FINANCIAL PERFORMANCE EVALUATION OF HYDRO POWER COMPANIES

(Comparative Study on Butwal Power Company and Himal Power Company)

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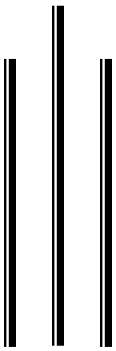

In partial fulfillment of the requirement for the degree of
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DECLARATION

I here by declare that the work reported in this thesis entitled **FINANCIAL PERFORMANCE EVALUATION OF HYDRO POWER COMPANIES (Comparative Study on Butwal Power Company and Himal Power Company)** submitted to St. Xavier's college, Faculty of Management, Tribhuvan University, is my original work done in the form of partial fulfillment of the requirement for the Master's Degree in Business Study (M.B.S.) under the supervision of Prof. Shankar Thapa, of St. Xavier's College, Maitighar, Kathmandu.

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This thesis entitled **FINANCIAL PERFORMANCE EVALUATION OF HYDRO POWER COMPANIES (Comparative Study on Butwal Power Company and Himal Power Company)** has been prepared for the partial fulfillment of the requirement of Master's Degree of Business Studies (MBS) under the Faculty of Management, Tribhuvan University, is based on research models involving the use of financial performance evaluation of private public sectors hydro power company.

First of all, I would like to extend my sincere regard and profound gratefulness to work under the admirable supervision of Mr. Shankar Thapa, Professor of St. Xavier's college. He always motivated me and I had his exclusive consideration and guidance all the time.

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Finally, I would like to express my genuine appreciation to the staffs of library of St. Xavier's college and Tribhuvan University.

At last but not least, my paramount dedication is to my friends and my family members who have been uninterrupted source during this work.

Researcher

CONTENTS

Chapter I

Introduction

Chapter II

Review of Literature

Chapter III

Research Methodology

Chapter IV

Presentation and Analysis of Data

Chapter V

Summary, Conclusion and Recommendation

LIST OF TABLE

LIST OF FIGURE

CHAPTER I

INTRODUCTION

1.1. Background of the Study

Nepal is rich in natural endowments like hydro potential, natural beauties, diverse flora, fauna and many different tribes and ethnic group. Hydropower generation is one of the four main economic growth sectors. Hydropower is a vital input needed to fuel the engine of economic growth and to fulfill the basic needs of the entire population of a country. Nepal is well endowed with enormous hydro-power resources. In fact, the perennial nature of Nepali rivers and the steep gradient of the country's topography provide ideal conditions for the development of some of the world's largest hydroelectric projects in Nepal. Current estimates are that Nepal has approximately 83,000 MW of economically feasible hydropower potential. However, the present situation is that Nepal has generated only approximately 600 MW of hydropower. Although bestowed with tremendous hydropower resources, only about 40% of Nepal's population has access to electricity. Most of the power plants in Nepal are run-of-river type with energy available in excess of the in-country demand during the monsoon season and deficit during the dry season.

Hydropower projects in Nepal have been deemed to be expensive primarily because of the fact that cost of access roads and power evacuation transmission lines are added on to the hydropower projects cost. As we 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. Similarly, high voltage trunk transmission lines should also be developed in these river valleys. This will lead to opening up these river valleys for private power producer companies to develop power projects around these rivers and their tributaries resulting in less expensive power and adding to the competitive advantage that this clean from of energy has. The hydropower system in Nepal is dominated by run-of –river projects. There is only one seasonal storage project in the system. There is shortage of power during winter and spill during wet season. The load factor is quite low as the majority of the consumption is dominated by household use. This imbalance has clearly shown the need for storage projects, and hence, cooperation between the two neighbouring countries is essential for the best use of the hydro resource for mutual benefit. The system loss is one of the major issues to be addressed to improve the power system which accounts to be 25% including technical and non-technical losses like pilferage.

An ideal way to develop the medium to larger scale projects in Nepal would be through private- public partnership. Since this scale of projects involves larger 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 economic activities such as power project development and believes that it should have a greater role in the decision-making process of the government when it comes to national economic issues and also in bilateral and multilateral issues which have a direct impact on this industry. Nepal's electricity generation is dominated by hydropower, though in the entire scenario of energy use of the country, the electricity is a tiny fraction, only 1% energy need is fulfilled by electricity. The bulk of the energy need is dominated by fuel wood (68%), agricultural waste (15%), animal dung (8%) and imported fossil fuel (8%).

The other fact is that only about 40% of Nepal's population has access to electricity. With this scenario and having immense potential of hydropower development, it is important for Nepal to increase its energy dependency on electricity with hydropower development. Not only this, the development of hydropower will help to achieve the millennium development goals with protecting environment, increasing literacy,

improving health of children and women with better energy. Growing environmental degradation adds a sense of urgency.

Source: www.ippan.org.np

1.1.1. The Potentiality of Nepalese Hydropower Sector

Nepal has tremendous potential for hydropower development. It is estimated that Nepal has the capacity to generate 83,000 MW of electricity from hydropower of which about 45,000 MW is considered to be economically feasible. At present, the installed capacity of hydropower is about 600 MW, less than 2 percent of the total economically feasible capacity. Taking advantage of government's new policy of welcoming private foreign investment, 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.

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

Basin wise Hydropower potential

Table 1.1

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

There are many projects which have been identified for development. Some of those identified promising projects for development are in the following table:

Identified potential Hydropower Projects

Table 1.2

S.N.	Project	Capacity (MW)
1	West Seti	750
2	Arun III	402
3	Budhi Gandaki	600
4	Kali Gandaki II	660
5	Lower Arun	308
6	Upper Arun	335
7	Karnali Chisapani	10800
8	Upper Karnali	300
9	Chamelia	30
10	Pancheswor	6480
11	Thulodhunga	25
12	Tamor/ Mewa	100
13	Dudh Koshi	300
14	Budhi Ganga	20
15	Rahughat Khola	27
16	Likhu 4	51
17	Kabeli A	30
18	Upper Marshyangdi A	121
19	Kulekhani III	45
20	Andhikhola (Storage)	180
21	Khimti II	27
22	Upper Modi A	42
23	Langtang Khola (Storage)	218
24	Madi Ishaneswor (Storage)	86

25	Upper Seti (Storage)	122
26	Kankai (Storage)	60
27	Upper Tamakoshi	250

Source:www.ippan.org.np

On the other hand, there are excellent prospects 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 economic cooperation between Nepal and India. There will also be significant markets for domestic consumption of electricity with economic growth and business and industrial expansion.

A large number of well studied projects of various scales and size are ready for investment. The government of Nepal is ready to invite private- domestic and foreign to invest in hydropower. The last decades saw important beginning of a real change. There was proper legislation and policy framework, implementation of numbers of small hydropower projects with private sector investment has contributed in the development of hydropower in Nepal.

1.1.2 History of Electricity Production of Nepal

The history of electricity production in Nepal started in 1911 A.D by the ambitious Rana Prime Minister Chandra Smasher Rana to light the Singh Durbar as a copy of European Style. He made initiation to develop 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 only for the aristocrats. The first pioneering project of Pharping was established and built in 1911 A.D whose capacity was 500 KW. Secondly, Sundarijal power project was established in 1935 AD with the capacity of 1350 KW. Until the time, several industries were established in Terai region of Nepal. The Morang Hydropower Company was established in 1940 AD and then Birgung Electric Supply Co was established to contribute for hydropower development in Nepal. By the end of 1997/98 hydro power generation reached 261.918 MW in the country. In order to meet

increasing demand of power, steps will be taken to consolidate and strengthen existing generating facilities with a view to increase efficiency in production and distribution of energy. Medium size hydro-power projects such as Khimti (60MW), Indrawati (5MW), and Upper Bhotekoshi (36MW) have already been taken up by the private sector. Other major projects on which preliminary studies have been undertaken which includes (Chisapani) 10800 MW, Upper Arun 335 MW, PAncheshwor 6480 MW, Lower Arun 308 MW, and Upper Karnali 300 MW hydro electric projects. Another major project West Seti Hydel project (750 MW), is being taken up by a private sector (SMEC West Seti Hydroelectric Corporation). This project is developed as an export oriented project.

