropower sector both in supply and in project has to be introduced by repealing all complex VAT regimes on the hydropower sector. The artificially imposed limit of 3 MW does not serve any real purpose, and therefore, VAT

exemption should be available for all hydropower projects, irrespective of their installed capacity.

**Bajracharya (2066)** on his article entitled “A Revolution in Hydropower Development –a Must”, has written about investment opportunities, problems and financial scarcity for the hydropower development in Nepal. In other words- at this juncture of power scarcity and actual load shedding, Nepal Electricity Authority is facing a financial crunch in starting 309 MW upper Tamakoshi projects, which is technically and financially viable. NEA is perusing Karmachari sanchaya Kosh and other financial entrepreneurs since some time ago. Recently this effort has been materialized to a large extent. The Karmachari Sanchaya Kosh and NEA have Jointly Entered into an agreement. Accordingly the Karmachari Sanchaya Kosh shall provide loan amounting 12 billion Nrs for construction of upper Tamakoshi project which is a big milestone for execution of this project. Similarly other financial entrepreneurs are taking interest in providing loan for the construction of this project.

Considering the past experiences, C.B. Bajracharya has highlighted the following alternatives for hydropower development of Nepal:

Nepal Electricity Authority shall manage funds its own resources, Karmachari Sanchaya Kosh and other Financial Entrepreneurs construct the 309 MW Upper Tamakoshi Project as soon as possible to meet this power crisis. If this project gets through or is successfully accomplished, NEA shall continue to venture into other new technically and financially viable hydropower projects. Presently, the pipeline projects in NEA’s consideration and construction phase are as follows:

**Table: 2.2****Major Projects under Construction Phase**

| <b>S.N.</b> | <b>Name of Hydropower Project</b> | <b>Capacity</b> |
|-------------|-----------------------------------|-----------------|
| 1           | Ankhu Khola Hydropower Project    | 42.9MW          |
| 2           | Upper Tamakoshi                   | 309MW           |
| 3           | Upper Trishuli A                  | 61MW            |
| 4           | Upper Trisuli B                   | 40MW            |
| 5           | Chameliya                         | 30MW            |
| 6           | Rahughat                          | 27MW            |
| 7           | Kulekhani Iii                     | 14MW            |
| 8           | Kali Gandaki A                    | 48MW            |
| 9           | Middle Marsyangdi                 | 70 MW           |

(Source: Vidyut, Year 21, Issue-5, 2067 BS)

Certainly implementation of those projects is to be prioritized according to the technical and financial viability and availability of funds. To create a feeling of ownership and to attract public participation and cooperation, it would be more effective to provide some shares to the local residents and involve them in the construction works. Due to this, it would have some instinct of ownership and responsibility. In this way the construction work would be completed smoothly without any obstacles. In the mean time, the power evacuation facilities must be developed simultaneously as per the requirements.

Government of Nepal shall encourage local and foreign investors to invest in hydropower development of Nepal. But seeing the past experience, government of Nepal must have simple and development oriented laws, rules and regulations as above mentioned so as to allure them. They must be convinced that their investment would certainly pay them back in long run. The government on its part must be guided by the fact that electricity generation in an important part of the infrastructure development and so this is one of the main priority sectors. It must be construed that this is a national strategy.



Government of Nepal must induce in the mind of local and foreign investors by enforcing new, simple, flexible and development oriented laws, rules and regulations so that they would find their investment guaranteed and lucrative. Otherwise they would not invest in this sector. Recently some genuine IPPs are taking interest in constructing some new power projects. In the backdrop of this power scarcity, load shedding and fund crunches, it is very appropriate and need of the hour to invite them to invest in this sector. Of course aforesaid, they must feel secure about their investment.

After the successful implementation of the 20 MW Chilime hydropower projects, the Chilime hydropower company is trying for 80 MW Middle Bhotekoshi hydropower project through local resources. They have set a target to complete this project within 4 years. If it happens, it would be great asset lessening the load shedding. Such entrepreneurs must be encouraged by the government of Nepal and Nepal Electricity Authority as well. They should feel secure and should be guaranteed for the optimum, profit for their investment. They should guarantee and assured of the purchase of the power generated by them in a reasonable price on a long term basis.

The power purchase Agreement (PPA) must not be a clumsy and tiring but it should always be done in a friendly manner and in a win- win position. From the past experiences, we know that the small and medium sized projects, where Nepalese expertise and workers are involved, are cheaper in comparison to those projects where foreign expertise and consultants are involved. Further their equipments are costly because of monopoly in some cases. Therefore Nepalese entrepreneurs or investors must always be encouraged to invest in the small and medium sized hydropower projects.

**Table: 2.3**  
**Donors interested Hydropower Projects**

| <b>S.N</b> | <b>Name of hydropower project</b> | <b>Capacity</b> |
|------------|-----------------------------------|-----------------|
| 1          | Buddhi Gandaki                    | 600MW           |
| 2          | Upper Karnali                     | 300MW           |
| 3          | Arun III                          | 402MW           |
| 4          | West Seti                         | 750MW           |

(Source: Vidyut, Year20, Issue-4, 2066 BS)

Seeing the increasing trend of the load growth and the power scarcity in Nepal, the Government of Nepal must take now immediate actions for implementation of new big hydropower projects, because completion of any hydropower project takes at least 4 to 5 years or more than that. Presently Nepal is facing heavy load shedding due to acute power shortage and the public disenchantment and dissatisfaction is growing day by day.

Recently the government of Nepal had set up a task force to recommend for technically and financial viable projects. As per the recommendation of task force and instructions of the parliament committee, GMR, an Indian entrepreneur has been awarded to construct the 300 MW Upper Karnali project. They shall construct the project on their own cost. Government of Nepal has to invest nothing. They would provide 12 percent of the total generated energy fee of cost of Nepal along with some shares. Another entrepreneur has offered 22 percent of the generated energy free of cost to Nepal while constructing Arun III project. A decision is going to be made in this regard as soon as possible. In this way Nepal shall get 124 MW of free energy from those two projects along with some shares also.

A number of experts are of the view that, to get free energy would be safer than having some shares at this moment of power crisis. Hence a global competition must be floated among the interested and genuine investors on the basic criteria of free energy to be supplied and the Government of Nepal must select the

investors who commit to provide maximum free energy to Nepal in case of other huge projects also. Of course other criteria set by the government must also be made. Certainly, this would have a very good impact on the development of our country in every sphere. Since we have lacking of fund, a prompt decision must be made immediately after rigorous discussions and deliberation at the backdrop of this power scarcity.

**Bhattari, (2064)** in his article “contribution of Small Hydropower in National Development”, he has mentioned that Nepal has a very big hydropower potential. Large number of rivers and rivulets and glaciers as well are the key to way out for small hydropower development. The other attraction is the availability of various sizes project sites ranging from few kilowatts to a very big capacity of 10,800 MW. This availability of different sizes of hydropower projects has attracted many domestic as well as international investors. Although there is the tremendous water power potential which is commercially viable, Nepal had not entered in the field of small hydropower before 1977. The first hydropower station was pharping power project which was commissioned on the year 1911. Major small hydro development started in Mid 70’s with the creation of small hydropower development Board in 1977. The objective guided with the political decision to give priority for electrification of the district headquarters. It was a major breakthrough in providing electricity to the remote people. Major hurdles were the difficult access condition, high costs and lack of trained manpower at site etc.

The present endeavour in small hydropower has led to a number of positive contributions like increased use of indigenous resources in the financial, manpower and material resources. The role of such a development is highly valuable in- order to promote productive sectors of the economy and improve living standards of rural population. Major steps to be taken to expand the small hydropower sector are expansion of grid, promotion of domestic financial and human resources, productive end use of electricity through

integrated planning and development etc. The development of rural energy is essential not only for uplifting the living standard of rural people through stimulation of local economy but also for the development of country as a whole. But the key point behind this is that up to which extend most suitable alternative sources of energies for isolated and dispersed hill communities are identified and exploited. In this regard, all possible energy resources should be identified and exploited.

As far as Nepal's hydropower sector is concerned, small hydropower has generated about 38.674 MW which is about 6.3 percent of total installed capacity. It is clear that small hydropower can not be underestimated from the main stream line of the power sector development. Without any hesitation, it can be claimed that large proportion of people living in the remote and inaccessible rural areas are benefited by the smaller share of energy instead of the large proportion of the energy serving for urban areas only. Small hydropower schemes owned and operated by NEA and other private companies have highest share within small hydropower sector which is 74.6 percent and it is 4.7 percent in total energy scenario. This includes all the small and micro-hydropower schemes operated by NEA and private companies. And the micro hydropower and Pico hydropower schemes under the AEPC have generated almost 7.8 MW and 2.01 and 5.2 percent in small hydropower sector. It reflects the exact scenario of the internal development of our country.

**Table: 2.4**  
**Contribution of hydropower station in system demand**

| S.N | Hydropower Schemes | Installed Capacity (MW) | Number of units | Percentage share in Small hydropower | Percentage share in total capacity |
|-----|--------------------|-------------------------|-----------------|--------------------------------------|------------------------------------|
| 1   | Pico-hydro         | 2.019                   | 1124            | 5.22                                 | 0.33                               |
| 2   | Micro- Hydro       | 7.805                   | 553             | 20.18                                | 1.27                               |
| 3   | Small-Hydro (NEA)  | 28.85                   | 44              | 74.60                                | 4.70                               |
| 3   | Total              | 38.674                  | 1721            | -                                    | 6.30                               |

(Source: Vidyut, year-18, Issue-2, 2064 B.S.)

Bhattarai has further said that there are more than 2500 MHP installation with combined installed capacity of 17.5 MW including Micro hydropower owned by government sector, community and the private sector for electrification and also the turbine mills for agro processing works. Almost 3000 improved water mills have been installed so far for grinding, purpose for people from far flung areas (AEPC, 2006). These installations are owned, managed, and operated by individuals, groups, or communities.

MHP has potential of mitigating global warming through carbon avoidance. Improving balance of payments of the country by reducing import of fossil fuel and mitigating environmental degradation of rural hills by substituting fuel wood. Thus, Micro –hydropower is seen as a catalytic agent for the broader socio-economic development of the isolated mountain areas of rural Nepal. Given storage of energy as one of rural areas, micro –hydropower plants play a major role as a source of renewable energy technologies capable of supporting efforts towards breaking the socio- economic stagnation of the remote rural areas.

Lastly, he has recommended that the development in the small hydropower sector is possible only when there will be the realization of participatory approach and social obligation. The only profit making organization may not involve as there is the long term service and patience to have nominal return. Government and the stakeholders should be aware that the large properties of the rural people are in search of sustainable development through electrification in their localities. If this may not be achieved in today's context, people may be compelled to search other alternatives via socio- political agitation. The small hydropower sector be supported by the concerned authorities as its development seeks so. They are not the burden but they are the important means to develop country. Only it requires is that proper and competent management, technical strength and responsibility the society and nation. The more the hydropower schemes installed and operated efficiently, the more

number of the people will be benefited which definitely boost up the country's economic status.

**Pradhan** (2065) has written an article entitled "Hydropower Development and Private Sector" in this article he has focused on the Role of private sectors and key issues of hydropower development in Nepal. Pradhan is a hydropower entrepreneur of Nepal. About role of private sector, he said that, "Global experiences have reaffirmed the notion that the invisible hand of the market would always contribute to accelerate growth process in a sustained manner. Market oriented development strategies encourage private sector involvement, limiting the government's role to a facilitator and developer of the private sector through creating an environment conducive for private sector development. Since the enactment of Hydropower Development policy in 1992, Electricity act in 1992 and Electricity Regulations in 1993, entry of independent power producers (IPPs) in Nepal's power sector through non resource financing has been noticeable and the position of NEA has been replaced from a sole monopoly to one of the licenses with the responsibility to buy the privately generated power. But this is not adequate to attract increased investment from the private parties in this sector".

The 55-60 billion rupees of liquidity believed to be present now in the Nepali capital market is not enough to generate more than 400 MW of hydro electricity. It is, therefore, very practical for the state to expect increased participation from the private sector. Since Nepal has adequate space to entertain private sector investments not only from Nepal but also from the rest of the world, the state should give specific responsibilities to the Nepali private sector in this regard.

For example, the Nepali private sector can be entrusted the sole responsibility to meet the energy needs of the domestic market. For this, the state should take a proactive role to create and foster congenial environment for the private

sector to help construct every year hydropower project (s) of 50 MW. Since the risk factor in investing on energy infrastructure is negligibly low, it would be feasible for the private sector to invest around 7-10 billion rupees every year.

G.L. Pradhan, has focusing on key issues of hydropower development in Nepal, has written as “analyze the key issues and challenges facing the power sector in Nepal, especially the generation segment, prominent ones are the discouragement to the private sector’s participation and the volume of investment. First, there has been no significant additional investment from donors as well as from the private sector either in the expansion of generation capacity or transmission facilities. Whatever investment is being made for this is coming from the government only.

Second, the current trend of private sector investment in only small capacity plants of 1-5 MW range does not provide any substantial relief to meet the growing needs of the country’s power system. The pace of capacity addition from private sector is far behind what is required to cope with the growing demand of the country, which is increasing by more than 10% annually. In other absence of private sector interest in this, the country faces considerable deflecks in near future, unless NEA takes leading role in bringing in such projects in the system.

One of key technical issue or challenge facing the power sector in Nepal, especially the generation segment, is the dominance of run-off-the-river (ROR) and daily pondage hydropower plants. These are set up at a considerable cost but they are not able to generate power throughout the year. The tariff based on average generation from these plants has been partially responsible for the current high power tariff to the consumer. Attempts by NEA to amend its present tariff structure to introduce seasonal tariff in certain consumer categories to encourage demand side management is yet to be approved by authorities concerned.

Also the power evacuation issue has emerged as a very important issue as it has been impeding speedy conclusion of PPA. Investment has to be made for expansion of the transmission network in tandem with creation of new generation capacity. The state does not have adequate wherewithal to make these investments and therefore the investment needs to be brought in either from domestic private sector participation or multilateral funding route.

NEA is considering developing some major hydropower projects in joint-venture with private developers. It is also looking for mobilizing local resources through the issuance of power bond in local market. In this context, it had concluded a number of studies in the past, which showed good appetite in Nepali financial market for such opportunities due to limited alternative investment opportunities. But to attract such investment, appropriate investment instrument need to be developed. At the same time, NEA should continue to persuade its traditional partners and multilateral donors, to provide financial support to NEA to take up large and medium hydropower projects.”

Pradhan has further added that, Investment in hydropower generation is considered the best investment due to the low risk associated with this. But only three hydropower companies are listed and traded in the Nepal stock exchange, namely: National Hydropower Co Ltd. (7, 000,000 units of total amount: Rs. 700,000,000); Butwal power company Company Limited (8,390,577 units of total amount: RS. 839,057,700) and Chilime Hydropower Co. Ltd. (7,296,000 units of total amount: Rs 729,600,000). However, the hydropower sector accounts for only 13.4 percent of the total shares traded, according to the NEPSE data for the month of April, 2008.

The deal in hydropower is profitable. Once the dam is built, hydropower projects provide dividends to the investors forever. Revenues from dams are considered inert as a lead weight. Projects can sell the power to utilities on long- term contracts, which might span 30 or 50 or more years. Revenues from



hydroelectric power plants are virtually free from the panic at NEPSE or during recession. So why not invest in hydropower?

## **2.2.2. Review of Related Acts/Plans**

### **2.2.2.1. Hydropower Development Policy, 1992**

The Government of Nepal has formulated the hydropower development policy, 1992 regarding different models of investors' participation for the hydropower development in Nepal. In this policy, the GON has declared as –investment may be made for the projects relating to generation, transmission and distribution of hydroelectricity as follows.

- Sole or joint venture of one or more private national investors.
- Joint investors.
- Joint venture of the government and one or more national or foreign investors.
- Hundred percent investments of one or more than one foreign investors.
- Joint venture of the national or foreign investors.

### **2.2.2.2. “Electricity Development Policy -2058 (2001)”**

Government of Nepal imagined achieving the following by 2007 in its “Electricity Development policy- 2058”

- A dominant private sector contributing 75 percent of total investment in hydropower;
- Boosting of industrial consumption's by 125 Percent;
- Establishment of power development fund and infrastructure development banks;
- Boosting of hydro capacity to meet a demand of 820 MW of which 70 MW to be Export;
- Privatization of NEA.

“Electricity Development Policy- 2058” is imposed with the following Objectives:

- To utilize the existing water resources of the country and produce electricity at a low cost;
- To make the electricity service dependable, reliable, and extend qualitative service within the whole kingdom at a reasonable rate;
- To tie up the electrification with the economic activities;

#### **2.2.2.3. Review of Ninth Five Year Plan (Electricity Development)**

According to the population consensus 2058BS, by the end of ninth five year plan about 40% of the total population is benefited by the electricity. The 40% includes 33% supplied by national grid and 7% from alternative energy (Solar, bio energy etc.). At the end of ninth five year plan 58 municipalities and about 1600 VDCs have electrification on all 75 districts. At the end of ninth five year plan, the peak hour demand has reached to 426 MW. Power consumption per individual is 60 KW, and average price per unit is Rs 6.81 at the end of ninth five year plan.

#### **2.2.2.4. Tenth Five Year Plan (Electricity Development)**

Of the total population, 48.5 percent was expected to have access to electricity services by the end of the tenth plan. Prior to the tenth plan, electricity was available to 58 municipalities and 1600 VDCs in the country. A total of 2100 VDCs were expected to have access to electricity services, at least partially, by the end of the tenth plan. Electricity supply has been expanded to cover 59 districts in the country. In the community rural electrification program, initiated during the tenth plan period, people's participation in the expansion of electricity supply has been encouraging. The per capita electricity demand of 426 MW towards the end of ninth plan increased to 648 MW towards the end of tenth plan period.

### **2.3. Review of Previous Research Works**

Various research works have been done by MBS students in different aspects of banking, NEA and hydropower companies such as financial performance,

fund management, cost volume profit analysis etc. Studies and reviews on financial performance, fund management, cost volume profit analysis of other organization and their recommendation are relevant to this study. In this context, some reviewed previous thesis is as follows.

**Amatya (2005)** has conducted a research topic on *An Evaluation of financial Performance of Nepal electricity Authority* has examined the financial strength and weakness of NEA based on its liquidity, activity, profitability, and leverage ratios.

**Her main objectives:**

- To analyze the financial performance of NEA through financial analysis taking relevant variables.
- To identify major weakness and strengths of NEA.
- To find out the past and present challenges undergone by NEA.
- To provide some suggestions and recommendation based on the findings for the improvement of financial performance.

**Her major findings:**

- The current assets are not been used in the profitable manner, the excess of the current assets utilization has increased the opportunity loss.
- Long terms as well as short –term debt utilization has increased the opportunity loss.
- Long terms as well short term debt utilization are also seen more irrational in the sense that their turnover ratio is not satisfactory.
- Capital employed according to profitability is not seemed to be reasonable as there is negative relationship between these variables.

**Her major recommendations:**

- Adoption of Effective Mechanism to Improve Liquidity Position.
- Development of Efficient System of Revenue Collection.

- Efficient Utilization of Assets.

**Kandel (2005)** has conducted a research topic on *Financial Performance and Employee Opinion on the Performance of NEA* is considering the financial performance analysis of NEA and also study about performance to the point of view of employee.

**His main Objectives:**

- To analyze the financial performance of the NEA with respect to its liquidity, activity, profitability and leverage.
- To analyze the liquidity and debt utilizing capacity of NEA.
- To suggest for the improvement of financial performance of order to improve financial performance of the basis findings of the studies.

**His major findings:**

- The current assets are not been used in the profitable manner; the excess of the current assets utilization has increased the opportunity loss.
- Long terms as well as short term debt utilization has increased the opportunity loss.
- Long terms as well short term debt utilization are also seen more irrational in the sense that their turnover ratio is not satisfactory.
- Capital employed according to profitability is not seemed to be reasonable as there is negative relationship between these variables.

**His major recommendations:**

- NEA should plan to generate its required fund mainly by operating activity.
- It should reduce the volume of power purchase and resort to expansion utilization of its qwn capacity.

- It should reduce the loss arose out of leakage outage and theft of electricity.
- Profit motive should be applied in practice to reduce dependency and subsidy from government and any other subjects it is most important for every PEs.
- Increase the volume of industrial sales of electricity.

**Khatiwada (2007)**, has conducted a research topic of *Financial performance analysis of Butwal power Compan* examines the financial strengths and weakness of BPC based on its ratio analysis, income and expenditure analysis and least square trend analysis. He has also used arithmetical tools.

**His main objectives:**

- To highlight about Butwal power Company like objective, policy, growth etc.
- To study the trend of financial performance and analyze the related financial indicators.
- To analyze financial strength and weakness of Butwal power Company.
- To provide recommendation and suggestions on the basis of study and findings.