Nepal Electricity Authority (NEA)

Nepal Electricity Authority (NEA) was created on August 16, 1985 under the Electricity Authority Act 1984, through the merger 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, mergers of these individual organizations became necessary to achieve efficiency and reliable service.

It is the leading organization in power generation, transmission and distribution.

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, NEA has following major responsibilities:

- To recommend to Nepal Government, long term and short-term plans and policies in the power sector;
- To recommended, determine 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.

(Source: www.nea.org.np)

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.

1.1.3 Power Purchase Agreements

A power purchase agreements (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 & sale electricity in 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. PPA can be quite lengthy agreements that may exceed 100 pages 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& C's

xii. *(Source: www.powerpurchaseagreements.com)*

Among 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 at which it would be sold to the purchaser. The PPA creates legal obligation on both the parties to perform the previously accepted tasks in a predetermined manner.

1.1.4. Private-Public Participation of Hydropower Development in Nepal

After 1990 the government initiated the process of economic liberalization and declared its sincere belief in private Ltd. Growth limiting the role of the government only to the creation of conductive atmosphere for market regulated economic 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 participation.

The following guiding policies have been promulgated for encouraging private-public sector participation especially in hydropower sectors.

- Hydro power development Policy 1992
- Water resource act 1992
- Electricity act 1992
- Electricity regulation 1993
- Water resource regulation 1993

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 plants.
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. Thoppakhola hydropower owns 1,650 KW, Thoppakhola power plant.
10. APCO Owns 1,500 KW, Chakukhola power plant.
11. Unique Hydel owns 980 KW, Baramchi hydropower plant.
12. Khoranga hydropower owns 995 KW, Phemekhola plant.
13. Gautam Buddha hydropower company owns 750 KW, Sisnekhola plant
14. Rairang hydropower development (RHPD) owns 500 KW, Rairang hydropower plant.
15. Kathmandu small hydropower owns 232 KW, Salinadhi plant.
16. Sange bidyut Company owns 183 KW, Sangekhola power plant.

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
4. Patikhola (Unified HP) - 996 KW
5. Upper Hadikhola (CPDS) - 991 KW
6. Seti II (Task HP) - 979 KW

Total **12,996 KW**

More than 14 plants of total capacity of 15, 15,079 KW are planned and proposed from private Sector.

Similarly, the projects under initial stages of implementation are listed below:

1. Hetauda –Dhalkebar-Duhabi400KV Transmission line
2. Koshi 220 KV Tranmission Corridor

3. Marshyandi 132 KV Transmission Corridor
4. Sunkoshi Dolakha Transmission Corridor
5. Kaligandaki(Dana –Kusma- New Modi-New Butwal –Bardghat) 220/132 Kv Transmission Corridor)
6. Middle Marshyandi- Manag 132 KV Transmission Line
7. Kaski- Bhurjung –Parbat-Kusma 132 Kv Transmission Line
8. Gulmi- Arghakhanchi-Chinauta 132 kV transmission Line
9. Modi –Lekhnath 220kV Transmission Line
10. Lekhnath –Damauli 220 V Transmission line
11. Samumdratat- Naubise 220v Transmission Line
12. Ramechap- Garjyang- Khimti132 kV Transmission Line
13. Marshyangdi – Kathmandu 220 kV Transmission Line
14. Koshalpur- Surkhet 132 kV Transmission Line
15. Koshi Corridor (Basantaput-kusaha) 220 kV Transmisison Line.

Source: Annual Report of NEA (Fiscal Year 2009/10)

1.1.5. Introduction of Sample Companies

1.1.5.1. Butwal Power Company (BPC) Limited

Butwal Power Company (BPC) is one of the leading companies in Nepal's power sector with generation and distribution as its core business areas. Incorporated in 1966 as private company and converted into Public Limited Company in 1993, BPC has a track record of pioneering multi faceted capacity building initiatives in hydropower development.

Pursuing the privatization process, in 2003, the Government of Nepal handed over majority ownership and management control to private investors on public-private partnership model. BPC is registered with the Securities Board of Nepal and listed in Nepal Stock Exchange Limited. Starting off with electrification plan of a small city in the south central Nepal, BPC is the only enterprise which can look back to a four decade long history of success, sustained growth and capacity building in the country.

Through its subsidiary companies, BPC is engaged in operation & maintenance of power plants, consulting engineering of hydropower and infrastructure projects, manufacturing and repair of hydro-mechanical and electro-mechanical equipment for power plants BPC is committed to operational excellence and believes in good governance, corporate citizenship and creating value for stakeholders.

History of Butwal Power Company:

Butwal Power Company was established by a visionary Norweign 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 potentials 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. Butwal Power Company (BPC) limited is a leading hydropower company in hydropower development of Nepal. 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 Hydroconsult is engineering and consultancy wing of BPC which is known as best in the country for its high quality and professional service in hydropower project consultancy and other engineering services. BPC Services Limited (BPCSL) was established in 2063/64 to provide operation and maintenance services to hydropower plants. Currently BPCSL provides Operation and Maintenance to Khudi Hydropower Project.

The following are the important milestones in BPC's history;

- Commissioning of Tinau Hydro Power Project (1MW)
- Commissioning of Andhikhola Hydro Power Project (5.1MW)
- Commissioning of Jhimruk Hydro Electric and Rural Electrification Project (12MW)
- Commissioning of Khimti Hydropower Project (60MW)
- Commissioning of Khudi Hydropower Project (4.2MW)

BPC Privatization

- October 2001: GoN invited offers for the purchase of its 75% shares in BPC.

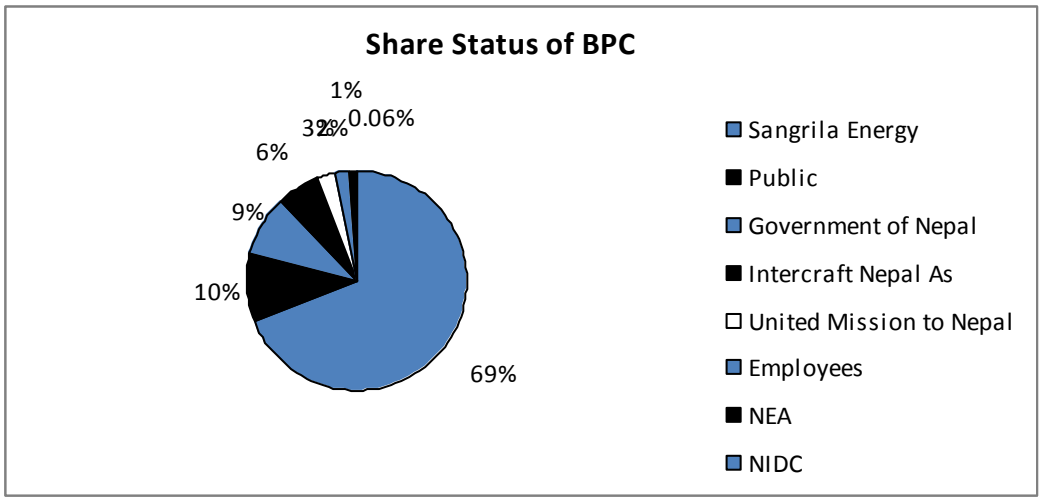
- December 2001: Bid submitted by Interkraft Nepal of Norway in partnership with Shangrila Energy of Nepal.
- 3 January 2003: Sale and Purchase Agreement of 75% shares of GoN in BPC signed by MoF Secretary Mr. Bhanu P. Acharya and IKN Representative Mr. Balaram Pradhan.

The main shareholders of BPC are:

Name	Ownership (%)
Shangri-La Energy Limited	68.95
General Public / Individuals	10.00
Government of Nepal	9.09
Interkraft Nepal AS	6.05
United Mission to Nepal	2.79
Employees	2.00
Nepal Electricity Authority	1.06
Nepal Industrial Development Corporation	0.06
Total	**100**

Table No. 1.3

Figure 1.1 : Share Status of BPC



(Source: website of BPC, www.bpc.com.np)

BPC is the first hydropower company in Nepal to have been certified for an Integrated Management System. BPC is certified for ISO 9001:2008 Quality Management System and 14001:2004 Environmental Management Systems by Det Norske Veritas (DNV) effective from 2005-05-24 for Generation, Transmission and Distribution of Hydropower and Engineering Consultancy including Design and Management of Hydropower and Water Resource Projects

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.