**His major findings:**

- The current ratio indicates that the company is using excessive current assets in the first 3 fiscal years. It is maintaining the current ratio in the later 3 years near to its normal standard. It reveals that the company is in perfect liquidity position. The firm is in strong credibility position.
- The debtors' turnover ratio reflects that debtor's turnover ratio of Butwal Power Company is fluctuating each year but is better in last two years study period than the first two year.

- Fixed assets turnover ratio shows that Butwal Power Company utilized its fixed assets in better way in later years in comparison to previous years except in 2059/060. Increment in fixed assets turnover ratio indicates the improved work efficiency and financial condition. It shows the efficiency of a concern on utilizing its fixed assets.
- The total assets turnover ratio of BPC in the study period is not good, it shows the increment in ratio but increment is not satisfactory. Higher ratios indicate better utilization of total assets of the organization. To improve the total assets turnover ratio BPC should utilize total efficiency. But the company is improving efficiency utilization of total assets.
- The non operating income to total income ratio shows in 2060/61 the non operating income took a high percentage in the total income. Likewise in the year 2057/58 and 2061/62, the non operating income covers a high percentage in total income. It explains that the income of the company is diversified a lot which can help the company to sustained in hard times.
- The local sales to bulk sales ratios shows that the BPC has extended the sales system to the local and Nepal Electricity Authority by power purchase agreement. This helps the company that the dependency of power selling is not constraint and diversified selling process helps to mange hard times. The company sells to local sales and to Nepal electricity Authority as bulk sales.

**His major recommendations:**

- The company (BPC) is in strong credibility position. It should enjoy capital of less cost by burrowing fund.
- The company has kept very high liquidity ratio. The investment in current assets is excessive which should be controlled.

- Debtors' turnover ratio of the company should be improved and made higher which can help the company to encash its sales in proper time to avoid cash shortage.
- Fixed assets turnover ratio shows the utilization of the assets in percentage. The finding shows that the fixed assets are utilized properly and efficiently. It helped to improve financial condition of the company.
- Total assets turnover ratio is not found satisfactory. To improve the total assets turnover ratio BPC should utilize its total efficiency. It is found that the company is improving its efficiency of utilizing total assets.
- The trend analysis revealed that the company has done better in total sales but worse in operating income. It should improve the trend of operating income in increasing order.

**Dahal** (2007), has conducted research topic on *Cost –Volume Profit Analysis of Public Enterprises and Private Company Ltd. (A Comparative analysis between NEA and BPC)*. He was concerned with profit and cost analysis of NEA and Butwal Power Company Limited. He used secondary data of annual reports of their companies.

**His major objectives:**

- To study and analyze existing position of costs of NEA and BPC Pvt. Ltd.
- To identify breakeven point of both enterprises for avoiding losses.
- To compare and analyze P/V ratio, BEP and volume of these Enterprises.
- To examine problems being faced by these two enterprises and recommend for solving these problems on the basis of study results.

### **His major findings :**

- Sales of the BPC are increasing every year in fluctuating rate while sales has increased in lower rate than BPC. BPC forecasted sales for FY 2064/65 is Rs 575.73 million and forecasted sales for NEA for FY 2064/65 is Rs 14518.6 million. The sales plan of both BPC and NEA are not systematic. So it is difficult to achieve their target of increasing operating income.
- Variable cost of BPC is less compare to its fixed cost. Contribution margin ratio of NEA is very less while it is satisfactory in place of BPC.
- BPC is running in profit while NEA is suffering from loss. BPC has earned reliable profit and has made it able to stand as one of the most successful enterprise of the country. In other hand, loss of NEA is gradually increasing. No any systematic plans have been implanted for preventing the loss and improve profit by NEA.
- BPC has high P/V ratio which reduces the breakeven level of the company but in the case of NEA P/V ratio is very less which increase the BEP sales of the authority.
- BPC's margin of safety is in average above 50 percent which indicates the safety of the company. But NEA's margin of safety is negative due to higher BEP sales than actual sales or there is no safety margin in NEA.

### **His major recommendations:**

- NEA is operating in monopoly situation, strength, weakness, threats, and opportunity should properly analyze to gain future opportunities.
- Sales revenue of both enterprises is in increasing trend but it is not sufficient to cover the cost and earn desired profit. The



variable cost of NEA is very high which is required to reduce in future make profit. Sales plan of these enterprises should clearly maintain and improve to catch market opportunity.

- BPC and NEA should consider BEP analysis while preparing sales plan, production plan, and setting price of its products.

**Karki (2008)** conducted research topic on *Financial Performance Analysis of Purbanchal Gramin Bikash Bank*". In his thesis he has used ratio analysis tools as well as statistical tools.

**His main objectives:**

- To identify the existing financial position of PGBBL.
- To evaluate the sources and application of funds of PGBBL.
- To find out the loopholes in operating PGBBL.
- To provide reformative suggestion for future improvement.

**His major findings:**

- Borrowing is the main sources of fund although the main source of fund is used in loan disbursement.
- Financial ratio indicates poor financial position except FY 2059/060 and 2060/ 061 B.S. but it is Minimum.
- Trend of operating expenses is increasing day by day except FY 2059/060 and 2060/ o61 B.S.
- The relationship between deposit and investment is not in good condition.
- Loan disburse by the bank are quite small in amount, it is not practicable to legal action against the defaulters.
- The PGBBL is going to break even level in last two years it activities are also expanding day by day.

- The bank has not charged interest of its branches against borrowing amount therefore not show the actual viability position of the branches.

**His major recommendations:**

- Equity is the permanent source of funds, its help manage the source of funds. The PGBBL must be increased its share capital and decrease in its borrowings. Therefore, the bank can operate its financial activities on low risk.
- PGBBL has low investment in government bonds, company share as well as fixed deposit of commercial bank. It helps to reach in the access of the capital market.
- The PGBBL has poorer liquidity position. So it should be increase in cash and bank balance for good liquidity position.
- The bank should be expanding its activities in hills side by establishing branch offices.

**Rijal (2007)** conducted research topic on *Financial Performance Evaluation of Private and Public Sector Company*). He was concerned with comparison of the financial development taking a sample of private and another public hydropower company.

**His main objectives:**

- To study and analyze the financial performance of one of the private and another public hydropower company and draw comparative conclusions through financial evaluation taking relevant variables.
- To identify major strengths and weaknesses of private and public hydropower company.
- To study and examine the present trends of financial performance of Private – Public participations in Hydropower Sectors.
- To provide necessary suggestions on the basis of study findings.

**His major findings:**

- Current ratio of BPC in fluctuating trend throughout the study period but current ratio of HPL is stable than BPC. The mean ratio of HPL is higher than BPC. Likewise CV of HPL is lower than BPC, which means that BPC has more fluctuation in ratios as compared with HPL. Mean ratio shows the highly liquid position of BPC and HPL, which shows the hydropower company did not have proper investment plan. Both companies could maintain the conventional standard of 2:1. However the average ratio of HPL is greater than that of BPC, which signifies that HPL is more capable of meeting immediate liabilities in contrast to BPC.
- The CV of BPC for quick ratio is greater than HPL, which shows more fluctuation in quick position. Quick ratio of HPL is more stable than BPC throughout the study period. Both companies could maintain the conventional standard of 1:1 the overage ratio of HPL is greater than BPC, Which means that HPL is more successful in maintaining the liquidity position.

Mean ratio of fixed assets turnover ratio of BPC is higher than HPL. It indicates that BPC has efficient utilization of fixed assets. But CV of BPC has higher than that of HPL because of its higher fluctuating turnover ratios.

**2.4. Research Gap**

The purpose of this study is to draw some ideas concerning to the maintained good financial performance and to see what new contribution can be made and to receive some ideas, knowledge and suggestions in relation to maintained good performance of hydropower companies. In this context, the previous studies can't be ignored because they provide the foundation to the present study. In other words, there has to be continuity in research. This continuity in research is ensured by linking the present study with the past research studies.

It is clear that the reference of new research can't be found on the exact topics, i.e. "An Evaluation on Financial Performance of Butwal Power Company and Himal Power Limited" therefore to complete this research work, many books, journals articles and various published and unpublished dissertations and field opinion are followed as guideline to make the research easier and smooth through these reference materials. The researcher can find out the gaping from the past research that has to be fulfilled by the present research work. In this regard, here the researcher is going to analyze the different procedure of financial performance techniques of the selected hydropower companies.

"An Evaluation on Financial Performance of Butwal Power Company and Himal Power Limited" is a new topic for the research work. It is expected that the uncovered areas of this research work will be studied. The gapping between old and new research work will be focused and filled up based on the given objectives and limitation in this research.

## **CHAPTER- III**

### **RESEARCH METHODOLOGY**

#### **3.1. Introduction**

A methodical and organized effort to explore a exact trouble that needs a solution is a research and in this method of investigation involves a serious of well- thought- out activities of gathering, recording, analyzing and interpreting the data with the purpose of finding answers to the problem, thus the entire process by which we attempt to solve problems or search the answers to questions is called research (Wolf and Pant, 2005:4).

#### **3.2. Research Design**

Descriptive approach is utilized for conceptualization, problem identification, conclusion and suggestion of the study where as analytical approach will be followed the presentation and analysis of data. The data have been analyzed on the basis of standard financial formulas used in the books of financial management. It includes an outline of what the investigator will do from writing the hypothesis and their operational implications to the final analysis of data. The structure of the research is more specific. It is the outline, the scheme, the paradigm of the operation of the variables. 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 & Pant, 2005: 92.).

#### **3.3. Population and sample**

Total Number of Private – Public Company Operated in Hydropower Sectors of Nepal Are Population. In Current Situation There are 14 Company in Operation (The Name of the Population are Listed Below). Among them I select Two Company as a sample of study by using random sampling Method.

**Table: 3.1**

**Name of the Major Private & public sectors Hydropower Companies,  
which are connected to IPPAN.**

| <b>S.N.</b> | <b>Hydropower Company</b>             | <b>S.N</b> | <b>Hydropower Company</b>                  |
|-------------|---------------------------------------|------------|--|
| 1           | Ankhu Hydropower Pvt. Ltd.            | 24         | NASA Hydropower Pvt. Ltd.                  |
| 2           | Annapurna Group Pvt. Ltd.             | 25         | Naulo Nepal Hydroelectric Pvt. Ltd.        |
| 3           | Annapurna Renewable Energy (P) Ltd    | 26         | Nepal Hydro Developer (P) Ltd.             |
| 4           | Balephi Hydropower Company Ltd.       | 27         | Nimrung Hydropower Company Pvt. Ltd.       |
| 5           | Bhotekoshi Power Company (BKPC)       | 28         | Numbur Himalaya Hydropower Pvt. Ltd.       |
| 6           | Butwal Power Company Ltd.(BPC)        | 29         | PAN Himalaya Energy Pvt. Ltd.              |
| 7           | Cemat Power Dev. Co (P) Ltd.          | 30         | Pashupati Energy Dev. Co.(P) Ltd.          |
| 8           | Chirkhwa Hydropower Pvt. Ltd.         | 31         | Radhi Bidyut Company Ltd.                  |
| 9           | Dordi Khola Jalabidyut Company Ltd.   |            | Rara Hydropower Devt. Co. Pvt. Ltd.        |
| 10          | Energy Engineering Pvt. Ltd.          | 33         | River Falls Hydropower Devt. Co. Pvt. Ltd. |
| 11          | Essel-Clean Solu Hydropower Pvt. Ltd. | 34         | Ru Ru Jalbidhyut Pariyojana Pvt. Ltd.      |
| 12          | Global Hydropower Associate Pvt. Ltd. | 35         | Sanima Hydropower Company (P) Ltd.         |
| 13          | GMR Upper Karnali Hydropower Ltd      | 36         | Sanima Mai Hydropower (P) Ltd.             |
| 14          | Grid Nepal Pvt. Ltd.                  | 37         | Shikhar Hydropower Company                 |
| 15          | Himal Power Ltd. (HPL)                | 38         | Sinohydro-Sagarmatha Power Co.             |

|    |                                      |    |  |
|----|--------------------------------------|----|--|
|    |                                      |    | Ltd.                                       |
| 16 | Himalayan Hydropower (P)<br>Ltd.     | 39 | Super Khudi Hydropower Pvt. Ltd.           |
| 17 | Himalayan Power Partner Pvt.<br>Ltd. | 40 | Synergy Power Devt. Pvt. Ltd.              |
| 18 | Himtal Hydropower Company            | 41 | Tara Energy Pvt. Ltd.                      |
| 19 | IDS Energy Pvt. Ltd.                 | 42 | Tundi Power Co. Pvt. Ltd.                  |
| 20 | Khudi Hydropower                     | 43 | Upper Mai Hydro Devt. Pvt. Ltd             |
| 21 | Lamjung Electricity Ltd.<br>(LEDCO)  | 44 | Upper Maiwa Hydropower Pvt.<br>Ltd.        |
| 22 | Lower Arun Hydroelectric Pvt.<br>Ltd | 45 | Upper Maiwa Hydropower Pvt.<br>Ltd         |
| 23 | Mai Valley Hydropower Pvt.<br>Ltd.   | 46 | Welcome Energy Development<br>Co. Pvt. Ltd |

(Source: [www.ippan.org.np](http://www.ippan.org.np))

### **Name of the Sample Companies;**

1. Butwal Power Company Limited (BPC)
2. Himtal Power Limited (HPL)

### **3.4. Sources of Data**

Though the study has basically covers the secondary data, however, in some case primary data were also obtained through conversation with the engineers and managerial officials of both companies. The main sources of data for the purpose of this study are the published financial statements of HPL and BPC. The study is thus mainly based on the secondary data. It constitution mostly the annual reports which comprises Balance sheet and profit and loss account statement. Information has also been from various publication of NEA.

All their available published and unpublished materials concerning the study as well as some journal abstracts have also been used. In addition to that, a

number of relevant websites were visited to ensure the availability of information across borders regarding the operation of companies.

### **3.5. Data Collection Procedure/ Techniques**

For purpose of this study, following methods/ techniques are used:

- A. Secondary Data:** The Secondary data are collected from published accounting statements of Himel Power Limited, Butwal power Company Limited, Nepal Electricity Authority, Report of National Planning Commission. The review of theory relating to this study is based on textbooks, official publication, journals, previous research studies and websites of related Companies, NEA and National Planning Commission.
- B. Primary Data:** Descriptive analysis is made with the help of primary data. Primary data are collected by questionnaire and meeting with concern people. To get reliable information discussion was also conducted with staff of HPL and BPC.

### **3.6. Data Processing**

The collected data should be further they need to be verified and simplified for the purpose of analysis since it obtained from the various sources cannot be directly used in their original form.. Data information, figures and facts so obtained need to be checked, rechecked, edited and tabulated for computation. According to the nature of data, they have been inserted in meaningful tables. Homogenous data have been sorted in understandable manner, odd data excluded from the table. Using financial and statistical tools, data have been analyzed and understand.

### **3.7. Tools of Data Analysis**

This research applies different tools for secondary and primary data analysis, which are discussed below.



### **3.7.1. Tools for Secondary Data Analysis**

#### **3.7.1.1. Financial Tools**

The tools used for the analysis and interpretation of financial data are financial tools. They attempt to explore the financial state of a business and convey the strengths and weakness of its policies and strategies. Ratio analysis is used as the basic tool for this study in order to summarize the quantitative judgements about the companies, financial performance (Khan & Jain, 1999; 4.33).

The following ratios are used for evaluating the performance of selected sample companies:

##### **i. Liquidity Ratios**

It is a class of financial metrics that is used to determine a company's ability to pay off its short-term debts obligations. The higher the value of the ratio and the larger the margin of safety that the company possesses to cover up short-term debts. Liquidity Ratios measure the firm's ability to satisfy its short-term commitments out of current or liquid assets.

These ratios focus on current assets and liabilities and are used to ascertain the short-term solvency position of a firm. The two primary test of liquidity are current ratio and quick ratio.

##### **a) Current Ratio (CR)**

The ratio is mainly used to give an idea of the company's ability to pay back its short-term liabilities (debt and payables) with its short-term assets (cash, inventory, receivables)A current Ratio (CR) is the quantitative relationship between current assets (CA) and Current Liabilities (CL). So this ratio is calculated by dividing Current Assets by Current Liability.

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

Current assets include cash and those assets that can be converted into cash within a year. This study accumulates stock, current work-in-progress, debtors

and receivable cash and bank and advance and deposit to produce the current assets. Similarly creditors and payables Provisions, and advance and deposit have been pulled together to produce current liabilities.

If Current ratio < 2.1 (The company is not good in solvency)

If Current ratio = 2.1 (The company is in adequate condition in solvency)

If Current ratio > 2.1 (The Company may have an excessive investment in current Assets)

#### **b) Quick Ratio (QR)**

Quick Ratio (QR) is a acid- test ratio or liquid ratio, is another measure of short-term solvency of a firm. Quick ratio is defined as the quantitative relationship between quick assets and current liabilities. It is calculated as follows:

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

Though advance and deposits are considered less liquid in accounting terms, in this study, they have been found to be convertible into cash quite simply. Therefore, only inventory has been left out of current assets to compare quick assets.

#### **ii. Activity/ Efficiency/ Assets Management Ratio**

Assets management Ratios are also known as turnover ratios or activity ratios or efficiency ratios. These ratios look at the amount of various types of assets and attempt to determine if they are too high or too low at current operating levels. They provide the measure for how effectively the firm's assets are being managed. If too many funds are tied up in certain types of assets that could otherwise be employed more productively elsewhere, the firm is not as profitable as it should be. Following ratios are calculated to measure how efficiently a firm employs the assets.

**a) Fixed Assets Turnover Ratio**

This ratio is calculated by dividing sales by net fixed assets i.e.

$$\text{Fixed Assets Turnover} = \frac{\text{Sales}}{\text{Net Fixed Assets}}$$

Net fixed assets are defined as the gross fixed assets minus depreciation. This study accumulates fixed assets. Capital work-in progress and investment in new project to produce Net fixed assets.

**b) Total Assets Turnover Ratio**

Total assets turnover Ratio shows the relationship between sales and total assets. So this ratio is calculated by dividing sales by total assets i.e.

$$\text{Total Assets Turnover} = \frac{\text{Sales}}{\text{Total Assets}}$$

Total assets constitute the fixed assets as well as current assets and investment of the company. This study accumulates fixed assets, work in progress, and investment in new project, current assets and differed revenue expenditure to produce the net current assets.

**c) Average Collection Period**

Average collection period is calculated by dividing sales by debtor's turnover ratio i.e.

$$\text{Average Collection period} = \frac{\text{Sales}}{\text{Debtor's turnover Ratio}}$$

This defines time period for the collection of credit sales. The duration of credit should be shortening for the organization. So less ACP is better for the company.

**d) Debtor's Turnover ratio**

Debtor's turnover Ratio is calculated by dividing sales by closing debtors. i.e.

$$\text{Debtor's Turnover Ratio} = \frac{\text{Net Sales}}{\text{Closing Debtors}}$$

This defines times debtors converted into cash. Higher ratio is better for the organization.

**e) Capital Employed Turnover Ratio**

This ratio is calculated by dividing sales by Capital employed i.e.

$$\text{Capital Employed Turnover} = \frac{\text{Sales}}{\text{Capital employed Relationship}}$$

The ratio measures the relationship between sales and capital employed. Higher ratio indicates better utilization of capital employed resulting in higher profit.

**iii. Profitability Ratio**

Profitability is the end of result of a number of corporate policies and decisions. It measures how effectively the firm is being operated and managed. Besides owners and managers, creditors are also interested to know the financial soundness of the firm. Owners are eager to know their returns where as manager are interested in their operating efficiency. So they calculate profitability ratios because expectations of both owners and managers are evaluated in terms of profit earned by the firm. Following are the major ratios used to measure the profitability of a firm.

**a) Net profit Margin**

Net profit Margin is the Ratio between net income and sales of a firm. It shows the firm's ability to generate net income per rupee of sales and is calculated as:

$$\text{Net Profit Margin} = \frac{\text{Net Income}}{\text{Sales}}$$

This ratio explains the relationship between net profit after tax and sales. Higher ratio denotes higher profitability of the enterprises. Lower ratio indicates increase in indirect expenses, in capable management and lower income sources.

**b) Gross Profit Margin**

This Ratio is calculated by dividing gross profit by sales, i.e.

$$\text{Gross Profit Margin} = \frac{\text{Gross Profit}}{\text{Sales}}$$

This ratio reflects the profitability of a company and measures the ability to get profit. This ratio should be able to cover all indirect expenses at least. Higher

ratio is favourable to the organization. Lower ratio reflects unfavourable purchase Policy, lighter production cost, lower selling price or higher investment in fixed assets.

**c) Operative Expenses Ratio**

Operating Expenses Ratio is calculated by dividing total operating expenses by sales, i.e.

$$\text{Operative Expenses Ratio} = \frac{\text{Total Operating Expenses}}{\text{Sales}}$$

This study accumulates power plant expenses, distribution expenses and consultancy service expenses to produce operating expenses.