1.1.5.2. Himal Power Limited (HPL)

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 1993 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 BS of Nepal. In addition to the investors, the International Finance Corporation (IFC), the Asian Development Bank (ADB), EKsportfinans a.s the Norweigian Agency for Development Cooperation (NORAD) and the Nordic Development Fund (NDF) has contributed to the financing of HPL. The Khimti I Hydropower Project reached financial closing in June 1996 and commercial Operation of the plant took place 4 years later, in July 2000. The total cost of constructing the power plant is approximately USD 140 million.

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 11th 2000. 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 50 percent Share in the plant after the end of the PPA.

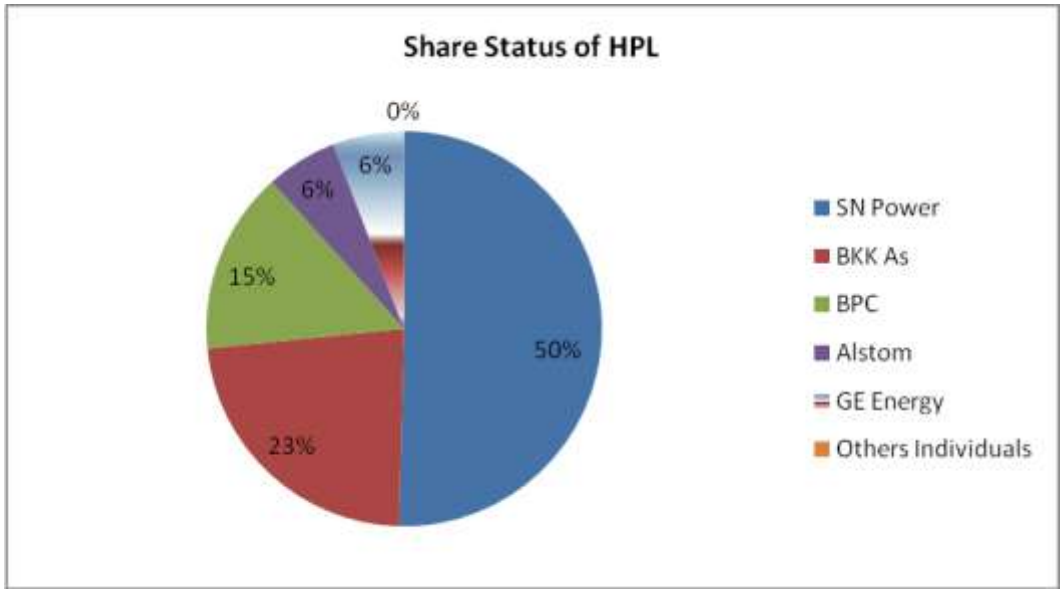
HPL's primary task is to attend and further develop assets and interests in Nepal, especially with regard to production, maintenance and the administration of properties owned by the Company. This shall be done in both a short and long term perspective. The strict environment criteria as set out by the 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:

Figure No. 1.2



(Source: website of HPL, www.hpl.com.np)

1.2. Focus of the Study

The financial performance evaluation of hydropower sector is still lacking. The main focus of this study is concerned with the financial performance evaluation of Butwal Power Company and Himal Power Company. Most of the hydropower sectors lack monitoring and evaluation on financial performance. This study is concerned with the evaluation of the financial matters. Various data are used to know how effectively to identify their work performance. This study adds a new and meaningful idea in the hydropower 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.

1.3. Statement of the Problem

Nepal has enormous hydropower potential. The prospects of becoming a prosperous 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.

To get the private sector sustained 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 overall performance of the companies.

Finance is one of the most important functional areas of a business. It is concerned with generation, transmission, distribution and other function of any business including independent power products. This study's directed is to identify and analyze the financial strengths and weakness of hydropower companies of Nepal

1.4 Research Questions

The study attempts to seek answer of the following questions.

- What is the financial positions and performance of the companies?
- Do the financial ratios best describe the performance of these hydropower companies?
- What types of contemporary steps are essential for performance improvement of Nepalese hydropower companies?
- What level of satisfaction is provided to the stakeholders by these private-public sectors hydropower companies?
- Which company is more effective and efficient in terms 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 are:

i) To study and analyze the financial performance of BPC and HPL and draw comparative conclusions through financial evaluation taking relevant variables.
ii) To identify major strengths and weaknesses of BPC and HPL.
iii) To study and examine the present trends of financial performance of Private – Public participations in Hydropower Sectors.
iv) To provide necessary suggestions on the basis of study findings.

1.6 Significance of the Study

Analysis of financial position and statement is a crucial part of financial decision making process of a business enterprise. 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 developing 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 economic 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 provide information and draw the attention of private and non governmental agencies that are willing to invest in hydropower projects in Nepal.

This 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.

1.6 Limitations of the Study

The main purpose of this study is assessing on the financial performance evaluation of private public hydropower sector for the partial fulfillment of Masters of Business Studies degree. However, this study possesses some limitations that are mentioned as follows:

- The study covers a period 10 years from the first fiscal year 2001/2 to the recent fiscal year 2009/10 of BPC and HPL. But HPL hasn't published annual report for

the year 2009/10, therefore comparative study have been done only up to the fiscal year 2008. .

- 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.
- Time and resources constraint may limit the area covered by the study.
- This study 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. Two companies Butwal Power Company and Himal Power Company are studied thoroughly. The study has been divided into five chapters. The major chapters of the study are as follows:

Chapter One: Introduction

This chapter deals with the initial 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. It 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 included.

Chapter Two: Review of literature

The chapter of conceptual framework and review of literature mainly includes related study on the same topics. Various available literatures regarding findings and

recommendation of previous research work in respect of NEA and any private public hydropower company/ plant are incorporated. .

Chapter Three: Research Methodology

The third chapter consists of Research Methodology which includes research design, population and sample, 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 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. Conceptual Review

This Chapter consists of the Review of various books, research studies. Generally review of literature is done in order to make clear about the concept of performance analysis as well as to recall the theories and studies made by the various researchers. 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.

2.1.1 Review of Related Acts/Plans

2.1.1.2 Hydropower Development Policy, 1992

Regarding different models of investors' participation for the hydropower development in Nepal, the Government of Nepal has formulated the hydropower development policy, 1992. 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.

Hydropower development policy, 1992 has made a provision of exemption of income tax to the newly established hydropower companies for certain years to inspire and facilitate

them in the field of hydropower generation. In this regard, the provisions made by the hydropower Development policy, 1992 are as follows:

i. An exemption of income tax shall be given to the projects of private sector generating and distributing electricity from the hydroelectric project up to the capacity of 1,000 KW.
ii. Hydroelectric project, constructed under to investment of private sector, producing more than 1000 KW shall be granted exemption from income tax for a period of fifteen years starting from the date of its commercial production.
iii. Any private entrepreneur, who constructs electric substation, and transmits and extends the distribution lines be granted exemption from income tax for a period of ten years.
iv. If the private companies take on contract for purpose the operation, maintenance and management of the hydroelectric plant or transmission and distribution lines under the ownership of Nepal Government, such companies shall be granted exemption from income tax for a period five years.
v. The income tax shall be less than ten percent of the corporate income tax which the government imposes from time to time.
vi. If the investor reinvests in the hydroelectric project in order to diversity the project or to expand its established capacity by twenty- five percent or more, or to modernize the technology or to develop the subsidiary industry, such investor may deduct an amount of fifty percent of the new additional fixed asset, from the taxable income of such hydroelectric projects. Such deduction may be at a time or from time within three years.

2.1.1.3 "Electricity Development Policy -2058 (2001)"

Government of Nepal envisaged 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 utilized 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;
- To extend the rural electrification in order to support rural economic development;
- To develop hydropower as an exportable commodity;

"Electricity Development Policy- 2058" adopts the following policies to achieve above objectives:

- Efforts shall be made to maximize the use of country's hydropower potential in order to meet the domestic demand of electricity.
- Construction and implementation of hydropower projects shall be encourage to promote on the principles of build-operate transfer (BOOT)
- For making the electricity service dependable, reliable and extension of qualitative service delivery within the kingdom at reasonable cost; the exiting public sector institutions shall be restructured to promote the participation by creating competitive environment of community/ corporations, institutions, local agencies and private sector in hydropower production, transmission and distribution.
- Small and medium hydropower projects shall be developed and promoted for domestic use in order to strengthen the situation of domestic power supply. The priority shall be given to develop hydropower projects on a competitive basis suitable to the electricity.

- The hydropower projects shall be identified for export purpose. The private sector shall export the electricity by developing such projects.
- The major multipurpose storage projects shall be developed in a way to render the maximum down stream benefit to the country.
- The electrification program in the rural areas shall be encouraged.
- The rural electrification program shall be expanded in order to make the electricity services available to maximum people. A "Rural Fund Electrification" shall be established for this purpose.
- The rural electrification development program shall be based on mobilization of people' participation.
- To deliver reliable and dependable electricity services and, make it easily available to consumers proper attention shall be given to safeguard their interests.
- For supplying the electrical energy at a reasonable rate, the electricity tariff fixations process shall be made transparent and reasonable.
- The unauthorized leakage of electricity shall be controlled. For this purpose necessary technical measures shall be adopted and legal arrangements shall be formulated besides these measures, emphasis shall be given to mobilized people participation to control the leakages.
- Incentives shall be provided for the proper utilization of electrical energy. In this context, incentives shall be provided for the use of electrical energy for village water supply, irrigation, industry and tourism sectors when electricity demand is low (when supply is in excess of demand).
- The appropriate incentive provisions shall be made to attract national and foreign investment for the development of hydropower and transparent process shall be followed.
- Capital market shall be operated for investment in the electricity sector.
- The use of local labour and skill shall be given priority in implementing the hydropower projects.
- The industry producing the construction materials and equipments to be used in the electricity sector shall be encouraged to develop the industry.

- Proper Arrangements shall be made to cover the risks arising in hydropower projects.
- Arrangements shall be made to provide appropriate benefits at the local level while operating hydropower projects.
- The adverse effects on environmental shall be minimized caused due to the development and operation of hydropower projects and proper arrangements shall be made to resettle the displaced families.
- Hydropower shall be developed to replace the biomass and thermal energy in order to contribute towards environmental conservation.
- Regarding multi- purpose projects, the government could become a partner with private sector looking at the possibility of irrigation development.

2.1.1.4 Interim Three Year Plan (Electricity and Energy Development)

The importance and contribution of electricity in the development of agriculture, tourism and industries, and other social and economic sectors, is well established. The studies undertaken to date have shown that the feasible potential is 83,000 MW. Of this development of 42,000 MW has been considered as technically and economically viable. The actual generation capacity of hydropower is only 556.4 MW; this is 0.67 percent of feasible generation potential. Of this public sector contribution is 408.1 MW and 148.3 MW comes from the private sector.

Private sector investment in the development of electricity was significant in the ninth plan period. In the tenth plan period, however, the investment of the private sector was not encouraging. The government sector also failed to make investment in this sector during the plan period. The capacity of electricity power generation is not sufficient to meet even the domestic demand in the absence of effective investment plan, at present. In this context, the possibilities of hydropower export and its contribution to overall economic development of the country, continuities to remain as the major challenge. The three year interim plan intends to develop the hydropower potential of the country as an export commodity, expanding hydropower to the rural areas and providing quality

services with low investment, within the framework and perspectives of the hydropower Development policy, 2001 and the National water plan ,2005.

a. Objectives

To create an environment conductive to domestic and foreign investment in the development of hydropower and to ensure reliable, quality and easily accessible electricity services for majority of the rural areas of the country, considering hydropower as an important base for the comprehensive economic, development of the country.

b. Long Term Vision

The vision of the hydropower sector is to develop hydropower based on optimal utilization of water resources to meet the domestic power demand and export the surplus while expanding the development and services in order to contribute to the livelihood improvement of Nepalese people.

Based on the perspective of National water plan, 2005, the target set for this sector in the long-term (up to 2027) are:

- Generation of 4,000 MW of electricity to meet the domestic demand.
- Expansion of services of electricity in such a way as to ensure coverage of 75 percent of the population through national grid, 20 percent of the population through non-grid (Small and Micro hydropower) system and 5 percent of the population through alternative energy sources.
- Per capita electricity consumption to be increased to 400 KWH.
- Significant expert of electricity to contribute to national remittance earnings.

c. Quantitative Targets

- Completion of the construction of ongoing hydropower projects adding 105MW, and initiating the construction of new hydropower projects shall be taken up for additional 2,115 MW.
- Additional 10 percent of the population shall be covered in the electricity services through the national grid. To attain this electricity services shall be expanded to cover additional 500 VDCs in the national grid.

- Per capita electricity consumption will be expanded to 100 KWH.

d. Strategies

- To arrange for effective regulation of generation, transmission and distribution of electricity and the businesses thereto.
- To make the single door system effective in order to encourage domestic and foreign investments in the survey, studies and other promotional activities for the hydropower development.
- To coordinate and make consistent efforts in the expansion of electricity generation potential and in doing so, taking into account the domestic consumption as well.
- To develop the electricity transmission capacity, contributing to the overall economic development and in doing so, to take the possibilities of inland electricity export into account.
- To strengthen and expand the electricity distribution system for social and geographic inclusion and to support the rural economy.

e. Problems, challenges and opportunities

Problems

The rate of implementation of hydropower projects under the initiative of the private sector has not taken place at the pace of finalization of the purchase agreement of electricity with the Nepal electricity Authority. The tendency of acquiring license for hydropower development and not undertaking the production and distribution, which needs to be discouraged, is being continued. Single door system has not performed as expected. This is believed to inhibit the accelerated development of power industry in the private sector. Consistent lowering of investments from the public sector has also been a cause for inadequate development of hydropower. As a result of this, load shedding is continuing in a country known for its enormous hydropower potential. Similarly, the other constrains now appearing are: lack of public and private sector investments in the development of the transmission and distribution system, and amendment in the existing Electricity Act, 1992, implementation of the Hydropower Development Policy, 2001, has not been taken up efficiency. This is constraining the development of hydropower. The

backlog bills payable by the government agencies and organizations and municipalities have constantly been increasing.

Challenges

The electricity and power sector has been facing the following challenges.

- To ensure supply to meet the ever increasing demand for electricity.
- To make coordinated efforts for the development of hydropower and alternate energy sources in order to provide electricity in the rural areas.
- To control the leakage of electricity.
- To rationalize the electricity tariff on time.

Strengths and Opportunities

- Encouraging people's participation in the community Rural Electrification program.
- Enhanced support of the people, based on the opinion that utilization of water resources of the country is the only means for Nepal's development. This has also created impetus for increased people's participation in the development of water resources.
- Increasing investment of private investors and the domestic capital market in the hydropower sector.
- Manual for the hydropower development prepared to ensure unified approach and quality control in undertaking feasibility studies and construction works.
- Electricity development fund instituted under the support received from the World Bank, under the policy to encourage private sector investment in hydropower development.

2.2. Review of Related Studies

Hydropower development has always been vital issue for 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.

In an article published on The Himalayan Times (**May 11, 2010**), Dr. **Kamal Raj Dhungel (2010),** has mentioned in his article "**Hydropower in national development: Crucial role to play"** As is evident, Nepal is rich in water resources. Perhaps, it is one of the richest countries in the world. Given the fact, development and rational use of water resources would enhance economic growth and sustaining poverty reduction efforts. However, maintaining and developing water resources require huge investments which seem next to impossible without public and private partnership, be it domestic or international investment. Interventions on water resource development among other sectors should be economically efficient, i.e. maximize benefits and minimize costs.