**d) Return on Assets**

The Return on Assets (ROA) is often called the firm's return on total assets, measure the overall effectiveness of management in generating profit with its available assets. The higher the firm's return on assets, the better it is doing in operation and vice versa. It is calculated as follows:

$$\text{Return on Total Assets} = \frac{\text{Net Profit after tax+interest}}{\text{Total Assets}}$$

**e) Return on share holders' equity (ROSHE)**

Return on shareholders' equity measures the return earned by the shareholders i.e. owners of the company. To analyze whether the company has been able to provide higher return on investment to the owner or not this tool is required.

This ratio can be calculated by using following formula:

$$\text{Return on Shareholders' equity} = \frac{\text{Net Profit after tax}}{\text{Shareholders' Equity}}$$

The higher the ratio is desirable from the point of view of the owners of the firm and represents the higher profitability of the firm and vice versa.

#### **iv. Leverage/ Capital Structure Ratio**

The leverage or capital structure Ratio may be defined as financial ratios which throw light on the long-term solvency of a firm as reflected in its ability to assure the long-term creditors with regard to (i) periodic payment of interest during the period of the loan and (ii) repayment of principal on maturity or in predetermined instalments at the due dates. This ratio indicates the mix of fund provided by owners and lenders. As a general rule, there should be an appropriate mix of debt and owners' equity in financial mix of the companies' assets (Khan and Jain, 1999, 4.10).

##### **a) Debt-Equity Ratio (D/E Ratio)**

Debt to Equity Ratio is calculated dividing total debts by total shareholders equity. This ratio shows the relationship between debt capital and equity capital.

$$\text{Debt to Equity Ratio} = \frac{\text{Total Debt}}{\text{Shareholders Equity}}$$

This study accumulates equity and, reserve and surplus to produce shareholders equity.

##### **b) Debt to Total Assets Ratio (DTAR)**

Debt to Total Assets Ratio is calculated dividing total debts by total assets. This ratio shows the relationship between debt capital and total assets.

$$\text{Debt to Total Assets Ratio} = \frac{\text{Total Debt}}{\text{Total Assets}}$$

#### **v. Invisibility Ratio**

An analysis of invisibility Ratios helps the investors to know about the performance of the company. Therefore following ratios have been calculated to rest earning capacity.

**a) Earning Per Share (EPS)**

This ratio is calculated dividing net profit after Taxes (EAT) by number of equity share outstanding. The profitability of a company from the point of view of ordinary share holders is the earning per share (EPS). EPS calculations made over years indicate whether or not the companies earnings power on per share has changed over that period. EPS shows the amount earning attributes to each equity share. If earning per share is high market price of the share may be increased in the market and vice versa. High ratio shows the sound profitability position of the components.

$$\text{Earning Per Share} = \frac{\text{Net Profit after tax}}{\text{Number of Share Outstanding}}$$

**b) Dividend Per Share (DPS)**

The dividend per share (DPS) is the per share earnings distributed to the shareholders. It can be calculated by following formula:

$$\text{Dividend per Share} = \frac{\text{Total Dividend Distributed}}{\text{Number of Share Outstanding}}$$

This ratio shows per rupee earnings actually distributed to common stockholders per share held by them. High ratio is favourable for the shareholders.

**c) Dividend Payout Ratio**

This Ratio is the ratio between dividends per share (DPS) to earning per share (EPS) is known as Dividend Payout Ratio. It can be computed by the following way.

$$\text{Dividend Payout Ratio} = \frac{\text{DPS}}{\text{EPS}}$$

It determines the portion of per share dividend paid out of per share earning. The higher ratio is better to the shareholders. It builds faithfulness of the company.

### 3.7.1.2. 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 researcher in order to draw liable financial consumptions from data available. The following statistical tools are used in this study for evaluating the performance of selected companies.

#### I. Arithmetic Mean

Arithmetic Mean (A.M) is the most commonly used of all the average. This is due to the simplicity of its calculation and other advantage.

It is used to calculate the average value of quantitative data closed end class intervals and when the distribution does not have very large and very small items. It is also used to obtained average value of distribution having closed ended class intervals and having non- extreme items. Arithmetic Mean of given set of observation is their sum divided by the number of observations. In general, if  $X_1, X_2, X_3, \dots, X_n$  are the given observations and  $N$  being number of observations, then arithmetic mean usually denoted by  $\bar{X}$  is given by:

$$\bar{X} = \frac{X_1 + X_2 + X_3 + \dots + X_n}{N} = \frac{\sum X}{N}$$

#### II. Coefficient of Variation (CV)

Coefficient of Variation is method of meaning risk. It is the standardized measure of the risk per unit of return. It is the percentage variance in the mean. Standard deviation being considered as the total variation in the mean. It is one of the relative measures of dispersion that is useful in comparing the amount of variation in data group with different mean. Coefficient of variation, denoted by CV is given by:

$$CV = \frac{\sigma}{X} \times 100\%$$



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

Comparing the variability of two distributions we compute the coefficient of variation for each distribution. A distribution with smaller CV is said to be more homogenous or uniform or less variable than other.

### III. Co-efficient of Correlation (r)

It is a Statistical tool for measuring the intensity of the magnitude of linear relationship between two series. Karl Pearson's correlation coefficient measures the degree of linear association between two variables. Let X and Y are two variables. Karl Pearson's Correlation coefficient between X and y is generally Denoted by  $r_{xy}$  or simply r only. It is also called Product Moment Correlation Coefficient or Simple Correlation Coefficient or simply a Correlation. It is defined as Follows:

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

Where,

N = Number of observation

$\sum X$  = Sum of observation in Series X

$\sum Y$  = Sum of observation in Series Y

$\sum X^2$  = Sum of squared observation in Series X

$\sum y^2$  = Sum of squared observation in Series Y

$\sum XY$  = Sum of the product of observation in Series X and Y

Values of r lies between -1 and +1,  $r = 1$  implies that there is a perfect correlation between the variables. The variables are said to be perfectly negatively correlated if  $r = -1$  and, perfectly positively correlated if  $r = +1$ . If  $r = 0$ , the variables are not correlated at all except other than in form of logarithm, quadratic or exponential.

#### **IV. Probable Error of Correlation Coefficient (PE)**

Probable Error of the Correlation Coefficient is an old measure of testing the reliability of an observed value of correlation coefficient. It is calculated to find the extent to which correlation coefficient depends upon the condition of random sample. Probable error of correlation coefficient denoted by PE(r) is obtained by:

$$E(r) = 0.6745 \times \frac{1-r^2}{\sqrt{N}}, \quad \text{Where, } \frac{1-r^2}{\sqrt{N}} = \text{Standard Error}$$

Reason for taking 0.6745 is that in a normal distribution, 50% of observations lie in the range  $p = \pm 0.6745$ .

PE is used to test if an observed value of sample correlation coefficient is significant of any correlation in the population. If  $r > 6 \text{ PE}$ , correlation is significant otherwise not.

#### **1.7.2. Tools for Primary Data Analysis**

The Chi- square ( $\chi^2$ ) test is designed to work with nominal data. It provides the researcher with a mathematical way of examining a classification table to see whether the arrangement of values within that table is unusual in some way. In performing this test, the mathematical process will be looking for a significant difference between the observed and expected frequencies. The Chi-square test involves a comparison of two or more responding groups (Wolf and Pant, 2005.287).

#### **3.8. Research Variables**

Profit and loss account, balance sheet, cash flow statement and time period are the main research variable of the study, these variables are measured in terms of various components of ratios hence the research Variables are mainly related with the financial statements of BPC and HPL.

## **CHAPTER IV**

### **PRESENTATION AND ANALYSIS OF DATA**

The secondary data collected have been analyzed and interpreted using financial and statistical tools following the research methodology dealt in the third chapter. In the part of analysis, various tables have been inserted in the required tables according to their homogenous nature. This chapter is divided into three sub heads as presentation of data from secondary sources, presentation of the data from Primary Sources and major findings of the study.

#### **4.1 Presentation and Analysis of Data From Secondary Sources**

This Section includes the data related with the study from secondary sources. Secondary sources mean the data of the private-public sectors hydropower companies derived from their annual reports, webpage and other already published sources. The presentation and analysis of these numerical dates include ratio analysis and correlation analysis.

##### **4.1.1 Liquidity Ratio**

It is a class of financial metrics that is used to determine a company's ability to pay off its short-terms debts obligations. If the value of the liquidity ratio increases, the margin of safety that the company possesses to cover short-term debts will also be increases. Liquidity Ratios are used to judge the company's ability to meet the short term obligations. These ratios involve the relationship between current Assets and Current Liabilities and measured by current ratio and quick ratio.

##### **a) Current Ratio**

The **current ratio** is a financial ratio that measures whether or not a firm has enough resources to pay its debts over the next 12 months. It compares a firm's current assets to its current liabilities. Current Ratio measures the

liquidity position of the company. The standard current ratio should be 2:1 and it is also defined by the nature of the company. The current ratio of different sampled years has been presented in the table: 4.1 below.

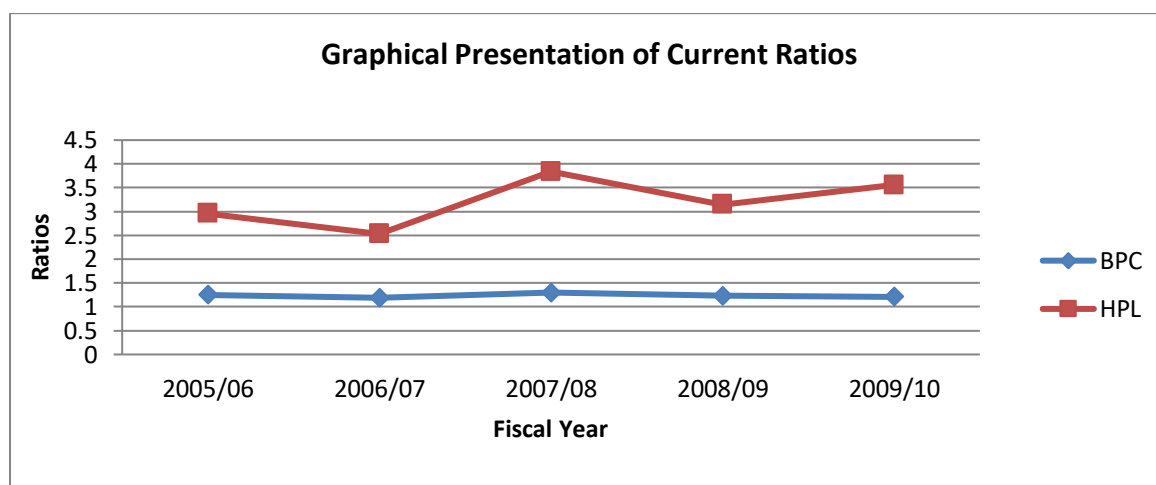
**Table :4.1**  
**Current Ratio**

In, 000)

| Fiscal Year                                     | Current Assets |          | Current Liabilities |         | Ratio (Times) |              |
|---|----------------|----------|---------------------|---------|---------------|--------------|
|   | BPC            | HPL      | BPC                 | HPL     | BPC           | HPL          |
| 2005/06   | 543,416        | 2326,983 | 433,619             | 784,873 | 1.25          | 2.96         |
| 2006/07   | 670,674        | 2230,147 | 562,584             | 881,517 | 1.19          | 2.53         |
| 2007/08   | 776,080        | 1703,231 | 595,871             | 443,000 | 1.30          | 3.84         |
| 2008/09   | 802,170        | 1948,538 | 651,272             | 618,249 | 1.23          | 3.15         |
| 2009/10   | 910,764        | 2260,835 | 752,500             | 635,669 | 1.21          | 3.56         |
| <b>Mean (<math>\bar{X}</math>)</b>              |                |          |                     |         | <b>1.24</b>   | <b>3.21</b>  |
| <b>Standard Deviation (<math>\sigma</math>)</b> |                |          |                     |         | <b>0.045</b>  | <b>0.46</b>  |
| <b>Coefficient of Variation (CV) %</b>          |                |          |                     |         | <b>3.64</b>   | <b>14.34</b> |

Sources: Annual Report of BPC &HPL (F/Y 2005/6-2009/10)

**Figure : 4.1**



The above table and figure shows the average mean of current ratio of BPC and HPL is 1.24 and 3.24 respectively. The current ratio of BPC is below the conventional standard 2.1 which suggests poor liquidity position. The figure

shows that the current ratio of BPC is stable in every year. Whereas , the current ratio of HPL is greater than the standard level 2.1(3.2>2.1). The CV of HPL is higher than that of BPC . The figure shows the current ratio of HPL is in slightly fluctuating trend.

#### b) Quick Ratio

The Quick Ratio is more accurate guide to measure the liquidity position of any company. Generally a quick ratio of 1:1 (Quick Assets equal to Current Liabilities) is considered satisfactory as it means a company can easily meet all current claims.

An indicator of a company's short-term liquidity the quick ratio measures a company's ability to meet its short-term obligations with its most liquid assets. The higher the quick ratio, the better the position of the company.

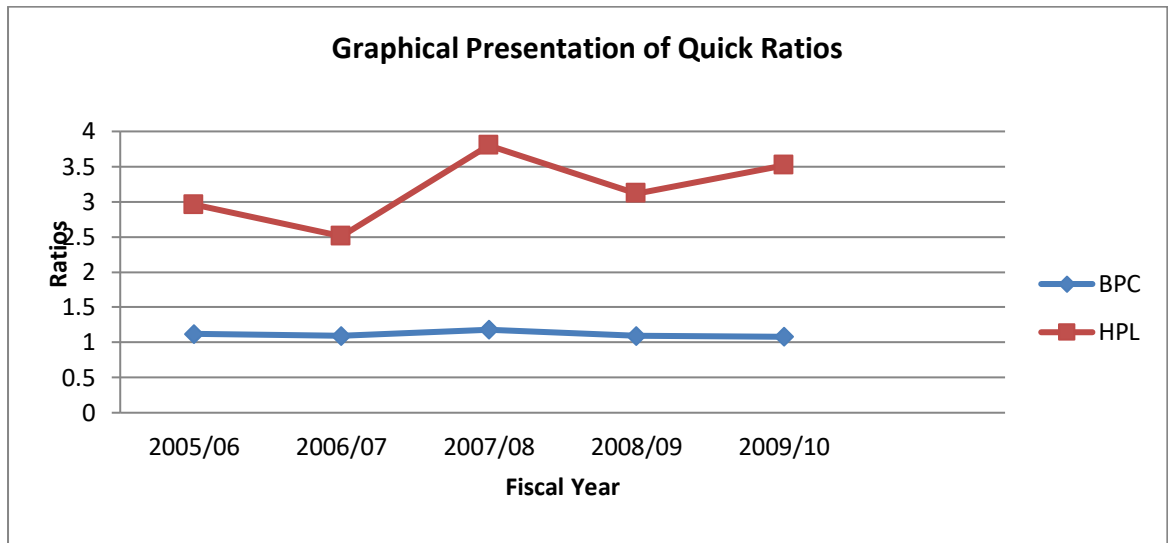
**Table :4.2**  
**Quick Ratio**

(In, 000)

| Fiscal Year                                     | Quick Assets |          | Current Liabilities |         | Ratio (Times) |              |
|---|--------------|----------|---------------------|---------|---------------|--------------|
|   | BPC          | HPL      | BPC                 | HPL     | BPC           | HPL          |
| 2005/06   | 485,793      | 2326,983 | 433,619             | 784,873 | 1.12          | 2.96         |
| 2006/07   | 611,778      | 2215,154 | 562,584             | 881,517 | 1.09          | 2.51         |
| 2007/08   | 701,432      | 1683,337 | 595,871             | 443,000 | 1.18          | 3.80         |
| 2008/09   | 709,447      | 1927,504 | 651,272             | 618,249 | 1.09          | 2.17         |
| 2009/10   | 813,341      | 2246,001 | <b>752,500</b>      | 635,669 | 1.08          | 4.94         |
| <b>Mean (<math>\bar{X}</math>)</b>              |              |          |                     |         | <b>1.112</b>  | <b>3.184</b> |
| <b>Standard Deviation (<math>\sigma</math>)</b> |              |          |                     |         | <b>0.045</b>  | <b>0.45</b>  |
| <b>Coefficient of Variation (CV) %</b>          |              |          |                     |         | <b>4.05</b>   | <b>14.13</b> |

Sources: Annual Report of BPC &HPL (F/Y 2005/6-2009/10)

**Figure : 4.2**



Above table reveals a satisfactory trend of quick ratio of BPC with a mean of 1.112. Similarly quick ratio of HPL reveals a fluctuating but satisfactory trend with a mean of 3.184. Standard deviation and CV of BPC is 0.045 and 4.05. In contrast Standard deviation and CV of HPL are 0.45 and 14.13 it means that risk of HPL is higher than BPC

The graphical presentation of quick ratios shows that the quick ratio of BPC experienced that the ratio are in decreasing trend . In contrast, the current ratio of HPL is increases drastically in F/Y2007/08.

#### **4.1.2 Activity/ Efficiency/ Assets Management Ratios**

Assets management Ratios are also known as turnover ratios or activity ratios or efficiency ratios. These ratios look at the amount of various types of assets and attempt to determine whether they are too high or too low at current operating levels. They provide the measure for how effectively the firm's assets are being managed. If too many funds are tied up in certain types of assets that could otherwise be employed more productively elsewhere, the firm is not as profitable as it should be. Following ratios are calculated to measure how efficiently a firm employs the assets.

**a) Fixed Assets Turnover Ratio**

Fixed Assets Turnover Ratio measures the efficiency with which the company is utilizing its investment in its various net fixed assets. Generally high fixed assets turnover ratio indicates efficient utilization of fixed assets while inefficiency in utilization is shown by low fixed assets turnover ratio.

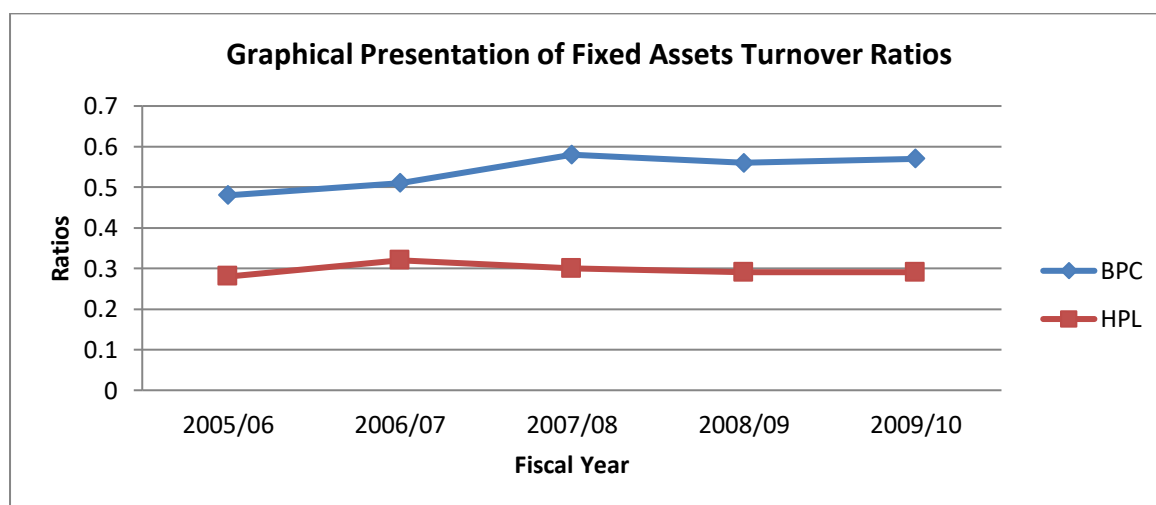
**Table: 4.3**  
**Fixed Assets Turnover Ratio**

(In, 000)

| Fiscal Year                                     | Sales   |          | Fixed Assets |          | Ratio (Times) |              |
|---|---------|----------|--------------|----------|---------------|--------------|
|   | BPC     | HPL      | BPC          | HPL      | BPC           | HPL          |
| 2005/06   | 358,419 | 2121,897 | 743,605      | 7551,062 | 0.48          | 0.28         |
| 2006/07   | 379,769 | 2307,461 | 743,893      | 7203,678 | 0.51          | 0.32         |
| 2007/08   | 421,687 | 2132,995 | 725,742      | 7002,613 | 0.58          | 0.30         |
| 2008/09   | 430,800 | 2104,124 | 765,339      | 7102,310 | 0.56          | 0.30         |
| 2009/10   | 455,441 | 2292,022 | 793,485      | 7302,677 | 0.57          | 0.29         |
| <b>Mean (<math>\bar{X}</math>)</b>              |         |          |              |          | <b>0.54</b>   | <b>0.30</b>  |
| <b>Standard Deviation (<math>\sigma</math>)</b> |         |          |              |          | <b>0.039</b>  | <b>0.014</b> |
| <b>Coefficient of Variation (CV) %</b>          |         |          |              |          | <b>7.2</b>    | <b>4.7</b>   |

Sources: Annual Report of BPC &HPL (F/Y 2005/06-2009/10)

**Figure : 4.3**



The above table shows that, Fixed Assets turnover ratio of BPC is in increasing trend. It is using its fixed assets quite adequately; generally an overall mean sale of Rs 0.54 out of each rupee invested in fixed assets. Similarly Fixed assets turnover ratio of HPL slightly decreases in the year 2008/09 than slightly increases in last year. Average mean sale of HPL is Rs 0.30 out of each rupee invested in fixed assets. CV of HPL is 4.7% which is less than the CV of BPC 7,20% thus the HPL is using its fixed assets quite adequately than BPC.