It implies that the target groups or the ultimate beneficiaries should be carefully identified. Besides these, pricing strategies should be developed such that the investors are ensured that they will receive a good return on investment. An economic analysis of water related projects have an important role in making these decisions, which reflect welfare impacts in the society.

He further added that by 2008/2009, there was 689 MW installed capacity of hydroelectric power; while demand for electricity increased multi-fold. However, electricity contributes only 2.2% to the total energy consumption in Nepal. The energy consumption in Nepal has always been dominated by traditional sources. In the fiscal year 2008/2009, traditional sources contributed 85 per cent of total energy consumption, while only 15 per cent of the total energy consumption had been met by commercial sources. Various INGO's, NGO's and private sector entrepreneurs initiated micro-hydro projects in different parts with the total installed capacity of 7 MW.

Dr. Kamal Raj Panta further added presently, around 40 per cent of the population use electricity but recent labor force survey estimated that access of electricity reached to 56 percent of the total population. Nepal has a very low per capita availability of 71 kWh per annum. However, electricity contributes only 2.2% to the total energy consumption and around 10 per cent of the total commercial energy consumption. The only native source of commercial energy is the electricity in Nepal, which is yet to be fully exploited. A huge potential of generating hydropower is estimated to be around 83 thousand MW of which only 43 thousand MW is considered viable from economic and technical point of view. However, the exploitation of hydropower resources was about 0.83 percent of the total potential and 1.6 percent of the economic potential capacity. Despite the huge potential, Nepal is slow in hydropower development because of various reasons. In the first place, in Nepal it is attributed to the dearth of adequate investment capital as it is one of the poorest countries in the world. Consequently, Nepal is not able to invest adequate amount of capital to harness its potential by installing large dams that require multimillion dollars. Therefore, its development hinges on the lack of adequate capital. Secondly, an over nationalistic view put its development in limbo. In the past, hydropower development policy was not investment friendly to domestic as well as international private developers. Thirdly, the generation per unit cost of electricity in Nepal is so high that it is not comparable even with Bhutan and northern part of India. For this reason, private sector involvement saw the high risk involved for their investment. Fourthly, there is no consistent policy that attracts foreign investors to invest in this sector. Regional cooperation with the formulation of encouraging domestic policy and exploration of potential market for excess energy to export would be the most probable model for harnessing untapped hydropower potential of Nepal.

In the Journal **'Hydro Nepal'** (issue2, January 2008), **Anil Kumar 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. This, in turn, will increase the capacity of financial sector. 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.

In the Magazine **Hamro Sampada** (Year7, Issue 10, 2064 Falgun), **Baburam 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 between10-100 MW, 47 between 100-300 MW; 20 between 300-1000MW; and 5 above 1000 MW. They make total 176,764 GWh/Year generations potential. Till now only 585 MW (less than 2% of the economically 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 economically 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 economically feasible potential (59.63%). The basin with second largest potential is SaptaKoshi River basin with 20,650 MW technically and 10,860 MW economically feasible potential".

Table 2.1: Theoretically & Economically Feasible Hydropower potential of Nepal

River Basin	**Theoretical potential (MW)**		**Economically Feasible Potential (MW)**	
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%)
Total	**83,290**	**(100%)**	**42,133**	**(100%)**

(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 youngest geological formations where the construction of large structures like dams, tunnels and powerhouses are always of a hydropower scheme is always packed with large number of geological problems that demands a great degree of care and expertise. The capital intensive nature and long gestation period of the development stage of the hydro projects further add uncertainties of return of investment. 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 environmental mitigation works are be- coming 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.

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 economically viable hydropower projects. Presently, the pipeline projects in NEA's consideration and construction phase are as follows:

Table No. 2.2

Projects under Construction Phase

S.N.	Name of Hydropower Project	Capacity
1	Middle Marsyangdi	70 MW
2	Upper Tamakoshi	309MW
3	Upper Trishuli A	61MW
4	Upper Trisuli B	40MW
5	Chameliya	30MW
6	Rahughat	27MW
7	Kulekhani IIi	14MW

(Source: Vidyut, Year 18, Issue-2, 2064 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. 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 along 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 production

Table No. 2.3

Hydropower Projects with foreign Investment Interest

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

(Source: Vidyut, Year18, Issue-2, 2064 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. Some 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.

In the Magazine **New Business Age** (Vol.7, No. 12, Bhadra 2065), **Gyanendra Lal Pradhan** 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 conductive 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 deflects 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".

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.

Investment in hydropower is lucrative. 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 cell 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?

The answer is that the private sector is discouraged to invest. And liberalisation propaganda and treating liberalisation as an end in itself are to blame for this. The aim of liberalisation is to make the private sector the main actor in the economy. The private sector can inject more capital, acquire new and modern technology, generates additional resources for development and alleviate poverty. Private sector has to play a key role in the integration of the national economy with global economy. In the process of such integration there are various opportunities and challenges. The complex challenges have to be dealt with in a joint effort of the government and private sector through appropriate institutional mechanism.

2.3. Review of Related Thesis

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 theses are as follows.

A Study done by **Ram Chandra Khatiwada** (2007), Entitled with "**Financial performance analysis of Butwal power Company"** 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 statistical tools.

The main objectives of his research are as Follows:

- 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.

Major findings of his research are:

- 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 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.

The recommendations are as follows:

- 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' turn over ratio of the company should be improved and made higher which can help the company to cash 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.

A Study Done by **Chandra Dahal** (2007), Entitled with "**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.

The Main Objectives of his Study were as follows:

- To study and analyze existing position of costs of NEA and BPC Pvt. Ltd.
- To identify break even 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.

Major findings of his study were:

- 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 break even 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.

Based on above findings, Dahal has recommended that:

- In Nepal most of enterprises have no practice of CVP analysis in systematic manner. So, it is suggested that every enterprises should apply or practice CVP analysis.
- CVP analysis shows the relationship among the variables related to cost, revenue and profit. Study of relationship between these variables helps improve the business condition. So, this tool is very much too every organization.
- BPC and NEA have many expert and skilled manpower but these enterprises have ignored the practice of CVP analysis. They have not classified or segregated various types of costs into fixed and variable. It is essential to classify the costs which help in controlling cost.

- ❖ Cost plan of both enterprises are not systematically maintained. So cost of every sector should plan properly. It is necessary to establish cost control program in these enterprises. It will maintain the discipline on cost control.
- ❖ 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.

A Study done by **Tomlal Subedhi** (2008) Entitled **"Fund Management of Hydropower companies (With Special reference to Chilime Hydropower Company Limited, Butwal Power Company Limited and National Hydropower Ltd)".** He was concerned with fund management of these companies analyzing various ratios and of the five years. He used secondary data of balance sheet and profit and loss a/c of these companies.

The main objectives of his study were as follows.

- To draw the overviews of the development of private and public hydropower companies in Nepalese hydropower sector.
- To evaluate the fund management and financial positions of public hydropower companies with the help of various financial tools.
- To analyze the present trends of public hydropower companies.
- To suggest and recommend possible guidelines on the basis of major findings.

Major findings of his Study were as follows:

1. Current ratio of CHPCL, BPCL and NHPL were in fluctuating trend through out the study period. The mean ratio of BPCL was higher than CHPCL and NHPL. Likewise CV of NHPL was lower than CHPCL and BPCL, which means that CHPCL and BPCL had more fluctuation in ratios as compared with NHPL. Mean

ratio shows the highly liquid position of BPCL, which shows the hydropower company did not have proper investment plan. CHPCL and NHPL had lower mean ratio than that of BPCL but these hydropower companies may face the problem of working capital if they need to pay current liabilities at demand. Current ratios were in slightly fluctuating trend for CHPCL, BPCL and NHPL. All three hydropower companies could not maintain the conventional standard of 2.1. However the average ratio of BPCL was greater than that of CHPCL and NHPL, which signifies that BPCL was more capable of meeting immediate liabilities in contract to CHPCL and NHPL.

2. Return on shareholder's equity ratio measures the return on shareholder's investment in hydropower companies. The average ratio of CHPCL for the return on shareholders equity was higher than that of BPCL and NHPL. Likewise the CV CHPL was lower. The ratios of BPCL and NHPL were increasing trend through out the study period. But the ratios of CHPCL were in fluctuating trend. Average return on shareholders equity ratio of CHPCL was fluctuating trend.
3. Long-term debt to net worth ratio showed CHPCL and NHPL had higher long-term debt for the beginning years and it was in decreasing trend. It shows that both companies were repaying their debt and they were in sound position for the settlement of solvency. Average ratio in NHPL was higher than that of CHPCL.
4. In the beginning two years, the hydropower companies applied higher funds on investing activities because they had to acquire fixed assets and set up their business at that period. After the commercial operation started, CHPCL and NHPL applied their higher funds on financing activities for the repayment of long –term loan.

Subedi has drawn following recommendations:

1. CHPCL and NHPL both hydropower companies have very low liquidity position because the both current and quick ratios are below the standard. Both hydropower companies cannot pay short- term liability at the time of their creditor's demand. It may create difficult situation in future. So, both hydropower

companies should keep sufficient level of current and quick assets to maintain their liquidity position.

2. Profitability position of NHPL was weaker than that of CHPCL and BPCL. It should improve overall efficiency by investing its fund in more returnable assets. I.e. risky area through proper risk analysis techniques.
3. Debt servicing capacity of NHPL appeared weak. So, it is better to search more profitable investments by utilizing its capital and revolving fund. The capital adequacy position of NHPL seems to be less satisfactory than that of CHPCL. So, it needs to raise the net worth.
4. Earning of NHPL could not grow proportionately because of high cost bearing outsiders' fund i.e. debt capital. Therefore, NHPL is suggested to increase the equity financing and minimize the debt capital.
5. Government should formulate plans and policies to attract private as well as public investors for the growth of hydropower companies creating investment friendly environment and focusing on their security in the hydropower development.

2.4. Research Gap

The purpose of this study is to draw some ideas concerning to the financial performance. In addition to that this study is made to receive some ideas, knowledge and suggestions in relation to financial performance of hydropower companies. In this context, the previous studies can't be ignored because they produced 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. "Financial Performance Evaluation of Hydropower Companies" therefore to complete this research work, various books, journals, articles and various published and unpublished dissertations and field opinion are followed as guideline to make the research easier and smooth. 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.

"Financial Performance Evaluation of hydropower Companies" 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

Research Methodology can be understood as a science of studying how research has been done. This chapter looks into the research design, nature and sources of data, data collection procedure and tools and technique of analaysis. For the purpose of achieving the objectives of the study, the applied methodologies are used. The research methodology used in the present study is briefly mentioned below:

3.2. Research Design

For the comparative evaluation of BPC and HPL, descriptive and analytical approaches were used to evaluate the financial performance of these hydropower companies. 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. Ratio analysis, correlation analyses have been done for analyzing the research. The data have been analyzed on the basis of standard financial formulas used in the books of financial management.

3.3. Population and sample

Total numbers of hydropower companies operated in Nepal are population. In Current situation there are 14 Company in Operation (The Name of the Population are Listed Below). Among the various companies two companies is selected purposively.

Name of the Private & Public Sectors Hydropower Companies, which are connected to IPPAN, are listed below:

1. Annapurna Renewable Energy (P). Ltd.
2. Balephi Hydropower Company Limited
3. Bhotekoshi Power Company Private Limited (BKPC)
4. Butwal Power Copmpany Limited (BPC)

5. East Nepal Development Endeavor
6. Himal Power Limited (HPL)
7. Himalayan Hydropower (P). Ltd.
8. Himal Hydropower Company
9. Khudi Hydropower Limited(KHL)
10. Lamjung Electricity Development (P). Ltd. (LEDCO)
11. Manang Trade Link Pvt. Ltd.
12. Molnia Power (P). Ltd.
13. Rairang Hydropower Development Company Private Limited (RHPD)
14. Sanima Hydropower Company (P). Ltd.

(Sourrce: www.ippan.org.np)

Name of the Sample Companies;

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

3.4. Sources of Data

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 consist the annual reports which comprise Balance sheet and profit and loss account statement. Information has also been collected from various publication of NEA.

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. 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 Himal Power Limited, Butwal power Company Limited, Nepal Electricity Authority, Report of 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.

3.6. Data Processing

Data obtained from the various sources can not be directly used in their original form. Further they need to be verified and simplified for the purpose of analysis. 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 interpreted.

3.7. Data Analysis Tools

3.7.1. Tools for Secondary Data Analysis

3.7.1.1. Financial Tools

Financial tools are those, which are used for the analysis and interpretation of financial data. They attempt to explore the financial state of a business and convey the strengths and weakness of its policies and strategies. The following ratios are used for evaluating the performance of selected sample companies:

i. Liquidity Ratios

Liquidity ratios measure the firm's ability to satisfy its short- term commitments out of current or liquid assets. The two primary test of liquidity are current ratio and quick ratio.

a) Current Ratio (CR)

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

b) Quick Ratio (QR)

$$\textbf{Quick Ratio} = \frac{Quick\ Assets}{Current\ Liabiliities}$$

ii. Activity/ Efficiency/ Assets Management Ratio

Assets management ratios are also known as turnover ratios or activity ratios or efficiency ratios. 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.

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

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.

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

c) Average Collection Period

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

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

d) Debtor's Turnover ratio

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

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

e) Capital Employed Turnover Ratio

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

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

iii. Profitability Ratio

Profitability is the end of result of a number of corporate policies and decisions. 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 is calculated as:

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

b) Gross Profit Margin

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

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

c) Operative Expenses Ratio

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

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

d) Return on Assets

The Return on Assets (ROA), which is often called the firm's return on total assets, measure the overall effectiveness of management in generating profit with its available assets. It is calculated as follows:

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

e) Return on share holders equity (ROSHE)

Return on shareholders equity measures the return earned by the shareholders i.e. owners of the company. This ratio can be calculated by using following formula:

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

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.

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.

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

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.

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

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. It is calculated by using following formula

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

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:

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

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.

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

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.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.....X_n are the given observations and N being number of observations, then arithmetic mean usually denoted by $\overline{X}$ is given by:

$$\overline{X} = \frac{X_1 + X_2 + X_3 + \cdots + X_n}{N} = \frac{\sum X}{N}$$

II. Coefficient of Variation (CV)

Coefficient of Variation is method of measuring risk. It is the standardized measure of the risk per unit of return. It is the percentage variance in the mean. Standard deviation is considered as the total variation in the mean Coefficient of variation, denoted by CV is given by:

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

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

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 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

IV. Least Square Linear Trend

Trend Analysis is very useful and commonly applied tool to forecast the future event in quantitative term, On the basis of the tendencies in the dependent variable in the past period. The straight line trend implies that irrespective of the seasonal and cyclical as well as irregular fluctuation, the trend values increase by absolute in arithmetic Progression.

Mathematically Y = a+ bX

Where, Y= Value of the dependent Variable

a = Y- intercept

b = slope of the trend line

X = Value of the independent Variable

Normal equations fitting above equation are:

$\sum Y = Na + b\sum X$

$\sum XY = a\sum X + b\sum \mathbf{X^2}$

Since, $\sum X = 0$, $a = \frac{\sum Y}{N}$, and $b = = \frac{\sum XY}{\sum X^2}$

3.8. Research Variables

The research Variables are mainly related with the financial statements of BPC and HPL. 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.

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

This chapter deals with presentation, analysis and interpretation of relevant data and information of Butwal Power Company and Himal Power Company. To obtain the best result data have been analyzed and interpreted using financial and statistical tools according to the research methodology mentioned in the third chapter.

This chapter is partitioned into two sub heads as presentation of data from secondary sources, and major findings of the study.

4.1 Presentation and Analysis of Data From Secondary Sources

The collected data are presented in this chapter. This section includes the data collected 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

Liquidity Ratios are used to judge the companies 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 of different sampled years has been presented in the table No. 4.1 below.