The graphical presentation of fixed assets turnover ratios shows that the FATOR of BPC is been increasing but decrease in the year 2008/09. In contrast, the FATOR of HPL slightly decreases in 2009/10 then slightly increases in last year.

#### b) Total Assets Turnover Ratio

Total Assets Turnover Ratio show the sales generated per rupee of investment in the total assets. Higher turnover ratios show efficiency in utilization of companies' scarce resources and vice versa.

**Table: 4.4**

#### **Total Assets Turnover Ratio**

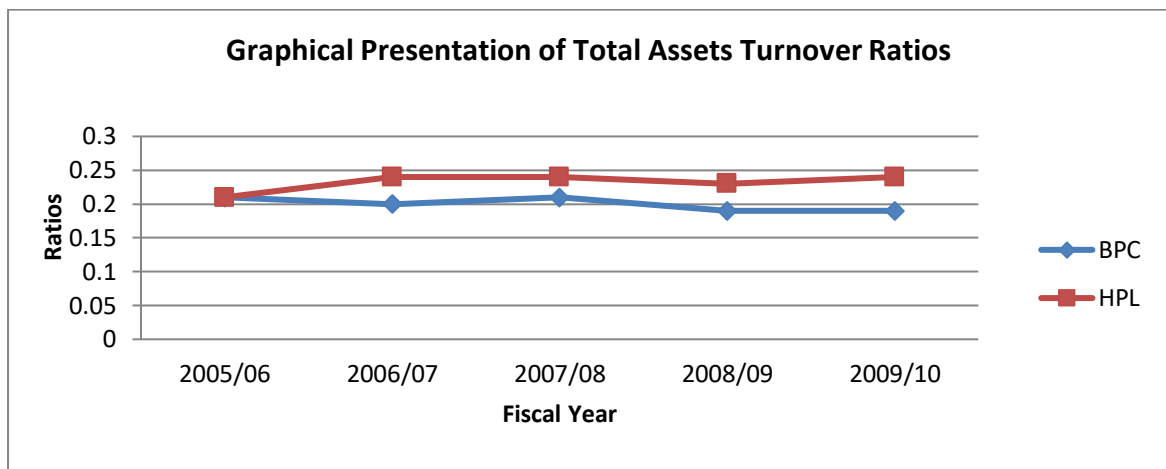
(In, 000)

| Fiscal Year                                     | Sales   |          | Total Assets |          | Ratio (Times) |              |
|---|---------|----------|--------------|----------|---------------|--------------|
|   | BPC     | HPL      | BPC          | HPL      | BPC           | HPL          |
| 2005/06   | 358,419 | 2121,897 | 1744,447     | 9897,922 | 0.21          | 0.21         |
| 2006/07   | 379,769 | 2307,461 | 1882,271     | 9454,424 | 0.20          | 0.24         |
| 2007/08   | 421,687 | 2132,995 | 1986,926     | 8728,710 | 0.21          | 0.24         |
| 2008/09   | 430,800 | 2104,124 | 2264,200     | 9072,314 | 0.19          | 0.23         |
| 2009/10   | 455,441 | 2292,022 | 2439,800     | 9583,878 | 0.19          | 0.24         |
| <b>Mean (X)</b>                                 |         |          |              |          | <b>0.20</b>   | <b>0.23</b>  |
| <b>Standard Deviation (<math>\sigma</math>)</b> |         |          |              |          | <b>0.0089</b> | <b>0.012</b> |
| <b>Coefficient of Variation (CV) %</b>          |         |          |              |          | <b>4.45</b>   | <b>5.17</b>  |

Sources: Annual Report of BPC &HPL (F/Y 2005/06-2009/10)



**Figure : 4.4**



Above table reveals a fluctuating and unsatisfactory trend of TATOR of BPC with a mean of 0.20. In contrast, HPL is better with TATOR mean of 0.23 than BPC. Since the CV of BPC 4.45% is less than C.V. of HPL 5.17% is less volatility. Considering the result of TATOR, it can be concluded that BPC is utilizing its current assets inefficiently or in other words, it has heavily invested in current assets. However, it also indicates that HPL possesses a weaker liquidity position when compared to BPC.

The graphical presentation of TOTARs shows that the TATOR of BPC experienced an increase in the F/Y 2007/08 then after decreases up to last year. In contrast, the TATOR of HPL has been increasing steadily.

**c) Debtors Turnover Ratio/ Receivable Turnover Ratio**

The Debtors Turnover Ratio specifies the amount of transaction with debtors within a specified time period. This ratio indicates the velocity of debt collection of a company. In other words, it indicates the number of times average debtors are turned over during a year. Generally, high Debtor's turnover is the indication of good receivable management. Debtor's turnover ratio is calculated by dividing sales by closing Debtors/ Receivable.

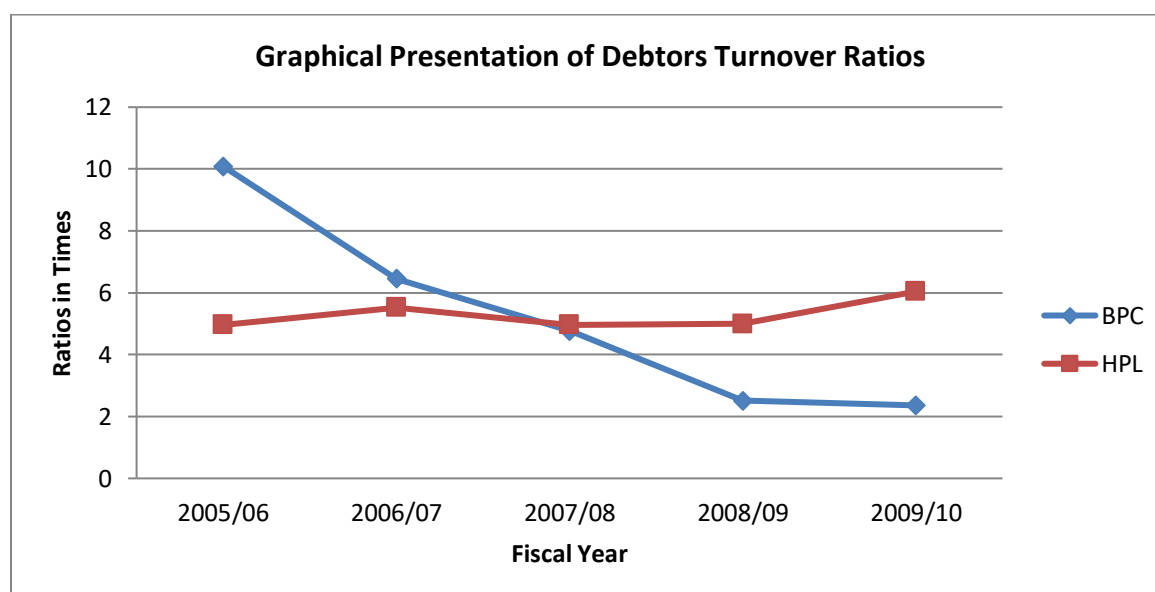
**Table: 4.5**  
**Debtor's Turnover Ratio**

(In, 000)

| Fiscal Year                                     | Sales   |          | Closing Debtors |         | Ratio (Times) |              |
|---|---------|----------|-----------------|---------|---------------|--------------|
|   | BPC     | HPL      | BPC             | HPL     | BPC           | HPL          |
| 2005/06   | 358,419 | 2121,897 | 35,512          | 428,146 | 10.09         | 4.96         |
| 2006/07   | 379,769 | 2307,461 | 58,918          | 417,834 | 6.45          | 5.52         |
| 2007/08   | 421,687 | 2132,995 | 88,407          | 430,109 | 4.77          | 4.96         |
| 2008/09   | 430,800 | 2104,124 | 171,359         | 420,834 | 2.51          | 4.99         |
| 2009/10   | 455,441 | 2292,022 | 193,256         | 406,854 | 2.36          | 5.63         |
| <b>Mean (<math>\bar{X}</math>)</b>              |         |          |                 |         | <b>5.236</b>  | <b>5.212</b> |
| <b>Standard Deviation (<math>\sigma</math>)</b> |         |          |                 |         | <b>2.86</b>   | <b>0.29</b>  |
| <b>Coefficient of Variation (CV) %</b>          |         |          |                 |         | <b>54.62</b>  | <b>5.56</b>  |

Sources: Annual Report of BPC &HPL (F/Y 2005/06-2009/10)

**Figure : 4.5**



Above table shows a fluctuating trend of DTR of BPC except last fiscal year and slightly is in increasing and decreasing trend of DTR of HPL. Due to considerably increased amount of debtors or receivable, The DTR of BPC have dropped to 2.36 after experiencing a high turnover last year.

The mean DTR of BPC is slightly higher than that of HPL but HPL seems to have a much stable trend of ratios with compared to BPC which is reflected by their corresponding standard deviation of ratios. The CV with respect to DTR of BPC and HPL are 54.62% and 5.63% respectively. The graphical presentation of DTRs shows that the DTR of BPC is experiencing rapid ups and downs through the study period. In contrast, the DTR of HPL has slightly decreases from first F/Y 2005/06 and then slightly increases in F/Y 2008/09 to F/Y 2009/10.

**d) Average Collection Period (ACP)**

The average Collection Period provides the average turnover day's receivable and outstanding the average times. It takes to convert them into cash. Short average collection period shows the timely payment of debt and long average collection period indicates inefficiency of the company in collection of receivables.

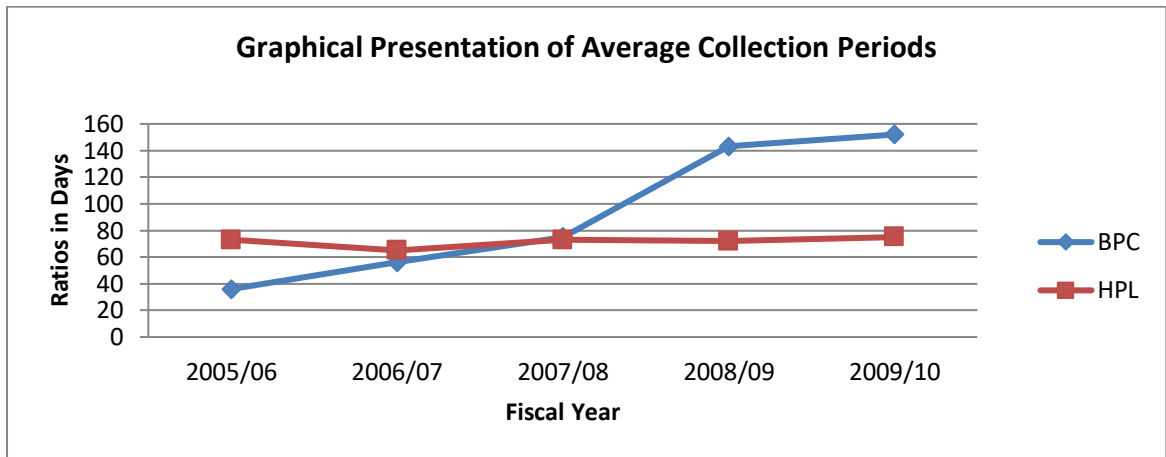
**Table :4.6**  
**Average Collection Period**

(In, 000)

| Fiscal Year                                     | Days in a Year | Debtors Turnover Ratio |      | Average Collection Period (Days) |              |
|---|----------------|------------------------|------|----------------------------------|--------------|
|   |                | BPC                    | HPL  | BPC                              | HPL          |
| 2005/06   | 360            | 10.09                  | 4.96 | 36                               | 73           |
| 2006/07   | 360            | 6.45                   | 5.52 | 56                               | 65           |
| 2007/08   | 360            | 4.77                   | 4.96 | 75                               | 73           |
| 2008/09   | 360            | 2.51                   | 4.99 | 143                              | 72           |
| 2009/10   | 360            | 2.36                   | 5.63 | 152                              | 64           |
| <b>Mean (<math>\bar{X}</math>)</b>              |                |                        |      | <b>92</b>                        | <b>69</b>    |
| <b>Standard Deviation (<math>\sigma</math>)</b> |                |                        |      | <b>47.52</b>                     | <b>8.46</b>  |
| <b>Coefficient of Variation (CV) %</b>          |                |                        |      | <b>51.65</b>                     | <b>12.26</b> |

Sources: Annual Report of BPC &HPL (F/Y 2005/06-2009/10)

**Figure : 4.6**



The above table shows a very fluctuating trend of ACP of BPC with a mean of 92 days. HPL is more efficient than BPC with a mean of 69 days. The CV of BPC and HPL are 51.65% & 12.26 % respectively.

The Graphical presentation of ACPs shows that ACP of BPC experienced rapid increase in F/Y 2008/09 up to last year. In Contrast, the ACP of HPL has slightly increasing or decreasing trend over the study period.

**e) Capital Employed Turnover Ratio**

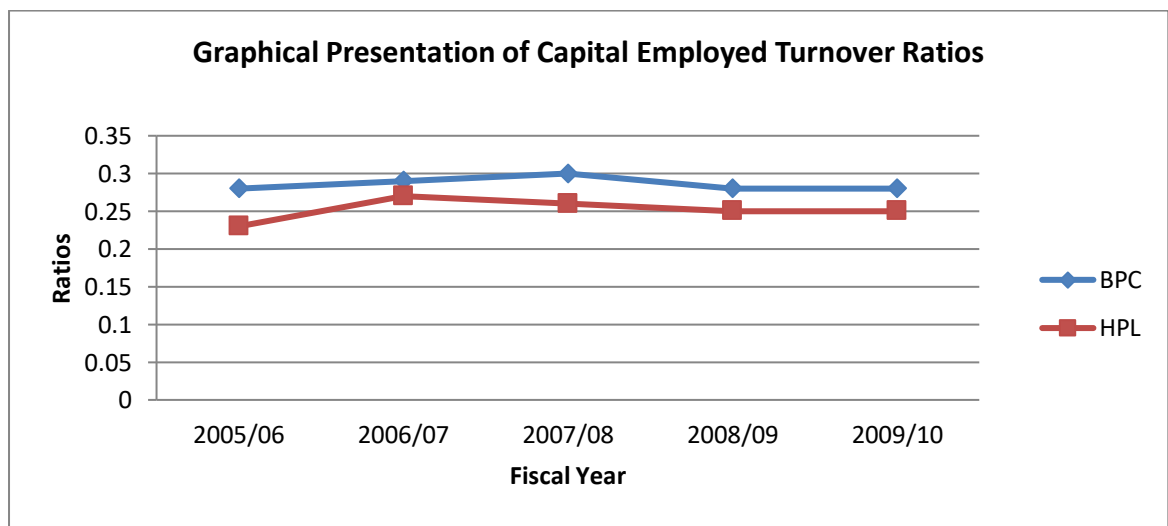
Capital employed is the amount entrusted by the owner and long term loan financiers to the firm. It includes the amount of owner's equity and debentures, bond and long-term loan. The amount of capital employed represents the net current assets and long term assets of the firm. Capital employed turnover ratio is calculated to know the effectiveness in utilizing the capital employed by dividing sales by capital employed. The high ratio indicates better utilization of capital employed resulting in high profit.

**Table: 4.7****Capital Employed Turnover Ratio**

(In, 000)

| Fiscal Year                                     | Sales   |          | Capital Employed |          | Ratio (Times) |              |
|---|---------|----------|------------------|----------|---------------|--------------|
|   | BPC     | HPL      | BPC              | HPL      | BPC           | HPL          |
| 2005/06   | 358,419 | 2121,897 | 1300,568         | 9113,048 | 0.28          | 0.23         |
| 2006/07   | 379,769 | 2307,461 | 1294,863         | 8572,907 | 0.29          | 0.27         |
| 2007/08   | 421,687 | 2132,995 | 1395,820         | 8285,711 | 0.30          | 0.26         |
| 2008/09   | 430,800 | 2104,124 | 1546,268         | 8454,065 | 0.28          | 0.25         |
| 2009/10   | 455,441 | 2292,022 | 1622,268         | 8948,209 | 0.28          | 0.26         |
| <b>Mean (<math>\bar{X}</math>)</b>              |         |          |                  |          | <b>0.286</b>  | <b>0.254</b> |
| <b>Standard Deviation (<math>\sigma</math>)</b> |         |          |                  |          | <b>0.01</b>   | <b>0.014</b> |
| <b>Coefficient of Variation (CV) %</b>          |         |          |                  |          | <b>3.49</b>   | <b>5.51</b>  |

Sources: Annual Report of BPC &amp;HPL (F/Y 2005/06-2009/10)

**Figure : 4.7**

The above table shows that the Capital Turnover ratio of BPC is in increasing trend upto F/Y 2007/08 and then stable in F/Y 2008/2009 to 2009/10 with an average mean of 0.286. In contrast the capital turnover ratio of HPL is decreases in F/Y 2008/09 and then slightly increased in last year with an

average mean of 0.254. Coefficient of variation of HPL is more (5.51) than BPC (3.49) because of low average mean. The Graphical presentation of Capital Employed ratios shows that capital employed ratio of BPC experience average all over the year of 2005 to 2009. In contrast, the Capital employed turnover ratio of HPL slightly increases or decreases throughout the study period.

#### 4.1.3 Profitability Ratio

Profitability Ratios measure the success of the company in earning a net return on sales or on investment. These ratios give the decision about how effectively the company is being managed. It is true that higher the profitability ratios better the financial position and vice versa.

##### a) Net Profit Margin

The Net Profit margin is the Ratio between Net income and sales of a firm. It shows the firm's ability to generate net income per rupee of sales.

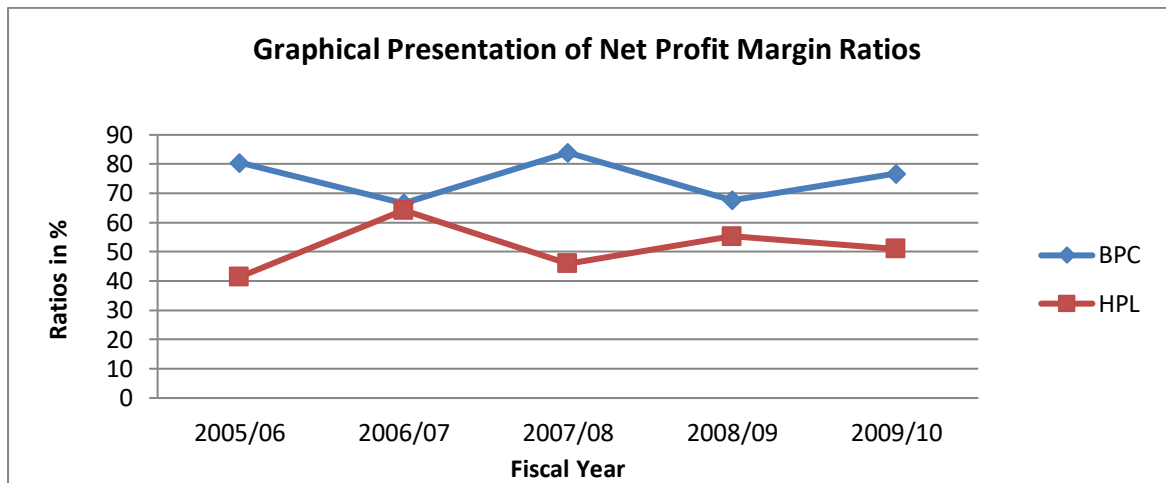
**Table: 4.8:**  
**Net Profit Margin**

(In, 000)

| Fiscal Year                                     | Net Profit After Tax |          | Sales   |          | Ratio %      |              |
|---|----------------------|----------|---------|----------|--------------|--------------|
|   | BPC                  | HPL      | BPC     | HPL      | BPC          | HPL          |
| 2005/06   | 288,419              | 878,986  | 358,419 | 2121,897 | 80.47        | 41.42        |
| 2006/07   | 252,840              | 1482,560 | 379,769 | 2307,461 | 66.58        | 64.25        |
| 2007/08   | 353,879              | 981,533  | 421,687 | 2132,995 | 83.92        | 46.02        |
| 2008/09   | 291,592              | 1162,551 | 430,800 | 2104,124 | 67.69        | 55.25        |
| 2009/10   | 349,485              | 1169,916 | 455,441 | 2292,022 | 76.73        | 51.04        |
| <b>Mean (<math>\bar{X}</math>)</b>              |                      |          |         |          | <b>75.07</b> | <b>51.59</b> |
| <b>Standard Deviation (<math>\sigma</math>)</b> |                      |          |         |          | <b>6.97</b>  | <b>7.89</b>  |
| <b>Coefficient of Variation (CV) %</b>          |                      |          |         |          | <b>9.28</b>  | <b>15.29</b> |

Sources: Annual Report of BPC &HPL (F/Y 2005/06-2009/10)

Figure : 4.8



Above table reveals a fluctuating trend of BPC. With an overall mean ratio of 75.07%. In contrast, NPR of HPL is in increasing or decreasing trend over study period but stable then BPC. Similarly mean of HPL is not better 51.59%. The CV with respect to NPR of BPC and HPL are 9.28% and 15.29% respectively.