Table No 4.1

Calculation of Current Ratio

(In, 000)

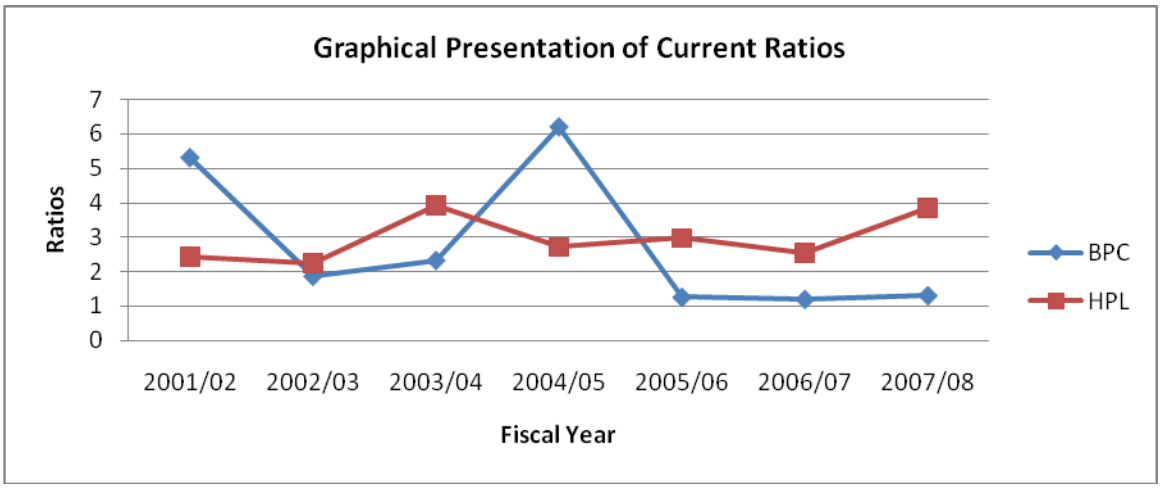
Fiscal Year	Current Assets		Current Liabilities		Ratio (Times)	
	BPC	HPL	BPC	HPL	BPC	HPL
2001/02	286,201	2104,519	54,012	873,979	5.30	2.41
2002/03	520,987	2417,624	280,166	1086,310	1.86	2.23
2003/04	481,833	1894,736	207,655	485,105	2.32	3.91
2004/05	335,582	2182,303	54,172	809,554	6.19	2.70
2005/06	543,416	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
Mean ($\overline{X}$)					2.77	2.94
Standard Deviation (σ)					1.936	0.63
Coefficient of Variation (CV) %					69.89	21.43

Sources: Annual Report of BPC &HPL (F/Y 2001/02-2007/08)

Looking over the trend of current ratio of BPC over 7 Years, it can be observed that other than last three years, the company's current ratio has remained satisfactory. Increased creditors and payables of BPC is the reason for decreased current ratio in last three years. On the Contrary, Current ratio of HPL has remained satisfactory.

BPC has fluctuating trend of current ratio, but average mean of Current ratio of 2.77 seems to be over than the conventional standard of 2:1 which suggest the sound liquidity position. Similarly Current ratio of HPL is stable than BPC. Every year, the Current ratio of HPL is over standard 2.1 and average mean is also over standard 2.1 (2.94>2.1). Likewise BPC has a Higher CV than that of HPL which means that BPC has more fluctuations in ratio than HPL. So Both Companies Current ratio position is satisfactory but, comparatively the position of HPL is better than BPC.

Figure No 4.1



The graphical presentation of current ratio shows that the current ratios of BPC have more fluctuations since F/Y 2003/04 to 2005/06. It has increased in F/Y 2004/05 and decreased in F/Y 2005/06. In contract, the current ratio of HPL has been slightly increasing or decreasing trend since starting year to ending year.

Current Ratio of Butwal Power Company

(In 000)

Fiscal Year	Current Assets	Current Liabilities	Ratio(Times)
2008/09	7,43,837	6,24,543	1.19
2009/10	651,519	5,66,569	1.15

Source: Annual Report of BPC FY 2009/10

In the year 2009/10, the current ratio of BPC has remained 1.19 and 1.15. Comparatively, it has remained stable since the past four years.

b. Quick Ratio

Table No 4.2

Calculation of Quick Ratio

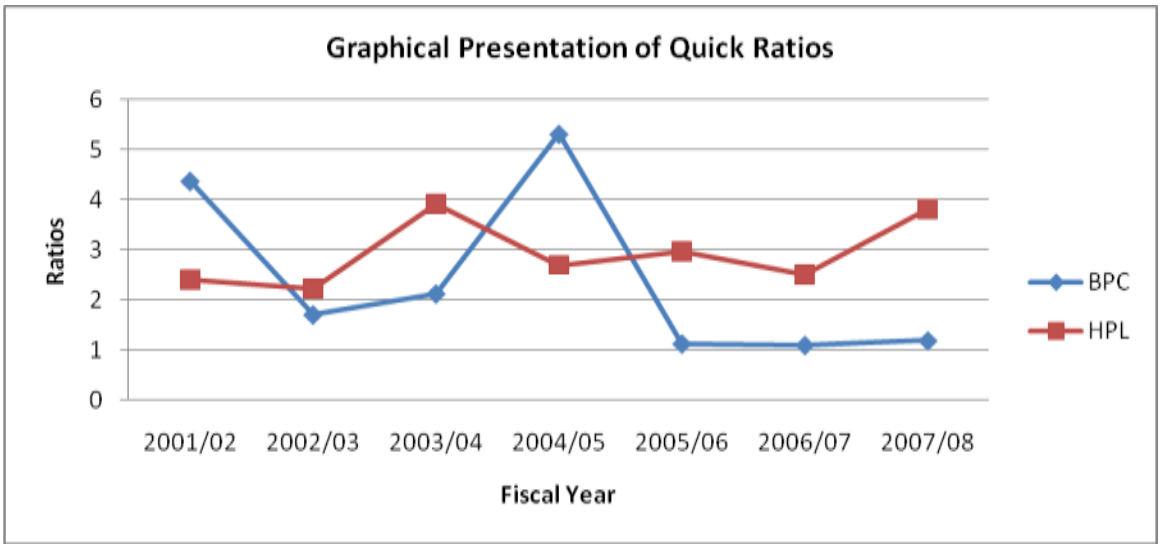
(In, 000)

Fiscal Year	Quick Assets		Current Liabilities		Ratio (Times)	
	BPC	HPL	BPC	HPL	BPC	HPL
2001/02	236,064	2104,033	54,012	873,979	4.37	2.41
2002/03	477,002	2417,624	280,166	1086,310	1.70	2.23
2003/04	440,067	1894,736	207,655	485,105	2.12	3.91
2004/05	287,544	2182,303	54,172	809,554	5.31	2.70
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
Mean ($\overline{X}$)					2.41	2.93
Standard Deviation (σ)					1.60	0.63
Coefficient of Variation (CV) %					66.39	21.50

Sources: Annual Report of BPC &HPL (F/Y 2001/02-2007/08)

Above table reveals a fluctuating but satisfactory trend of quick ratio of BPC with a mean of 2.41. Similarly quick ratio of HPL is also satisfactory with a mean of 2.93. Standard deviation and CV of BPC is 1.60 and 66.39. In contrast Standard deviation and CV of HPL are .63 and 21.50 it means that risk of BPC is higher than HPL.

Figure No 4.2



The graphical presentation of quick ratios shows that the quick ratio of BPC experienced a fluctuating in F/Y 2003/04 and since F/Y 2004/05 it has been decreasing gradually. In contrast, the current ratio of HPL has been slightly increasing and decreasing over study period.

Quick Ratio of Butwal Power Company

(In, 000)

Fiscal Year	Quick Assets	Current Liabilities	Ratio(Times)
2008/09	651114	6,24,543	1.04
2009/10	546976	5,66,569	0.96

Source: Annual Report of BPC (2009/10)

The quick ratio of BPC has remained 1.04 and 0.96 in the year 2009 and 2010 respectively. Comparatively, for three years it has been in decreasing trend.