Similarly the figure of NPR shows that after experiencing a massive increase in F/Y 2006/07 and rapid fall down the following year up to 2008/09, the NPR of BPC since then, has been experiencing ups and downs in its NPR to a range of 20% at 2009/10. In contrast, the NPR of HPL decreases and increases in its NPR to a range of 4 to 18%.

### b) Operating Profit Ratio

Operating Profit Ratio expresses the relationship between operating profits and is usually expressed in percentage. The operating profit should adequate to cover operating expenses and to provide fixed charges, to pay dividend and build up reserves, operating profit ratio is calculated by dividing operating profit by net sales as follows.

Operating Profit Ratio of BPC and HPL for different sampled years has been presented in the table below:

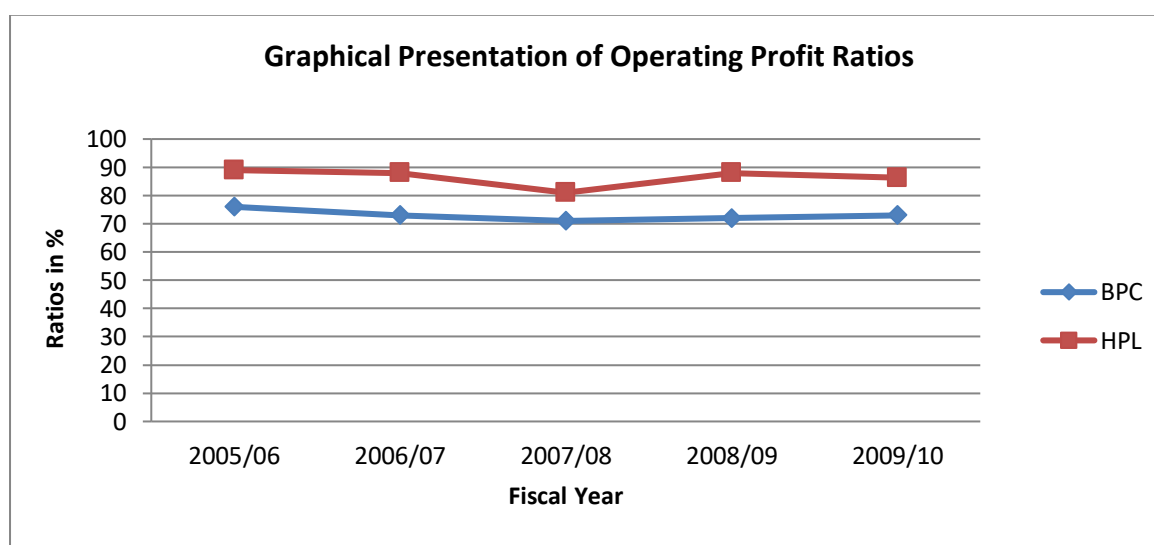
**Table : 4.9**  
**Calculation of Operating Profit Ratio**

(In, 000)

| Fiscal Year                                     | Operating Profit |          | Sales   |          | Ratio %     |              |
|---|------------------|----------|---------|----------|-------------|--------------|
|   | BPC              | HPL      | BPC     | HPL      | BPC         | HPL          |
| 2005/06   | 272,809          | 1895,080 | 358,419 | 2121,897 | 76.00       | 89.00        |
| 2006/07   | 276,296          | 2033,076 | 379,769 | 2307,461 | 73.00       | 88.00        |
| 2007/08   | 299,046          | 1736,457 | 421,687 | 2132,995 | 71.00       | 81.00        |
| 2008/09   | 310,800          | 1843,544 | 430,800 | 2104,124 | 72.00       | 88.00        |
| 2009/10   | 333,281          | 1989,806 | 455,441 | 2292,022 | 73.00       | 86.00        |
| <b>Mean (<math>\bar{X}</math>)</b>              |                  |          |         |          | <b>73</b>   | <b>86</b>    |
| <b>Standard Deviation (<math>\sigma</math>)</b> |                  |          |         |          | <b>1.67</b> | <b>8.78</b>  |
| <b>Coefficient of Variation (CV) %</b>          |                  |          |         |          | <b>2.29</b> | <b>10.21</b> |

Sources: Annual Report of BPC &HPL (F/Y 2005/06-2009/10)

**Figure : 4.9**



Above table shows that the operating Profit Ratio of BPC is stable over the study period with a mean ratio of 73%. Similarly the operating profit ratio of HPL is better and stable, slightly increasing or decreasing trend over the study period with a mean ratio of 86%. CV of BPC and HPL are 2.29% and 10.21% respectively.



The operating profit ratio of BPC and HPL seems to be better. Generally a 40% ratio is supposed good which both companies possess.

The Graphical presentation of operating profit ratios shows that operating profit ratio of BPC has normally drop in F/Y 2007/08 and then increases. Similarly, operating profit ratios of HPL is in slightly increasing and decreasing trend over the study period.

### c) Operating Expenses Ratio (OER)

Operating Expenses Ratio is the yardstick of operating efficiency. The calculation of this ratio comprises computation of all operating cost of goods sold and general administrative expenses. In general higher operating ratio is inefficient due to higher operation cost in terms of sales. Lower operating ratio is favourable, as it will generate higher operating income, which will be sufficient to meet interest, dividend and other expenses of the company.

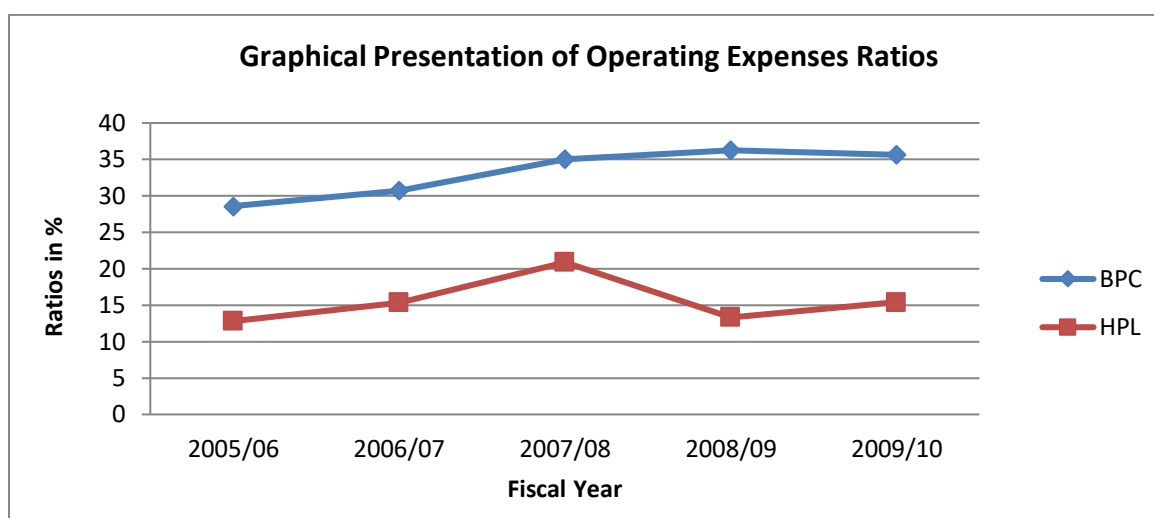
**Table : 4.10**  
**Operating Expenses Ratio**

(In, 000)

| Fiscal Year                                     | Operating Expenses |         | Sales   |          | Ratio %      |              |
|---|--------------------|---------|---------|----------|--------------|--------------|
|   | BPC                | HPL     | BPC     | HPL      | BPC          | HPL          |
| 2005/06   | 102,461            | 271,626 | 358,419 | 2121,897 | 28.59        | 12.80        |
| 2006/07   | 116,642            | 353,751 | 379,769 | 2307,461 | 30.71        | 15.33        |
| 2007/08   | 147,685            | 445,106 | 421,687 | 2132,995 | 35.02        | 20.87        |
| 2008/09   | 156,148            | 280,733 | 430,800 | 2104,124 | 36.25        | 13.34        |
| 2009/10   | 162,310            | 352,761 | 455,441 | 2292,022 | 35.64        | 15.39        |
| <b>Mean (<math>\bar{X}</math>)</b>              |                    |         |         |          | <b>33.24</b> | <b>15.55</b> |
| <b>Standard Deviation (<math>\sigma</math>)</b> |                    |         |         |          | <b>3.05</b>  | <b>2.84</b>  |
| <b>Coefficient of Variation (CV) %</b>          |                    |         |         |          | <b>9.18</b>  | <b>18.26</b> |

Sources: Annual Report of BPC &HPL (F/Y 2005/06-2009/10)

**Figure : 4.10**



Above table shows a fluctuating trend of Operating Expenses Ratio of BPC with a mean ratio of 33.24%. In Contrast, HPL is maintaining an admirably low and consistent trend of OER with a mean ratio of 15.55% and CV of 18.26%. These ratios indicate that BPC has considerably high operating costs with compared to HPL. The rate of fluctuation in ratios is also high in BPC with a CV of 9.18%.

The graphical presentation of OERs of HPL shows a huge increase in F/Y 2007/08 and then dropped massively the following year and since, then it has been experiencing little bit up in its OER. In contrast, the OER of BPC has increased.

**c) Return On Total Assets (ROTA)**

Return on Total Assets (ROTA) which is often called the firm's return on total assets, measure the overall effectiveness of management in generating profit with its available assets. The higher the firms return on assets the better it is doing in operation and vice versa.

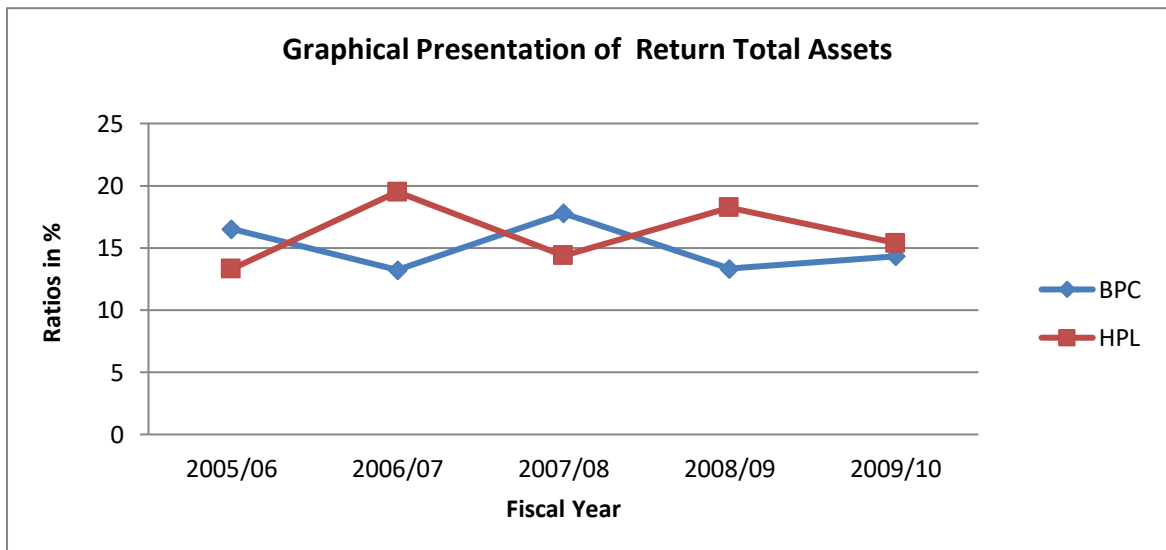
**Table: 4.11**  
**Return on Total Assets Ratio**

(In, 000)

| Fiscal Year                                     | Net Profit + Interest |          | Total Assets |          | Ratio %      |              |
|---|-----------------------|----------|--------------|----------|--------------|--------------|
|   | BPC                   | HPL      | BPC          | HPL      | BPC          | HPL          |
| 2005/06   | 288,419               | 1315,243 | 1744,447     | 9897,922 | 16.53        | 13.29        |
| 2006/07   | 252,840               | 1843,439 | 1882,271     | 9454,424 | 13.43        | 19.50        |
| 2007/08   | 353,879               | 1255,597 | 1991,691     | 8728,710 | 17.77        | 14.38        |
| 2008/09   | 299,505               | 1655,154 | 2264,200     | 9072,314 | 13.23        | 18.24        |
| 2009/10   | 349,485               | 1490,828 | 2439,800     | 9583,878 | 14.32        | 15.56        |
| <b>Mean (<math>\bar{X}</math>)</b>              |                       |          |              |          | <b>15.06</b> | <b>16.19</b> |
| <b>Standard Deviation (<math>\sigma</math>)</b> |                       |          |              |          | <b>1.76</b>  | <b>2.36</b>  |
| <b>Coefficient of Variation (CV) %</b>          |                       |          |              |          | <b>11.69</b> | <b>14.58</b> |

Sources: Annual Report of BPC &HPL (F/Y 2005/06-2009/10)

**Figure : 4.11**



Above table reveals a fluctuating trend of ROTA of BPC with a mean ratio of 15.06%. BPC does not carry loan burden therefore does not include interest calculation while computing ROTA. ROTA has been satisfactory. The overall mean is HPL is 16.19 ROTA of HPL has slightly increased in one year then

slightly decreased in another year, CV of HPL & BPC are 14.58%,11.69 respectively BPC.

The Graphical presentation of ROTA ratios shows that the ROTA of BPC dropped in F/Y 2006/07 however it recovered profusely the following year. The ROE of BPC is experiencing small ups and downs in ROTA. In contrast, the ROTA of HPL is been slightly increased or decreased over 5 year study period.

#### e) Return on Shareholders' Equity (ROSHE)

Return on Shareholders' Equity measures the return earned by the shareholder's i.e. owners of the company. To analyze whether the company been able to provide higher return on investment to the owner or not, this ratio necessary. Higher ROE is Favourable as it indicates higher return for shareholders at each rupee of investment.

**Table : 4.12**

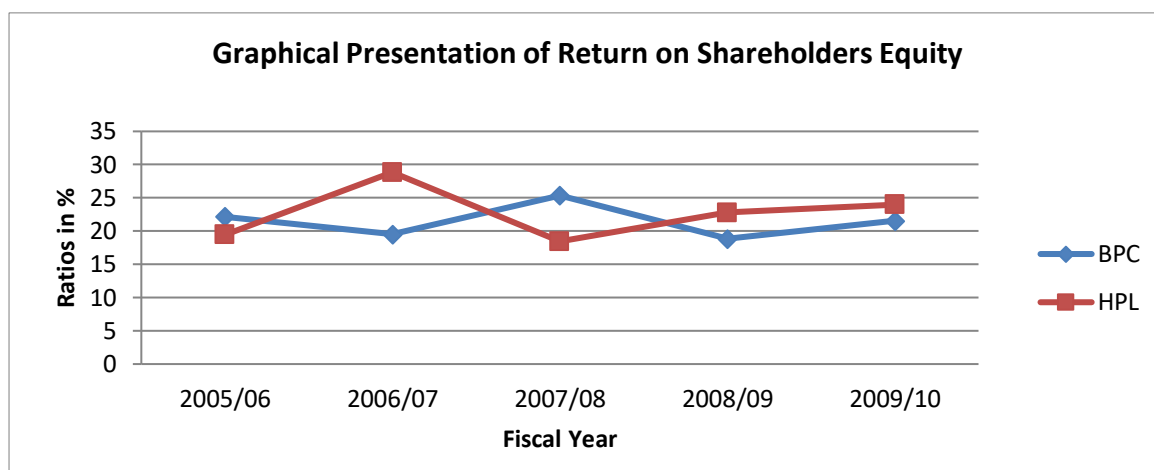
#### **Return on Shareholders' Equity**

(In, 000)

| Fiscal Year                                     | Net Profit After Tax |          | Shareholders' Equity |          | Ratio %      |              |
|---|----------------------|----------|----------------------|----------|--------------|--------------|
|   | BPC                  | HPL      | BPC                  | HPL      | BPC          | HPL          |
| 2005/06   | 288,419              | 878,986  | 1300,568             | 4514,727 | 22.18        | 19.47        |
| 2006/07   | 252,840              | 1482,560 | 1294,863             | 5140,056 | 19.53        | 28.84        |
| 2007/08   | 353,879              | 981,533  | 1395,820             | 5317,483 | 25.35        | 18.46        |
| 2008/09   | 291,592              | 1162,551 | 1546,268             | 5106,244 | 18.86        | 22.77        |
| 2009/10   | 349,485              | 1169,916 | 1622,268             | 4869,977 | 21.54        | 24.02        |
| <b>Mean (<math>\bar{X}</math>)</b>              |                      |          |                      |          | <b>21.49</b> | <b>22.71</b> |
| <b>Standard Deviation (<math>\sigma</math>)</b> |                      |          |                      |          | <b>2.30</b>  | <b>3.69</b>  |
| <b>Coefficient of Variation (CV) %</b>          |                      |          |                      |          | <b>10.73</b> | <b>16.25</b> |

Sources: Annual Report of BPC &HPL (F/Y 2005/06-2009/10)

**Figure : 4.12**



Above table reveals a fluctuating trend of BPC with a mean ratio of 21.49% and CV 10.73%. However, in every year the ROE has been satisfactory revolving around 20%. In Contrast, HPL has maintained considerable higher trend of ROE with an overall mean ratio of 22.71% and CV of 16.25%. BPC with a lower mean ratio of ROE and lower CV of ratios proves to be attractive than HPL to shareholders. The Graphical Presentation of ROE ratios shows that the ROE of BPC dropped in F/Y 2006/07, however it recovered profusely the following year and at last year BPC has maintain higher ROE. Similarly ROE of HPL has increased in F/Y 2006/07 and then drop in F/Y 2007/08 but HPL has maintained higher ROE than BPC.

#### **4.1.4 Leverage/ Capital Structure Ratios**

Leverage Ratio also called as Capital Structure Ratios are calculated to judge the long term financial position of the company. This ratio indicates the mix of fund provided by owners and lenders.

##### **a) Debt-Equity Ratio (D/E Ratio)**

Debt to shareholders Equity is calculated dividing total debts by Total Shareholders' equity. This ratio shows the relationship between debt and equity capital.

**b) Debt-To Total Assets Ratio (DTAR)**

Debt to Total Assets Ratio is calculated dividing total debt by total assets. This ratio shows the relationship between debt capital and total assets.

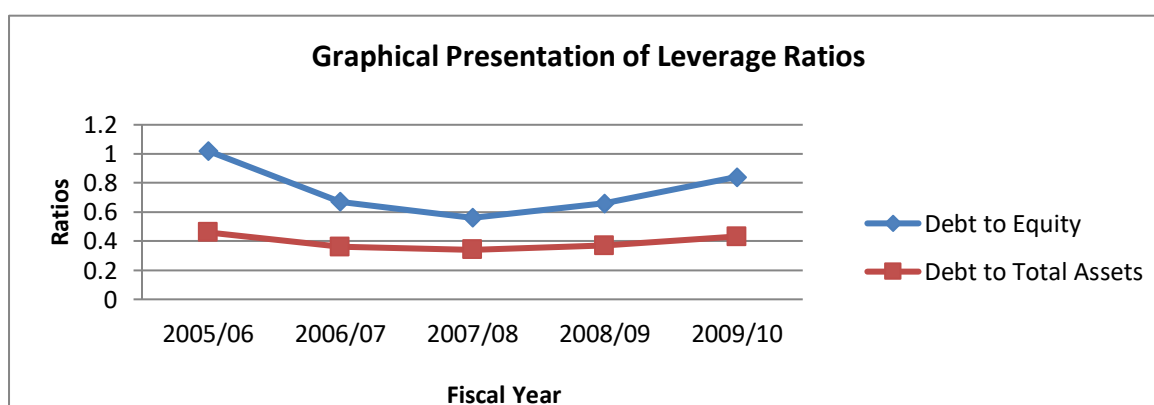
**Table :4.13**  
**Leverage Ratios**

(In ,000)

| Fiscal Year                                     | Total Debt Of HPL | Shareholders Equity of HPL | Total Assets Of HPL | Leverage Ratios Of HPL |                      |
|---|-------------------|----------------------------|---------------------|------------------------|----------------------|
|   |                   |                            |                     | Debt to Equity         | Debt to Total Assets |
| 2005/06   | 4598,322          | 4514,727                   | 9897,922            | 1.02                   | 0.46                 |
| 2006/07   | 3432,851          | 5140,056                   | 9454,424            | 0.67                   | 0.36                 |
| 2007/08   | 2968,227          | 5317,483                   | 8728,710            | 0.56                   | 0.34                 |
| 2008/09   | 3347,821          | 5106,244                   | 9072,314            | 0.66                   | 0.37                 |
| 2009/10   | 4078,232          | 4869,977                   | 9583,878            | 0.84                   | 0.43                 |
| <b>Mean(<math>\bar{X}</math>)</b>               |                   |                            |                     | <b>0.75</b>            | <b>0.39</b>          |
| <b>Standard Deviation (<math>\sigma</math>)</b> |                   |                            |                     | <b>0.16</b>            | <b>0.063</b>         |
| <b>Coefficient of Variation (CV) %</b>          |                   |                            |                     | <b>21.33</b>           | <b>16.15</b>         |

Sources: Annual Report of HPL (F/Y 2005/06-2009/10)

**Figure : 4.13**



The above table shows the average mean of Debt to equity and debt to total assets of HPL are 0.75 and 0.39 respectively. There is decreasing trend of

Leverage ratios. The debt to total assets ratio has been slightly increased from F/Y 2007/08 to last year. The CV of debt to equity is 21.33% and that of debt to total assets is 16.15%. The Graphical presentation of leverage shows that the leverage ratios of HPL is been decreasing gradually through study period.

#### 4.1.5 Invisibility Ratio

An analysis of invisibility ratios helps the investors to know about the performance of the company. Therefore following ratios have been calculated to rest earning capacity.

##### a) Earnings Per Share (EPS)

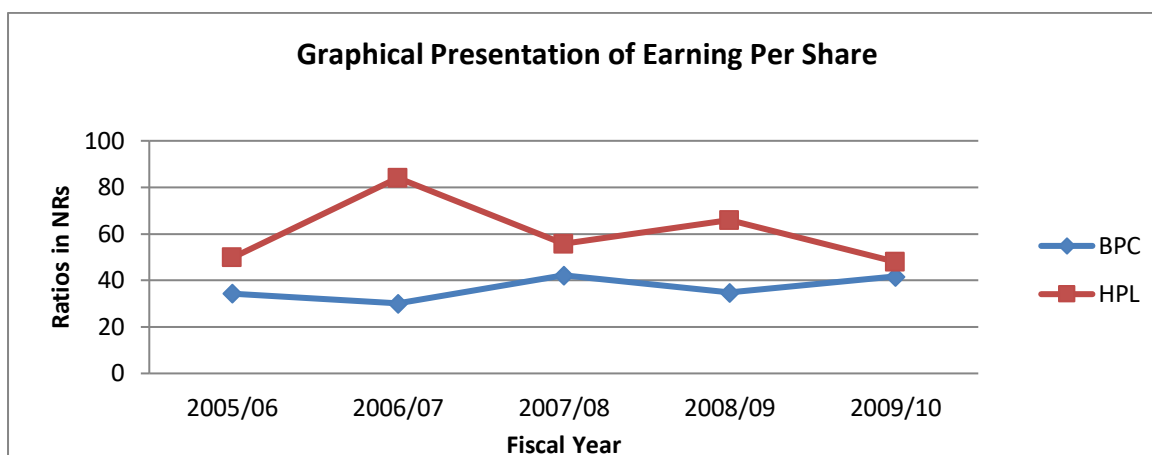
This ratio is calculated dividing net profit after tax by number of equity share outstanding. The profitability of a company from the point of view of ordinary share holders is the earning per share (EPS). EPS calculations made over years indicate whether or not the companies earning power on per share has changed over that period. EPS shows the amount of earning attributes to each equity share. If earning per share is high market price of the share may be increased in the market and vice versa. High ratio shows the sound profitability of the components

**Table: 4.14**  
**Earnings per Share**

| Fiscal Year                                     | Earnings After Tax |              | No of Equity Share |           | Rs           |              |
|---|--------------------|--------------|--------------------|-----------|--------------|--------------|
|   | BPC                | HPL          | BPC                | HPL       | BPC          | HPL          |
| 2005/06   | 288,418,689        | 878,985,535  | 8390,580           | 17641,439 | 34.37        | 49.82        |
| 2006/07   | 252,839,960        | 1482,560,083 | 8390,580           | 17641,439 | 30.13        | 84.04        |
| 2007/08   | 353,879,380        | 981,532,807  | 8390,580           | 17641,439 | 42.18        | 55.64        |
| 2008/09   | 291,592,180        | 1162,551,021 | 8390,580           | 17641,439 | 34.75        | 65.89        |
| 2009/10   | 349,485,480        | 1169,916,025 | 8390,580           | 17641,439 | 41.65        | 66.32        |
| <b>Mean (<math>\bar{X}</math>)</b>              |                    |              |                    |           | <b>36.62</b> | <b>64.34</b> |
| <b>Standard Deviation (<math>\sigma</math>)</b> |                    |              |                    |           | <b>4.59</b>  | <b>11.68</b> |
| <b>Coefficient of Variation (CV) %</b>          |                    |              |                    |           | <b>12.54</b> | <b>18.15</b> |

Sources: Annual Report of BPC & HPL (F/Y 2005/06-2009/10)

**Figure : 4.14**



We can find huge difference between the fluctuating trends of EPS of BPC and HPL. While BPC is yielding a satisfactory mean EPS of Rs 36.62. HPL is yielding on better mean EPS of Rs 64.34. The EPS of BPC has also been much better revolving around of Rs 30. HPL has less Variability in ratios, because of its High EPS. The CV with respect to EPS of BPC and HPL are 12.54% and 18.15% respectively. The Graphical presentation of EPS ratios shows that the EPS of BPC dropped in F/Y 2006/07. However it recovered profusely the following year and falls rapidly in next year and then increase in last year of study. In contrast, the EPS of HPL has been experiencing bigger ups and downs since F/Y 2006/07 in its EPS.

**b) Dividend Per Share (DPS)**

The Dividend per Share (DPS) is the per share earnings distributed to the shareholders. It can be calculated total Dividend Distributed divided by No of share outstanding. This ratio shows per rupee earnings actually distributed to common stock holders per share held by them. High ratio is favourable for the Shareholders.

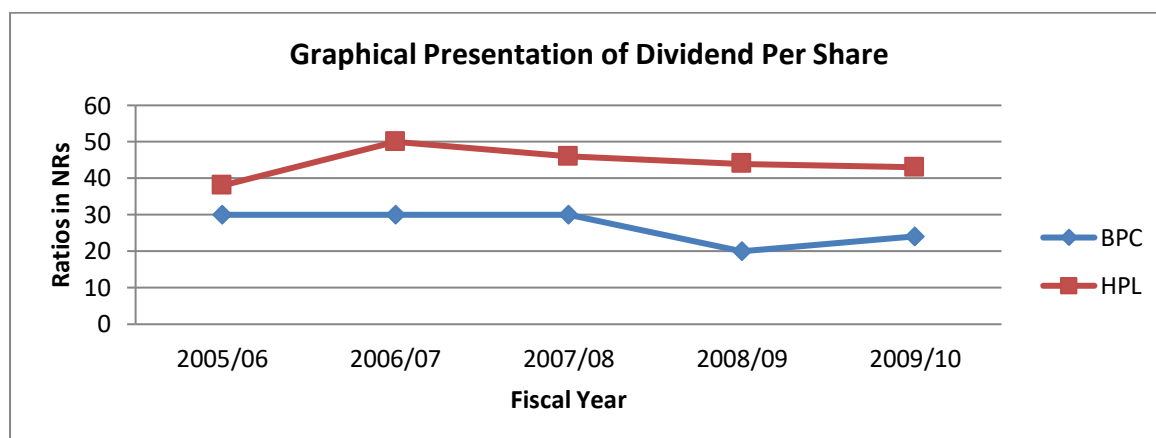


**Table 4:15**  
**Calculation of Dividend per Share**

| Fiscal Year                                     | Total Distributed dividend |             | No of Equity Share |           | Rs           |             |
|---|----------------------------|-------------|--------------------|-----------|--------------|-------------|
|   | BPC                        | HPL         | BPC                | HPL       | BPC          | HPL         |
| 2005/06   | 251,718,000                | 666,265,000 | 8390,580           | 17641,439 | 30           | 38          |
| 2006/07   | 251,635,000                | 887,760,000 | 8390,580           | 17641,439 | 30           | 50          |
| 2007/08   | 251,717,300                | 804,105,000 | 8390,580           | 17641,439 | 30           | 46          |
| 2008/09   | 167,811,000                | 778,035,000 | 8390,580           | 17641,439 | 20           | 44          |
| 2009/10   | 197,721,400                | 819,776,000 | 8390,580           | 17641,439 | 24           | 46          |
| <b>Mean (<math>\bar{X}</math>)</b>              |                            |             |                    |           | <b>26.8</b>  | <b>44.8</b> |
| <b>Standard Deviation (<math>\sigma</math>)</b> |                            |             |                    |           | <b>4.12</b>  | <b>3.92</b> |
| <b>Coefficient of Variation (CV) %</b>          |                            |             |                    |           | <b>15.37</b> | <b>8.75</b> |

Sources: Annual Report of BPC &HPL (F/Y 2005/06-2009/10)

**Figure : 4.15**



Above table reveals that DPS of BPC of first 3 years is constant i.e. Rs 30. In Contrast, the DPS of HPL is increasing trend except F/Y 2008/09 . DPS of HPL is better than BPC. The Mean DPS of BPC and HPL are Rs 26.80 and Rs 44.80 respectively. The CV with respect to DPS of BPC and HPL are 15.37% and 8.75% respectively which indicates high fluctuations in DPS of BPC rather than HPL. The graphical presentation of DPS ratios shows that BPC have been experiencing constant up to F/Y 2007/08 and then decreases. In contrast DPS

ratios of HPL has stable and increasing trend from starting study period and slightly decreased in F/Y 2009/10.

c) **Dividend Payout Ratio (DPR)**

This ratio is the ratio between Dividends per Share (DPS) to Earning per Share (EPS) is known as Dividend Payout Ratio. It determines the portion of per share dividend paid out of per share earning. The higher ratio is better to the share holders. It builds faithfulness of the company.

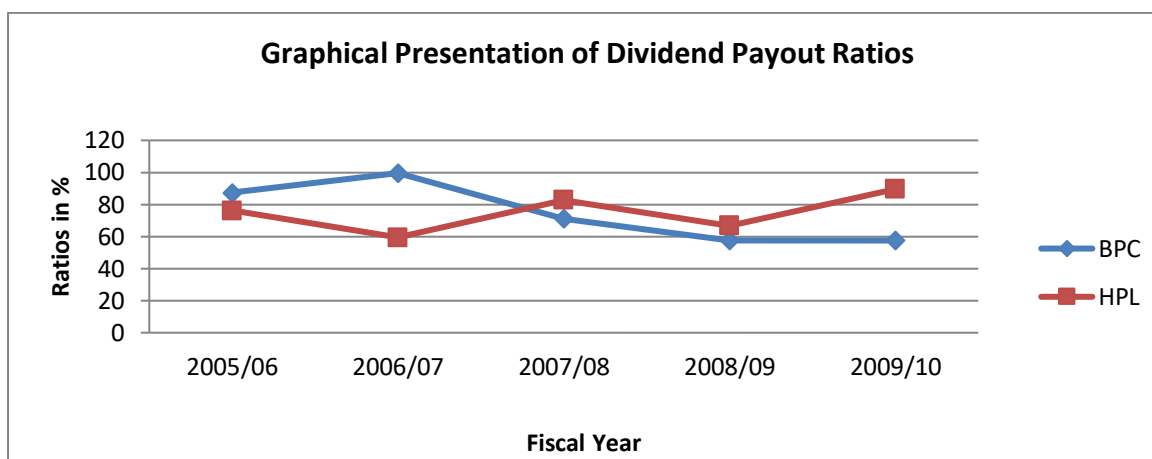
**Table : 4.16**  
**Calculation of Dividend Payout Ratio**

| Fiscal Year                                     | Dividend Per Share |     | Earning Per Share |       | Ratios %     |              |
|---|--------------------|-----|-------------------|-------|--------------|--------------|
|   | BPC                | HPL | BPC               | HPL   | BPC          | HPL          |
| 2005/06   | 30                 | 38  | 34.37             | 49.82 | 87.29        | 76.27        |
| 2006/07   | 30                 | 50  | 30.13             | 84.04 | 99.57        | 59.50        |
| 2007/08   | 30                 | 46  | 42.18             | 55.64 | 71.12        | 82.67        |
| 2008/09   | 20                 | 44  | 34.75             | 65.89 | 57.55        | 66.78        |
| 2009/10   | 24                 | 46  | 41.65             | 66.32 | 57.62        | 69.36        |
| <b>Mean (<math>\bar{X}</math>)</b>              |                    |     |                   |       | <b>74.63</b> | <b>70.92</b> |
| <b>Standard Deviation (<math>\sigma</math>)</b> |                    |     |                   |       | <b>16.59</b> | <b>28.55</b> |
| <b>Coefficient of Variation (CV) %</b>          |                    |     |                   |       | <b>22.23</b> | <b>40.26</b> |

*Sources: Annual Report of BPC &HPL (F/Y 2005/06-2009/10)*

Above table reveals fluctuating trend of DPR of both Companies but higher in BPC. The DPR of F/Y 2005/06, 2006/07 has been much luring to the investors of BPC. In contrast, HPL shows the lower DPR than BPC but it has stable compared then BPC. The CV with respect to DPR of BPC and HPL are 22.23% and 40.26%. Due to high fluctuation, CV of HPL is higher than BPC.

**Figure : 4.16**



The Graphical presentation of DPR ratios shows that HPL has been experiencing highly fluctuating DPR through the study period. The DPR ratio of BPC has been decreasing till last year.

#### **4.1.6 Correlation Analysis**

Karl person’s coefficient of correlation is most widely used in practice to measure the degree of relationship between two variables of the company. So, it measured by using the following formula.

#### **I. Correlation Between Total Sales and Total Assets**

The coefficient of Correlation between total sales and total Assets of both companies for the different sampled years has been calculated in Appendix A.

**Table: 4.17**

#### **Relation between Total Sales and Total Assets**

| <b>Particulars</b>   | <b>BPC</b> | <b>HPL</b> |
|----------------------|------------|------------|
| Correlation (r)      | 0.947      | 0.322      |
| Probable Error (P.E) | 0.0311     | 0.270      |
| 6 P.E                | 0.187      | 1.62       |

The coefficient of correlation between Sales (X) and Total Assets (Y) of BPC and HPL came to be 0.947 and 0.322 respectively. This suggests that two variables have positive relation to each other in BPC and HPL.

However, coefficient of correlation in BPC appeared more than 6 times of PE i.e.  $0.947 > 6 \times 0.0311$  which implies that the relation between sales and total assets is positive at significant level. But coefficient of correlation in HPL appeared less than 6 times of PE i.e.  $0.322 < 6 \times 0.270$ , which implies that the relation between sales and total assets is not at significant level.

## II. Correlation Between Total Sales and Net Profit After Tax

The coefficient of correlation between Total Sales and Net profit after Tax of both companies for different sampled years has been calculated in Appendix A.

**Table: 4.18**

### **Relation between Total Sales and Net Profit after Tax**

| <b>Particular</b>    | <b>BPC</b> | <b>HPL</b> |
|----------------------|------------|------------|
| Correlation (r)      | 0.696      | 0.744      |
| Probable Error (P.E) | 0.155      | 0.135      |
| 6 P.E                | 0.93       | 0.81       |

The Coefficient of Correlation between Sales (X) and Net Profit after Tax (Y) of BPC and HPL to 0.696 and 0.744 respectively, this suggests that the two variables have positive relation to each other.

Coefficient of Correlation in BPC appeared less than 6 times of PE i.e.  $0.696 < 6 \times 0.155$  which implies that the relation between sales and net profit after tax is positive but not at significant level. Similarly, Coefficient of Correlation in HPL also appeared less than 6 times of PE i.e.  $0.744 < 6 \times 0.135$  which implies that the relation between sales and net profit after tax is positive but not at significant level.

## III. Correlation Between Total Assets and Net Profit After Tax

The coefficient of correlation between Total Assets and Net profit after Tax of both companies for different sampled years has been calculated in Appendix A.

**Table: 4.19**

**Relation between Total Assets and Net Profit after Tax**

| <b>Particulars</b>   | <b>BPC</b> | <b>HPL</b> |
|----------------------|------------|------------|
| Correlation (r)      | 0.52       | -0.021     |
| Probable Error (P.E) | 0.22       | 0.301      |
| 6 P.E                | 1.32       | 1.81       |

The Coefficient of correlation between Total Assets (X) and Net Profit after Tax (Y) of BPC and HPL came to be 0.52 & -0.021 respectively. This suggests that the two variables have positive relation to each other in BPC and negative relation to each other in HPL.

However, the coefficient of correlation in BPC appeared less than 6 times of PE i.e.  $0.52 < 6 \times 0.22$  which implies that the relation between total assets and net profit after tax is not at significant level. Similarly, the coefficient of correlation in HPL also appeared less than 6 times of PE i.e.  $-0.021 < 6 \times 0.301$  which implies that the relation between total assets and net profit after tax is not at significant level.

#### **4.2 Presentation and Analysis of Data from Primary Sources**

This Section includes the information related with the study from primary sources. Primary data were obtained through questionnaire made with the managerial officials and engineers of Hydropower companies. In this section I have taken as 30 Respondents. The presentation and analysis of these primary data are given below.

##### **4.2.1 Performance Evaluation Through Ratio Analysis**

To take the respondents view of ratio analysis used to measure performance in the selected companies, a question was asked “Do you agree that the ratio used to measure performance in Hydropower Companies?”

The responses provided by respondents are tabulated below:

**Table: 4.20**

**Performance Evaluations through Ratio Analysis by answers of oral questionnaires**

| <b>Group</b>  | <b>Agree</b> | <b>%</b>     | <b>Disagree</b> | <b>%</b>     | <b>Total</b> | <b>%</b>   |
|---------------|--------------|--------------|-----------------|--------------|--------------|------------|
| Executive     | 13           | 43.33        | 2               | 6.67         | 15           | 50         |
| Non-executive | 10           | 33.33        | 5               | 16.67        | 15           | 50         |
| <b>Total</b>  | <b>23</b>    | <b>76.66</b> | <b>7</b>        | <b>23.34</b> | <b>30</b>    | <b>100</b> |

Sources: Primary data Collection 2068

Above table shows that out of 30, 23 i.e, 76.66% respondents agree that ratio analysis is used to measure performance in the Hydropower companies and 23.34% disagree. From above we can conclude that personal think that ratio analysis is used to measure performance in the selected companies.

**4.2.2 ROE as a Measure of Performance**

To know the respondents' view of ROE shows the performance of the selected companies, a question was asked "Do you agree that ROE show the performance of Hydropower Companies?"

The responses provided by respondents are tabulated below:

**Table : 4.21**

**ROE Measure of Performance by answers of oral questionnaires**

| <b>Group</b>  | <b>Agree</b> | <b>%</b>     | <b>Disagree</b> | <b>%</b>     | <b>Total</b> | <b>%</b>   |
|---------------|--------------|--------------|-----------------|--------------|--------------|------------|
| Executive     | 11           | 36.67        | 2               | 6.67         | 13           | 43.34      |
| Non-executive | 12           | 40           | 5               | 16.67        | 17           | 56.67      |
| <b>Total</b>  | <b>23</b>    | <b>76.67</b> | <b>7</b>        | <b>23.34</b> | <b>30</b>    | <b>100</b> |

Sources: Primary data Collection 2068

Above table shows that out of 30, again 23 i.e,76.67% respondents agree that ROE shows the performance of the Hydropower companies and 23.34%

disagree. From above test we can conclude that personnel think that ROE shows the performance of the Selected Companies.

#### **4.2.3 Total Sales are used in the proper way to maximize the profit**

To know the respondents' views of Total sales are used in the proper way to maximize the profit, a question was asked "Do you agree that total assets are used in the proper way to maximize the profit in Hydropower Companies?"

The responses provided by respondents are tabulated below:

**Table: 4.22**

**Total Sales are used in the proper way to maximize the profit  
(Answers of oral Questionnaires)**

| <b>Group</b>  | <b>Agree</b> | <b>%</b>     | <b>Disagree</b> | <b>%</b>     | <b>Total</b> | <b>%</b>   |
|---------------|--------------|--------------|-----------------|--------------|--------------|------------|
| Executive     | 12           | 40           | 1               | 3.33         | 13           | 43.33      |
| Non-executive | 13           | 43.33        | 4               | 13.33        | 17           | 56.67      |
| <b>Total</b>  | <b>25</b>    | <b>83.33</b> | <b>5</b>        | <b>16.66</b> | <b>30</b>    | <b>100</b> |

Sources: Primary data Collection 2068

Above table shows that out of 30, 25 i.e,83.33% respondents agree that Total sales are used in the proper way to maximize the profit of Hydropower companies and 16.66% disagree. We can conclude that personal think that sales are used in the proper way to maximize the profit of selected companies.

#### **4.2.4 Comparison of the present Return and Expectation of Investors**

To compare the expected and actual earning status of the investors from the share investment, a question was asked "Do you agree that the level of return you are presently getting is higher than your expectation from share investment?"

The responses provided by respondents are tabulated below:

**Table: 4.23**

**Present Return and Expectation of Investors  
(Answers of oral Questionnaires)**

| <b>Group</b>  | <b>Agree</b> | <b>%</b>  | <b>Disagree</b> | <b>%</b>  | <b>Total</b> | <b>%</b>   |
|---------------|--------------|-----------|-----------------|-----------|--------------|------------|
| Executive     | 12           | 40        | 3               | 10        | 15           | 50         |
| Non-executive | 9            | 30        | 6               | 20        | 15           | 50         |
| <b>Total</b>  | <b>21</b>    | <b>70</b> | <b>9</b>        | <b>30</b> | <b>30</b>    | <b>100</b> |

Sources: Primary data Collection 2068

Above table shows that out of 30,21 i.e,70% respondents agree that the level of return presently obtained from Hydropower companies is higher than the expectation of investors and 30% disagree. From above test we can conclude that personnel think that the level of return presently obtained from Hydropower companies is higher.

**4.2.5 Role of operating expenses in the performance of companies**

To know the view point of respondents about the role of operating expenses in the performance of companies, a question was asked, “Do you agree that, operating expenses affected the performance of companies?”

The responses provided by respondents are tabulated below:

**Table: 4.24**

**Role of operating expenses in the performance of companies  
(Answers of oral Questionnaires)**

| <b>Group</b>  | <b>Agree</b> | <b>%</b>  | <b>Disagree</b> | <b>%</b>  | <b>Total</b> | <b>%</b>   |
|---------------|--------------|-----------|-----------------|-----------|--------------|------------|
| Executive     | 15           | 50        | 3               | 10        | 18           | 60         |
| Non-executive | 9            | 30        | 3               | 10        | 12           | 40         |
| <b>Total</b>  | <b>24</b>    | <b>80</b> | <b>6</b>        | <b>20</b> | <b>30</b>    | <b>100</b> |

Sources: Primary data Collection 2068



Above table shows that out of 30,24 i.e,80% respondents agree that the operating expenses affect the performance of companies and 20%disagree. From above test we can conclude that personnel think that the operating expenses affect the performance of companies.

#### **4.2.6 Comparison of Financial Performance Between Private and Public Companies**

To know the view point of respondents about the performance between private and public companies, a question was asked “Do you agree that, private sectors performance is better than public sectors?”

The responses provided by respondents are tabulated below:

**Table: 4.25**

**Comparison of Financial Performance between Private and Public Companies  
(Answers of oral Questionnaires)**

| <b>Group</b>  | <b>Agree</b> | <b>%</b>     | <b>Disagree</b> | <b>%</b>     | <b>Total</b> | <b>%</b>   |
|---------------|--------------|--------------|-----------------|--------------|--------------|------------|
| Executive     | 9            | 30           | 9               | 30           | 18           | 60         |
| Non-executive | 8            | 26.67        | 4               | 13.33        | 12           | 40         |
| <b>Total</b>  | <b>17</b>    | <b>56.67</b> | <b>13</b>       | <b>43.33</b> | <b>30</b>    | <b>100</b> |

Sources: Primary data Collection 2068

Above table shows that out of 30,17 i.e,56.67% respondents agree that the private sectors performance is better than public sectors and 43.33% disagree. From above test we can conclude that personnel think that, private sectors have maintained good performance rather than public sectors.

### **4.3 Major Findings of the Study**

From the above analysis and interpretation of data, the following findings have been drawn.

#### **4.3.1 Major Findings from Secondary Sources**

- Current ratio of BPC is stable throughout the study period however current ratio of HPL is in fluctuating trend. The mean ratio of HPL is higher than BPC. Likewise CV of BPC is lower than HPL, which means that HPL has more fluctuation in ratios as compared with BPC. BPC could not maintain the conventional standard of 2:1 since mean ratio is less. However the average ratio of HPL is greater than that of BPC, which signifies that HPL is more capable of meeting immediate liabilities in contrast to BPC.
- The CV of HPL for quick ratio is greater than BPC, which shows more fluctuation in quick position. Both companies could maintain the conventional standard of 1:1, though the mean ratio & CV of HPL is greater than BPC, Which means that HPL is more successful in maintaining the liquidity position.
- Mean ratio of fixed assets turnover ratio of BPC is higher than HPL. It indicates that BPC has efficient utilization of fixed assets. But CV of BPC is higher than that of HPL because of its higher fluctuating turnover ratios.
- The total assets turnover ratios of both companies in the study period are not good. The increment in ratio of both companies is not satisfactory. To compare each other, the mean ratio of total assets turnover ratio of HPL is higher than BPC. It indicates that HPL has efficiency in utilization of companies' scarce source. Similarly CV of HPL is higher than BPC. It shows that, BPC has less volatility.
- Average DTR of BPC and HPL are 5.236 and 5.212, it indicates that BPC has maintain good receivable management but CV of BPC is

higher than HPL (54.62% > 5.56%) because of high fluctuation of DTR of BPC.

- Mean ratio of Average collection period of BPC and HPL are 92 days and 69 days respectively. It indicates that, HPL has maintained more efficiency in collection of receivable. Similarly CV of BPC is also higher than the CV of HPL.
- The mean ratio of Capital employed turnover ratio of BPC and HPL are 0.286 and 0.254 respectively. It indicates that the capital employed ratio of both companies in the study period does not seem good, but comparing each other BPC has better utilization of capital employed. Similarly CV of Capital employed ratio of BPC and HPL came to be 3.49% and 5.5%, it indicates that HPL has more fluctuating trend in capital employed ratios.
- The mean of NPRs of BPC and HPL came to be 75.07% and 51.59% respectively, it indicates that both companies has maintain good net profit ratio. Because the average standard net profit ratio is 12% but to compare each other BPC has better to generate net income per rupee of sales. Similarly, CV of NPRs of BPC and HPL came to be 9.28% and 15.29%, it indicates that HPL has more fluctuate in NPRs throughout study period.
- The mean of operating profit ratio of BPC and HPL are 73% and 86% respectively, it reveals that both companies' ratios seem to be better. To compare each other operating profit ratio of HPL has higher than that of BPC. Similarly CV of operating profit ratio of BPC and HPL came to be 2.29% and 10.21%, it indicates that BPC ratios have less variability than HPL.
- Mean of OERs of BPC and HPL came to be 33.24% and 15.55% respectively. Similarly CV of OERs of BPC and HPL has 9.18% and 18.26% respectively, it reveals that the OERs of HPL has high fluctuating trend rather than BPC.

- Return on total assets of HPL is more fluctuating trend than HPL. So CV of ROAs of HPL is higher than BPC i.e.  $14.58\% > 11.69\%$ . Similarly mean of ROAs of BPC and HPL came to be 15.06 and 16.19 respectively; it indicates that HPL made better return to use its total assets rather than BPC.
- The average ratios of BPC and HPL for the return on shareholders equity are 21.49% and 22.71% respectively i.e. the average ratio of HPL for the return on shareholders equity is higher than BPC. Likewise the CV of BPC is lower than HPL ( $16.25\% > 10.73\%$ ), which indicates that BPC ratios is less volatility than that of HPL.
- Debt to equity ratio of HPL is slightly in increasing trend over the study period. Its mean ratio and CV came to be 0.75 and 21.33% respectively. Similarly debt to assets ratio of HPL is also in increasing trend over the last period. Its mean ratio and CV came to be 0.39 and 16.15% respectively, which is less than debt to equity ratio. In contrast there was not debt capital in BPC and it was fully financed by equity.
- Mean ratio of EPS of BPC and HPL are Rs 36.62 and Rs 64.34 respectively, it reveals that HPL made higher EPS than BPC. Similarly, CV of EPS of BPC and HPL came to be 12.54% and 18.15% respectively. The CV of HPL is higher than BPC.
- Mean ratio of DPS of BPC and HPL came to be Rs 26.8 and Rs 44.8 respectively. Similarly CV of DPS of BPC and HPL are 15.37% and 8.75% respectively. In above ratio and percentage says that the position of HPL is better than BPC.
- Dividend payout ratio of both companies seem to be fluctuating trend but higher in BPC. Mean ratio of BPC and HPL came to be 74.63% and 70.92% respectively. To compare each other the dividend payout ratio of BPC is better than HPL. The CV of DPRs of HPL is higher than BPC.
- The coefficient of correlation between sales and total assets of BPC and HPL came to be 0.947 and 0.322 respectively. This value of correlation

indicates the positive relation to each other for the both companies. However, considering the probable error of BPC, since the Value of  $r$  is greater than  $6PE$  the correlation is at significant level where as the value of  $r$  of HPL is less than  $6PE$ , the correlation is not at significant level.

- The coefficient of correlation between sales and net profit after tax of BPC and HPL came to be 0.696 and 0.744 respectively. This value suggests that the two variables have positive relation to each other. Considering the probable error of BPC & HPL, the value of  $r$  is less than  $6PE$  so the correlation is not at significant level.
- The coefficient of correlation between total assets and net profit after tax of BPC came to be 0.52. This suggest that the two variable have positive relation to each other but value of  $r$  is less than  $6PE$  i.e.  $0.52 < 6 \times 0.22$  so, the correlation is not at a significant level. Similarly, the coefficient of correlation between total assets and net profit after tax of HPL came to be -0.021, this suggests that the two variable have negative relation to each other and the value of  $r$  is less than  $6PE$  i.e.  $-0.021 < 6 \times 0.301$ , so the correlation is not at a significant level.

#### **4.3.2 Major Findings From the Primary Sources**

- Out of 30, 23 i.e,76.66% respondents agreed that ratio analysis was used to measure the performance of Hydropower company.
- Out of 30, again 23 i.e,76.66% respondents agreed that ROE show the performance of Hydropower company
- Out of 30, 25 i.e,83.33% respondents agreed that total sales are used in the proper way to maximize the profit in Hydropower companies.
- Out of 30, 21 i.e,70% respondents agreed that the level of return presently obtained from Hydropower companies were higher than the expectation of investors. which means that the level of return presently obtained from these companies is higher than the expectation of investors.

- Out of 30, 24 i.e,80% respondents agreed that operating expenses affected the performance of Hydropower companies. which means that operating expenses affected the performance of Selected companies.
- Out of 30, 17 i.e. 56.67% respondents agreed that the private sectors performance is better than public sectors. which means that the private sectors performance is better than public sectors.

## **CHAPTER –V**

### **SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

This is the final part of the research and this chapter has been classified into three major parts. The opening subhead deals with the summary of the whole study of the financial evaluation of the BPC and HPL in which result of calculations that is found in previous chapter is presented in short manner. In the later subhead the conclusion of the study has been take account of in which overall decisions made under the study are presented. The final sub-head of this study is the recommendations of the to the samples organisation of the research.

#### **5.1 Summary**

Nepal is gifted with the huge number of potential hydropower possibility, since the flow of water from the height of mountain to the slope. Hence the major part of the developments of the motherland can be sampled as hydroelectricity. The production of all possible hydro electricity can be served to India as well. Hence the hydro projects are emerging and establishing year by year for production of huge amount of electricity.

Country's one of the major electricity producing project of ARUN III was stopped because of study on Environmental Impact Assessment (EIA). In august 1995, the Arun III project, which dam planners claimed would coat the country's energy needs well into the next century, had to be shelved when the world Bank draw out from the dollar 1 billion plan for environmental reasons. A rush in energy requires was previously creating long power shortage in the capital city, Kathmandu. The alternative power projects to meet the demand and can lift up a little bit to the power need of the nation.

The establishment of a few small and medium sized hydropower plants within the last decade has laid the foundation for private-public sectors participation in Nepal. The continuing interest shown by both the domestic and foreign private sectors investors is encouraging for Nepal's power sectors although the current interest of the private sector is limited to small plants of capabilities less than 10 MW only, probably because of the much higher investment needs of larger projects.

The increasing demand of electricity can however be met only through a combination of small and medium- sized projects. It is therefore pertinent for NEA to take up several medium sized schemes for implementation in the public sector with donor assistance. There has been a gradual change in local and global energy markets providing ample space for both the private and public sectors. It is now increasing evident that the participation of private-public enterprises in the power sectors can lead to better mobilization of resources to meet the ever-increasing domestic and regional power demand.

The private sector should be rushed up to meet the demand for power is rising every year, generation have not been implemented in tandem. Public sector generation projects take considerable preparation time before execution. The process of mobilization of resources for generation and other projects is also very time consuming and uncertain. Decision for taking up such projects should therefore be made well in advance so that power plants come into operation in a timely fashion as per the system requirements. The delays experienced in middle Marsyandi, the only public sectors project presently under operation, is an example of the uncertainties faced even after a project enters the construction phase.

- Butwal Power Company was established in 1996 when total capacity of the power in the country was only 3.45 MW. BPC with assistance from the United Mission to Nepal, developed Tinau Project in 1967 to light



up town of Butwal and promote industrial development in the area. BPC not only involved in design and construction work but also owns and operates the 12 MW Jhimruk Hydropower plant and the 5.1 MW Andhikhola Hydropower plant. The company supplies power to the national electricity grid besides lighting up nearly 23,000 local households. BPC is currently the largest public supplier in Nepal.

- The Khimti-I Hydropower project is the first private sector power project in Nepal, Based on a Build-Own-Operate-Transfer (BOOT) Structure. The power plant is owned and operated through the company Himal Power Limited (HPL).
- Himal Power Limited was established in 2049 B.S (1993) when Butwal Power Company (BPC) together with the Norwegian companies statkraft SF, Alstom Power a.s (Formerly ABB kraft), and GE Energy a.s (Formerly Kvaerner Energy) registered HPL under Nepal's Company Act 2021 B.S.
- In addition to the investors, the International Finance Corporation (IFC), the Asian Development Bank (ADB), EksportFinans a.s. the Norwegian agency for development Cooperation (NORAD) and the Nordic Development Fund (NDF) have contributed to the financing of HPL.
- As this study is related to the financial Evaluation of BPC and HPL, a number of financial and statistical tools have been used to meet the prescribed objectives. Ratio analysis being the primary financial tool includes all five categories namely, Liquidity ratio, Activity ratio, Profitability ratio, Leverage ratio and Invisability ratio. To further analyze the financial data, a number of statistical tools have been used such as arithmetic mean, standard deviation, coefficient of variation, coefficient of correlation, probable error of correlation coefficient and least square trend line.
- With respect to ratio analysis five different categories have been used with their sub divisions according to these ratios the following fact has been discovered.

- The liquidity ratios of the companies seem to be inconsistent. BPC and HPL both have maintained proper liquidity position. The mean and CV of current ratios of BPC came to be 1.24 and 3.64%, the mean and CV of current ratios of HPL came to be 3.21 and 14.34%. Similarly the mean and CV of quick ratio of BPC came to be 1.112 and 4.05%, the mean and CV of quick ratio of HPL came to be 3.184 and 14.13%.
- Except that of DTRs all other activity ratios of BPC present fairly consistent trends for the last four years. Whereas, HPL holds less variation in all activity ratios as compared to BPC, the mean and CV of FATORS of BPC came to be 0.54 and 7.2%. Similarly, the mean and CV of FATORS of HPL came to be 0.30 and 4.7%. Similarly, the mean and CV of TATORS of BPC came to be 0.20 and 4.45%, the mean and CV of TATORS of HPL came to be 0.23 and 5.17%. Similarly, mean and CV of DTRs of BPC came to be 5.236 and 54.62%, the mean and CV of DTRs of HPL came to be 5.212 and 5.56%. Similarly the mean and CV of ACPs of BPC came to be 92 days and 51.65%, the mean and CV of ACPs of HPL came to be 69 days and 12.26%.
- BPC, HPL has considerably low OERs and shows rather consistent trends of profitability ratios. But it has lower NPRs then BPC. The mean and CV of NPRs of BPC came to be 75.07% and 9.28%, the mean and CV of NPRs of HPL came to be 51.59% and 15.29%. Similarly the mean and CV of Operating profit ratios of BPC came to be 73% and 2.29%, the mean and CV of operating profit ratio of HPL came to be 86% and 10.21%. Similarly, the mean and CV of OERs of BPC came to be 33.24% and 9.18%, the mean and CV of OERs of HPL came to be 15.55% and 18.26%. Similarly, the mean and CV of ROTA ratio of BPC came to be 15.06% and 11.69%, the mean and CV of ROTA of HPL came to be 16.19% and 14.58%. Similarly, the mean and CV of ROE of BPC came to be 21.49% and 10.73%, the mean and CV of ROE of HPL came to be 22.71% and 16.25%.

- While BPC is all equity financed, Similarly the mean and CV of debt to shareholders equity of HPL came to be 0.75 and 21.33%, the mean and CV of debt to total assets ratios of HPL came to be 0.39 and 16.15%.
- The invisibility ratio of both companies present fluctuating trends but though HPL has higher trend of EPS and DPS ratios and DPRs remain lower as compared to BPC. The mean and CV of EPS ratio of BPC came to be Rs 36.62 and 12.54%, the mean and CV of EPS of HPL came to be Rs 64.34 and 18.15%. Similarly, the mean and CV of DPS ratios of BPC came to be Rs 26.8 and 15.37%, the mean and CV of DPS of HPL came to be 44.8 and 8.75%. Similarly, the mean and CV of DPRs of BPC came to be Rs 74.63 and 22.23%, the mean and CV of DPRs of HPL came to be Rs 70.92 and 40.26%.
- The coefficient of correlation between sales and total assets of BPC shows positive and significant relation but HPL shows positive but insignificant relation. The coefficient of correlation between these two variables of BPC and HPL came 0.947 and 0.322 respectively. Similarly, the probable errors of BPC and HPL came 0.0311 and 0.270 respectively.
- The coefficient of correlation between sales and net profit after tax of BPC & HPL shows positive relation but not significant relation. The coefficient of correlation between these two variables of BPC and HPL came 0.696 and 0.744 respectively. Similarly, the probable errors of BPC and HPL came to 0.155 and 0.135 respectively.
- The coefficient of correlation between total assets and net profit after tax of BPC shows positive relation and not at significant level. Similarly, the coefficient correlation between total assets and net profit after tax of HPL shows the negative relation but not at significant level. The coefficient of correlation between these two variables of BPC and HPL came to be 0.52 and -0.021 respectively. Similarly, the probable error of BPC and HPL came to be 0.22 and 0.301 respectively.

- Out of 30, 23 respondents agreed that ratio analysis was used to measure the performance of Hydropower company which means that ratio analysis is used to measure performance in the selected companies
- Out of 30, again 23 respondents agreed that ROE did show the performance of Hydropower company. Which means that ROE shows the performance of the selected companies.
- Out of 30, 25 respondents agreed that total sales are used in the proper way to maximize the profit in Hydropower company. which means that total sales are used in the proper way to maximize the profit in selected companies.
- Out of 30, 21 respondents agreed that the level of return presently obtained from Hydropower companies were higher than the expectations of investors, which means that the level of return presently obtained from these companies is higher than the expectation of investors.
- Out of 30, 24 respondents agreed that operating expenses affected the performance of Hydropower companies, which means that operating expenses affected the performance of Selected companies.
- Out of 30, 17 respondents agreed that the private sectors performance is better than public sectors, which means that the private sectors performance is better than public sectors.

## **5.2 Conclusions**

The following conclusions have been derived as per the analysis and interpretation of data.

- HPL have maintained proper liquidity position since its average ratios are above standard level, But BPC incapable to meet current liabilities as compared HPL as its current ratios are below the standards.
- The fixed assets turnover ratios of both companies are satisfactory and some what consistent. However, both companies have not been able to

utilize its current assets appropriately as the total assets turnover ratio remains vulnerable against that of HPL. Though the debtor's turnover ratios are almost, equivalent, considering the average collection period. It can conclude that HPL suffers less the problem of outstanding debt collection.

- Though BPC has considerably high operating expenses ratio and inconsistent trend in its net profit ratios. The overall performance with respect to profitability is not far behind to HPL. However, considering the return on shareholders equity and return on total assets, it is obvious that one would preferably invest in HPL rather in BPC.
- BPC is all equity financed and thus the risk of insolvency is minimized for this company. The risk of insolvency of HPL has been decreasing each year with the decrease in its leverage ratios.
- HPL has higher EPS with compared to that of BPC. In other hand, BPC being much liberal in distributing the earning in form of dividends. One might confuse to pick the preferable investment between BPC and HPL.
- The coefficient of correlation between sales and total assets of BPC show positive and significant relation. Similarly, the coefficient of correlation between sales and total assets of HPL shows positive but insignificant relation.
- The coefficient of correlation between total sales and net profit after tax of BPC and HPL show positive and insignificant relation . It also reveals that BPC is slightly more successful than BPC to be able to yield more uniform profit and its sales.
- The coefficient of correlation between total assets and net profit after tax of BPC show positive and insignificant relation. Similarly the coefficient of correlation between total sales and net profit after tax of HPL show negative but insignificant relation. It reveals that the net profit after tax of HPL is more reactive than of BPC to fluctuations in total assets.

- From the primary data analysis, it can be concluded that ratio analysis is used to analyze the performance, ROE does show the performance of Hydropower companies, total sales are used in the proper way to maximize the profit, present return of Hydropower companies is higher than the expectation of investors, operating expenses affected the performance of Hydropower companies and private sectors performance is better than public sectors.

### **5.3 Recommendations**

Based on conclusion, some recommendations are presented below:

- The liquidity position of HPL is more satisfactory than that of BPC. BPC should cut off current liabilities to maintain a proper liquidity position.
- Fixed assets turnover ratio of BPC is satisfactory but total assets need to be managed more effectively. Similarly, both fixed assets and total assets should be managed more effectively in HPL. BPC needs to find better ways to control and improve its receivable.
- The profitability position of both companies is satisfactory. However HPL can do much to increase the net profit margin. And BPC can do much to increase the ROE and ROTA by better utilization of its assets. BPC need an effective production management to control operating cost.
- Despite the availability of lucrative investment opportunities, shareholders need to be satisfied with dividends. HPL should adopt a more liberal dividend payout policy, as the earning per share is healthy to support such policy.
- The hydropower sectors should maintain research budgets to study new hydroelectric projects across the country. These should be proper cost control on maintenance activities.
- The hydropower sectors should introduce SWOT analysis to improve their capability of dealing with external forces and managing internal issues of strengths and weaknesses.

- The hydropower sectors should maintain a separate human resource department to make sure that there is an effective system of handling grievance of employees and conduction of management development and training programs.
- The government of Nepal should provide an exemption of income tax to the projects of private sector generating and distributing electricity from the hydroelectric project up to the capacity of 1,000 KW.
- The hydropower sectors should follow the practices of setting financial goals for future activities and should develop major programs to accomplish them.
- Government should formulate plans and policies to attract private as well as public investors for growth of hydropower companies creating investment friendly environment and focusing on their security in the hydropower development.

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## Appendix A:

### Computation of correlation of coefficient and probable errors

1. Correlation between Total Sales and Total Assets of BPC

(In millions NRs)

| Year                   | Sales (X) | Total Assets(Y) | X <sup>2</sup>              | Y <sup>2</sup>            | X x Y          |
|------------------------|-----------|-----------------|-----------------------------|---------------------------|----------------|
| 2005/06                | 358       | 1744            | 128164                      | 3041536                   | 624353         |
| 2006/07                | 380       | 1882            | 144400                      | 3541924                   | 715160         |
| 2007/08                | 422       | 1992            | 178084                      | 3968064                   | 840624         |
| 2008/09                | 431       | 2264            | 185761                      | 5125696                   | 975784         |
| 2009/10                | 455       | 2440            | 207025                      | 5953600                   | 1110200        |
| Total                  | ΣX =2046  | ΣY =10322       | ΣX <sup>2</sup> =843434     | ΣY <sup>2</sup> =21630820 | ΣX xY =4266121 |
| Correlation (r) =0.947 |           |                 | Probable Error (PE) =0.0311 |                           |                |

$$r = \frac{N \sum XY - \sum X \sum y}{\sqrt{N \sum X^2 - (\sum X)^2} \sqrt{N \sum Y^2 - (\sum Y)^2}} = 0.947$$

$$P.E = 0.6745 \times \frac{1-r^2}{\sqrt{N}} = 0.0311$$

2. Correlation between Total Sales and Total Assets of HPL

(In millions NRs)

| Year                   | Sales (X) | Total Assets(Y) | X <sup>2</sup>             | Y <sup>2</sup>             | X x Y            |
|------------------------|-----------|-----------------|----------------------------|----------------------------|------------------|
| 2005/06                | 2122      | 9898            | 4502884                    | 97970404                   | 21003556         |
| 2006/07                | 2307      | 9454            | 5322249                    | 89378116                   | 21810378         |
| 2007/08                | 2133      | 8729            | 4549689                    | 76195441                   | 18618957         |
| 2008/09                | 2104      | 9072            | 4426816                    | 82301184                   | 19087488         |
| 2009/10                | 2292      | 9584            | 5253264                    | 91853056                   | 21966528         |
| Total                  | ΣX =10958 | ΣY =46737       | ΣX <sup>2</sup> =24054902  | ΣY <sup>2</sup> =437698201 | ΣX xY =102486907 |
| Correlation (r) =0.322 |           |                 | Probable Error (PE) =0.270 |                            |                  |

$$r = \frac{N \sum XY - \sum X \sum y}{\sqrt{N \sum X^2 - (\sum X)^2} \sqrt{N \sum Y^2 - (\sum Y)^2}} = 0.322$$

$$P.E = 0.6745 \times \frac{1-r^2}{\sqrt{N}} = 0.270$$

### 3. Correlation between Total Sales and Net profit after Tax of BPC

(In millions NRs)

| Year                    | Sales (X) | Net profit after tax (Y) | X <sup>2</sup>             | Y <sup>2</sup>          | X x Y         |
|-------------------------|-----------|--------------------------|----------------------------|-------------------------|---------------|
| 2005/06                 | 358       | 288                      | 128164                     | 82944                   | 103104        |
| 2006/07                 | 380       | 253                      | 144400                     | 64009                   | 96140         |
| 2007/08                 | 422       | 354                      | 178084                     | 125316                  | 149388        |
| 2008/09                 | 431       | 292                      | 185761                     | 85264                   | 125852        |
| 2009/10                 | 455       | 349                      | 207025                     | 121801                  | 158795        |
| Total                   | ∑X =2046  | ∑Y =1536                 | ∑X <sup>2</sup> =843434    | ∑Y <sup>2</sup> =479334 | ∑X xY =633279 |
| Correlation (r) = 0.696 |           |                          | Probable Error (PE) =0.155 |                         |               |

$$r = \frac{N \sum XY - \sum X \sum Y}{\sqrt{N \sum X^2 - (\sum X)^2} \sqrt{N \sum Y^2 - (\sum Y)^2}} = 0.696$$

$$P.E = 0.6745 \times \frac{1-r^2}{\sqrt{N}} = 0.155$$

### 4. Correlation between Total Sales and Net profit after Tax of HPL

(In millions NRs)

| Year                    | Sales (X) | Net profit after tax (Y) | X <sup>2</sup>             | Y <sup>2</sup>           | X x Y           |
|-------------------------|-----------|--------------------------|----------------------------|--------------------------|-----------------|
| 2005/06                 | 2122      | 879                      | 4502884                    | 772641                   | 1865238         |
| 2006/07                 | 2307      | 1483                     | 5322249                    | 2199289                  | 3421281         |
| 2007/08                 | 2133      | 982                      | 4549689                    | 964324                   | 2094606         |
| 2008/09                 | 2104      | 1163                     | 4426816                    | 1352569                  | 2446952         |
| 2009/10                 | 2292      | 1170                     | 5253264                    | 1368900                  | 2681640         |
| Total                   | ∑X =10958 | ∑Y =5677                 | ∑X <sup>2</sup> =24054902  | ∑Y <sup>2</sup> =6657723 | ∑X xY =12509717 |
| Correlation (r) = 0.744 |           |                          | Probable Error (PE) =0.135 |                          |                 |

$$r = \frac{N \sum XY - \sum X \sum Y}{\sqrt{N \sum X^2 - (\sum X)^2} \sqrt{N \sum Y^2 - (\sum Y)^2}} = 0.744$$

$$P.E = 0.6745 \times \frac{1-r^2}{\sqrt{N}} = 0.135$$

### 5. Correlation between Total Assets and Net profit after tax of BPC

(In millions NRs)

| Year                   | Total Assets (X) | Net profit after tax(Y) | X <sup>2</sup>            | Y <sup>2</sup>          | X x Y          |
|------------------------|------------------|-------------------------|---------------------------|-------------------------|----------------|
| 2005/06                | 1744             | 288                     | 3041536                   | 82944                   | 5022272        |
| 2006/07                | 1882             | 253                     | 3541924                   | 64009                   | 476146         |
| 2007/08                | 1992             | 344                     | 3968064                   | 125316                  | 705168         |
| 2008/09                | 2264             | 292                     | 5125696                   | 85264                   | 661088         |
| 2009/10                | 2440             | 349                     | 5953600                   | 121801                  | 851560         |
| Total                  | ∑X =10322        | ∑Y =1536                | ∑X <sup>2</sup> =21630820 | ∑Y <sup>2</sup> =479334 | ∑X xY =3196234 |
| Correlation (r) = 0.52 |                  |                         | Probable Error (PE) =0.22 |                         |                |

$$r = \frac{N \sum XY - \sum X \sum Y}{\sqrt{N \sum X^2 - (\sum X)^2} \sqrt{N \sum Y^2 - (\sum Y)^2}} = 0.52$$

$$P.E = 0.6745 \times \frac{1-r^2}{\sqrt{N}} = 0.22$$

### 6. Correlation between Total Assets and Net profit after Tax of HPL

(In millions NRs)

| Year                      | Total assets (X) | Net profit after tax (Y) | X <sup>2</sup>             | Y <sup>2</sup>           | X x Y           |
|---------------------------|------------------|--------------------------|----------------------------|--------------------------|-----------------|
| 2005/06                   | 9898             | 879                      | 97970404                   | 772641                   | 8700342         |
| 2006/07                   | 9454             | 1483                     | 89378116                   | 2199289                  | 14020282        |
| 2007/08                   | 8729             | 982                      | 76195441                   | 964324                   | 8571878         |
| 2008/09                   | 9072             | 1163                     | 82301184                   | 1352569                  | 10550736        |
| 2009/10                   | 9584             | 1170                     | 91853056                   | 1368900                  | 11213280        |
| Total                     | ∑X =46737        | ∑Y =5677                 | ∑X <sup>2</sup> =437698201 | ∑Y <sup>2</sup> =6657723 | ∑X xY =53056518 |
| Correlation (r) = - 0.021 |                  |                          | Probable Error (PE) =0.301 |                          |                 |

$$r = \frac{N \sum XY - \sum X \sum Y}{\sqrt{N \sum X^2 - (\sum X)^2} \sqrt{N \sum Y^2 - (\sum Y)^2}} = 0.301$$

$$P.E = 0.6745 \times \frac{1-r^2}{\sqrt{N}} = -0.021$$

## Appendix B:

### Five Year Summary of Financial Statements of Butwal Power Company (BPC)

#### Balance Sheet

|                              | 2005/06         | 2006/07         | 2007/08         | 2008/09        | 2009/10        |
|------------------------------|-----------------|-----------------|-----------------|----------------|----------------|
| <b>ASSETS &amp; PROPERTY</b> |                 |                 |                 |                |                |
| Particulars                  | 743,605         | 743,893         | 725,742         | 765339         | 793485         |
| Capital Work in Progress     | 18,576          | 1,111           | 7,247           | 7406           | 7904           |
| Long Term Investment         | 434,481         | 465,705         | 477,858         | 683550         | 727647         |
| <b>Current Assets</b>        | <b>543,416</b>  | <b>670,674</b>  | <b>776,079</b>  | <b>802170</b>  | <b>910764</b>  |
| Stock                        | 57,623          | 58,896          | 74,646          | 92723          | 97423          |
| Current Work in Progress     | 19,394          | 23,258          | 29,944          | 35749          | 43479          |
| Debtors and Receivables      | 35,512          | 58,918          | 88,407          | 171359         | 193256         |
| Cash and Bank Balance        | 364,373         | 457,035         | 412,635         | 291687         | 349509         |
| Advance and Deposit          | 66,514          | 72,567          | 170,447         | 210652         | 220352         |
| Deferred Revenue             | 4,369           | 888             | 4,765           | 5735           | 6745           |
| Expenditure                  |                 |                 |                 |                |                |
| <b>TOTAL</b>                 | <b>1744,447</b> | <b>1882,271</b> | <b>1991,691</b> | <b>2264200</b> | <b>2439800</b> |
| <b>CAPITAL &amp; EQUITY</b>  |                 |                 |                 |                |                |
| Equity                       | 839,058         | 839,058         | 839,058         | 839058         | 839058         |
| Reserve and Surplus          | 461,510         | 455,805         | 556,762         | 707210         | 783210         |
| Funds                        | -               | -               | -               | -              | -              |
| <b>Current Liabilities</b>   | <b>433,619</b>  | <b>562,584</b>  | <b>595,871</b>  | <b>651272</b>  | <b>752500</b>  |
| Bank Overdraft               | -               | 89,947          | 183,956         | 181023         | 184121         |
| Creditors and Payables       | 432,012         | 441,779         | 356,934         | 434050         | 519347         |
| Advance and Deposit          | 1,607           | 30,858          | 29,433          | 36199          | 49032          |
| Provisions                   | 10,260          | 24,824          | -               | 66660          | 65032          |
| <b>TOTAL</b>                 | <b>1744,447</b> | <b>1882,271</b> | <b>1991,691</b> | <b>2264200</b> | <b>2439800</b> |

Source: Annual Report of BPC (F/Y 2005/06 – 2009/10)

## Profit and Loss Account (BPC)

(In thousand NRs)

| Particulars                     | 2005/06        | 2006/07       | 2007/08       | 2008/09       | 2009/10       |
|---------------------------------|----------------|---------------|---------------|---------------|---------------|
| <b>INCOME</b>                   |                |               |               |               |               |
| Electricity Sales to NEA        | 318,483        | 334166        | 372521        | 375103        | 398104        |
| Electricity Sales to Customers  | 39,936         | 45603         | 49166         | 55697         | 57337         |
| Electricity Service             | 5353           | 3634          | 6151          | 8040          | 8830          |
| Consultancy Service             | 11,498         | 9535          | 18894         | 28108         | 31320         |
| <b>Total Operating Income</b>   | <b>375,270</b> | <b>392938</b> | <b>446732</b> | <b>466948</b> | <b>495591</b> |
| Income from Other Source        | 116,909        | 96403         | 196463        | 158134        | 197321        |
| <b>TOTAL INCOME</b>             | <b>492,179</b> | <b>489341</b> | <b>643195</b> | <b>625082</b> | <b>692912</b> |
| <b>EXPENDITURE</b>              |                |               |               |               |               |
| Power Plant Expenses            | 57,715         | 74565         | 82514         | 88491         | 93341         |
| Distribution Expenses           | 31,054         | 33303         | 48428         | 48700         | 49732         |
| Consultancy Service             | 13,692         | 8774          | 16743         | 18957         | 19237         |
| Administrative Expenses         | 34,990         | 37645         | 53508         | 64159         | 69127         |
| Loss on Fixed Assets            | 6090           | -             | -             | -             | -             |
| KHP Back End Payment            | -              | -             | -             | -             | -             |
| Provision of loss of Investment | -              | 9479          | 6869          | 21491         | 22391         |
| Depreciation                    | 49959          | 51924         | 55103         | 61873         | 66423         |
| Interest expenses               | -              | 5266          | 7246          | 7193          | -             |
| Staff Bonus                     | 6791           | 5926          | 9504          | 9659          | 9749          |
| <b>TOTAL EXPENDITURE</b>        | <b>200291</b>  | <b>226882</b> | <b>279915</b> | <b>321243</b> | <b>330000</b> |
| <b>Net PROFIT Before Tax</b>    | <b>291888</b>  | <b>262459</b> | <b>363280</b> | <b>303839</b> | <b>362912</b> |
| Income Tax Provision            | 3469           | 9619          | 9401          | 12247         | 13427         |
| <b>Net Profit After Tax</b>     | <b>288419</b>  | <b>252840</b> | <b>353879</b> | <b>291592</b> | <b>349485</b> |
| Last Year Balance               | 185484         | 222131        | 222805        | 306397        | 315231        |
| Income Tax Adjustment           | (55)           | (531)         | (18570)       | (676)         | (1097)        |
| Dividend                        | (251717)       | (251635)      | (251717)      | (167811)      | (197721)      |
| Net Profit Transfer to B/S      | 222131         | 222805        | 306397        | 429502        | 465898        |

Source: Annual Report of BPC (F/Y 2005/06 – 2009/10)

**Appendix C: Five Years Summary of Financial Statements of Himal Power Limited (HPL)**

**Balance Sheet**

(In Thousand NRs)

| Particulars                        | 2005/06        | 2006/07        | 2007/08        | 2008/09        | 2009/10        |
|------------------------------------|----------------|----------------|----------------|----------------|----------------|
| <b>ASSETS &amp; PROPERTY</b>       |                |                |                |                |                |
| Fixed Assets                       | 7551062        | 7203678        | 7002613        | 7102310        | 7302677        |
| Capital Work in Progress           | 19877          | 20599          | 22866          | 21466          | 20366          |
| <b>Current Assets</b>              | 2326983        | 2230147        | 1703231        | 1948538        | 2260835        |
| Account Receivable / Debtors       | 428146         | 417834         | 430109         | 420834         | 406854         |
| Inventories                        | -              | 14993          | 19894          | 21034          | 14834          |
| Cash and Bank Balance              | 1737778        | 1581610        | 1100228        | 1352380        | 1643280        |
| Prepaid Advances, loan and deposit | 161062         | 200174         | 132094         | 133053         | 180430         |
| Deferred Revenue Expenditure       | -              | 15536          | 20907          | 21237          | 15437          |
| <b>TOTAL</b>                       | <b>9897922</b> | <b>9454424</b> | <b>8728710</b> | <b>9072314</b> | <b>9583878</b> |
| <b>CAPITAL &amp; LIABILITIES</b>   |                |                |                |                |                |
| Equity                             | 1764144        | 1764144        | 1764144        | 1764144        | 1764144        |
| Reserve and Surplus                | 2750583        | 3375912        | 3553339        | 3342100        | 3105833        |
| Secured loans                      | 4598322        | 3432851        | 2968227        | 3347821        | 4078232        |
| <b>Current Liabilities</b>         | 784873         | 881517         | 443000         | 618249         | 635669         |
| <b>TOTAL</b>                       | <b>9897922</b> | <b>9454424</b> | <b>8728710</b> | <b>9072314</b> | <b>9583878</b> |

Source: Annual Report of BPC (F/Y 2005/06 – 2009/10)



## Profit And Loss Account (HPL)

(In Thousands NRs)

| Particulars                              | 2005/06        | 2006/07        | 2007/08        | 2008/09        | 2009/10        |
|--|----------------|----------------|----------------|----------------|----------------|
| Revenue From Sales of Electricity        | 2121897        | 2307461        | 2132995        | 2104124        | 2292022        |
| Other Income                             | 3263           | 59             | 16             | 20154          | 991            |
| Interest Income                          | 41545          | 79308          | 48553          | -              | 49554          |
| <b>Total Revenue</b>                     | <b>2166705</b> | <b>2386827</b> | <b>2181563</b> | <b>2124278</b> | <b>2342567</b> |
| Operation & Administrative Expenses      | 271626         | 353751         | 445106         | 280733         | 352761         |
| <b>Profit From Operation</b>             | <b>1895079</b> | <b>2033076</b> | <b>1736457</b> | <b>1843544</b> | <b>1989806</b> |
| Interest                                 | 436257         | 360879         | 274064         | 492603         | 320912         |
| Depreciation                             | 391492         | 388112         | 330872         | 327661         | 365127         |
| Foreign Exchange Gain/Loss               | 170412         | (241856)       | 131840         | (163786)       | 112830         |
| Write Off                                | -              | -              | -              | 790            | -              |
| Deferred Tax                             | -              | -              | (5755)         | -              | -              |
| (Profit)Loss on disposal of Assets       | 6              | 13125          | 3872           | -              | -              |
| Provision for Bonus                      | 17938          | 30256          | 20031          | 23726          | 21021          |
| <b>Profit Before Tax</b>                 | <b>878986</b>  | <b>1482560</b> | <b>981533</b>  | <b>1162551</b> | <b>1169916</b> |
| Provision For Income Tax                 | -              | -              | -              | -              | -              |
| <b>Profit After Tax</b>                  | <b>878986</b>  | <b>1482560</b> | <b>981533</b>  | <b>1162551</b> | <b>1169916</b> |
| Balance of Profit as per Last Year       | 2537862        | 2750583        | 3345383        | 3553113        | 3759743        |
| Interim Dividend                         | (155320)       | (330480)       | (694185)       | (678801)       | (699431)       |
| Proposed Dividend                        | (510945)       | (5572800)      | (109920)       | (99234)        | (120345)       |
| <b>Balance of Profit Transfer To B/S</b> | <b>2750583</b> | <b>3345383</b> | <b>3522811</b> | <b>3937629</b> | <b>4109883</b> |

Source: Annual Report of BPC (F/Y 2005/06 – 2009/10)