4.1.2 Activity/ Efficiency/ Assets Management Ratios

a) Fixed Assets Turnover Ratio

Table No 4.3

Calculation of Fixed Assets Turnover Ratio

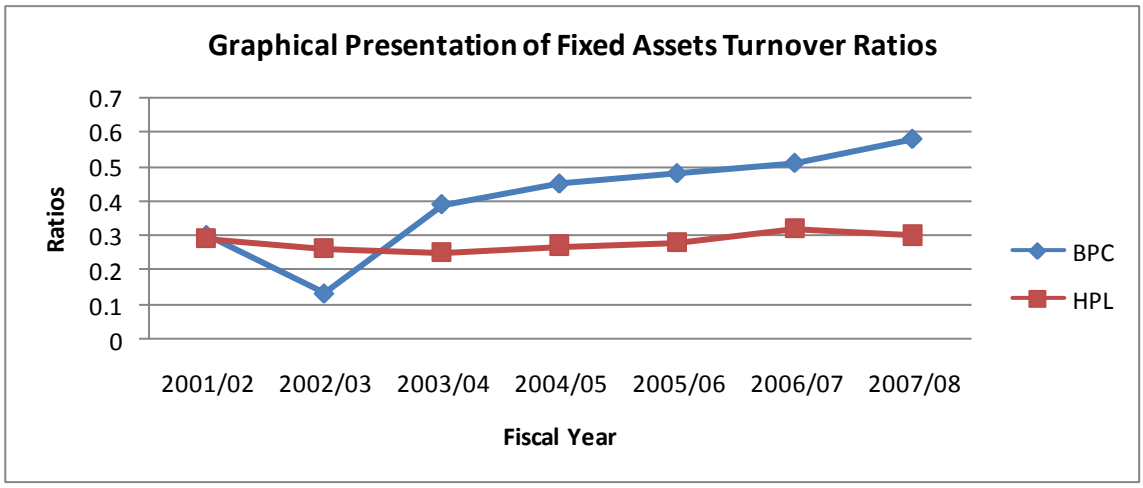
(In, 000)

Fiscal Year	Sales		Fixed Assets		Ratio (Times)	
	BPC	HPL	BPC	HPL	BPC	HPL
2001/02	236,278	2171,039	778,913	7548,112	0.30	0.29
2002/03	96,364	2193,850	763,484	8570,394	0.13	0.26
2003/04	283,167	2092,032	727,340	8213,644	0.39	0.25
2004/05	323,134	2104,124	714,016	7908,173	0.45	0.27
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
Mean ($\overline{X}$)					0.406	0.281
Standard Deviation (σ)					0.139	0.026
Coefficient of Variation (CV) %					34.24	9.25

Sources: Annual Report of BPC &HPL (F/Y 2001/02-2007/08)

In above table, we can find that, Fixed Assets turnover ratio of BPC is increasing trend except F/Y 2002/03. BPC has used its fixed assets quite adequately; generally an overall mean sale of Rs 0.406 out of each rupee invested in fixed assets. Similarly Fixed assets turnover ratio of HPL is slightly decreasing From F/Y 2002/03 to 2003/04, then slightly increasing since F/Y 2004/05 to F/Y 2006/07 and last year has decreasing. Average mean sale of HPL is Rs 0.281 out of each rupee invested in fixed assets. CV of HPL is 9.25% which is less than the CV of BPC 34.24% thus the volatility of ratio is lower in HPL but HPL has not used its fixed assets quite adequately than BPC.

Figure No 4.3



The graphical presentation of fixed assets turnover ratios shows that the FATOR of BPC experienced a bulky drop in F/Y 2002/03 and after recovery the New Year, since then it has been increasing steadily. In contrast, the FATOR of HPL has slightly decreased in first three years then slightly decreased in next 3 years and at last increased but stable trend.

Fixed Asset Turnover Ratio of Butwal Power Company

(In, 000)

Fiscal Year	Sales	Fixed Assets	Ratio(Times)
2008/09	4,30,800	7,65,339	0.56
2009/10	4,53,431	7,81,666	0.58

Source: Annual Report of BPC (2009/10)

The fixed asset turnover ratio of BPC is in increasing trend for last two years.

b) Total Assets Turnover Ratio

Table No 4.4

Calculation of Total Assets Turnover Ratio

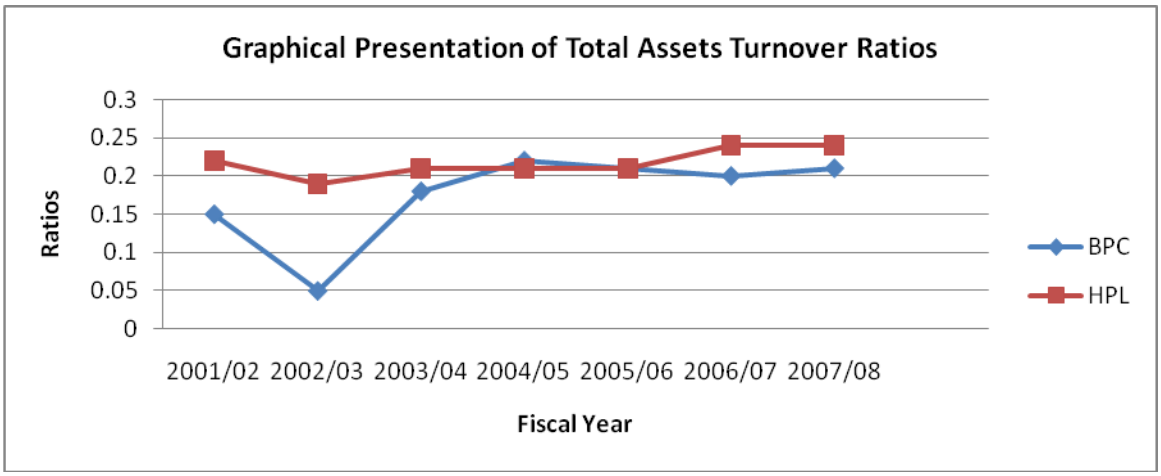
(In, 000)

Fiscal Year	Sales		Total Assets		Ratio (Times)	
	BPC	HPL	BPC	HPL	BPC	HPL
2001/02	236,278	2171,039	1622,165	9679,770	0.15	0.22
2002/03	96,364	2193,850	1825,464	10999,525	0.05	0.19
2003/04	283,167	2092,032	1579,195	10110,846	0.18	0.21
2004/05	323,134	2104,124	1439,238	10098,600	0.22	0.21
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
				Mean ($\overline{X}$)	0.174	0.217
				Standard Deviation (σ)	0.056	0.017
				Coefficient of Variation (CV) %	32.18	7.83

Sources: Annual Report of BPC &HPL (F/Y 2001/02-2007/08)

Above table reveals a fluctuating and unsatisfactory trend of TATOR of BPC with a mean of 0.174. In contrast, HPL has better TATOR mean of 0.217 and a rather incremental trend except F/Y 2002/03. HPL also has less volatility in TOTAR with compared to BPC which is indicated by its CV. Considering the result of TATOR, it can be concluded that BPC is utilizing its current assets inefficiency or in other words, it has heavily invested in current assets. However this also indicates that HPL has a weaker liquidity position with compared to BPC.

Figure No 4.4



The graphical presentation of TOTARs shows that the TATOR of BPC experienced a big drop in F/Y 2002/03 and after increasing rapidly for next two years. It has again dropped in F/Y 2005/06 and F/Y 2006/07 and at last F/Y 2007/08 also slightly increased. In contrast the TATOR of HPL has been drop in F/Y 2002/03 then after increasing steadily.

Total Asset Turnover Ratio of Butwal Power Company

(In, 000)

Fiscal Year	Sales	Total Assets	Ratio(Times)
2008/09	4,30,800	22,64,200	0.19
2009/10	4,53,431	23,41,444	0.19

Source: Annual Report of BPC (2009/10)

The Total Asset turnover ratio of BPC is stable in the year fiscal 2009 and 2010.

c) Debtors Turnover Ratio/ Receivable Turnover Ratio

Table No 4.5

Calculation of Debtor's Turnover Ratio

(In, 000)

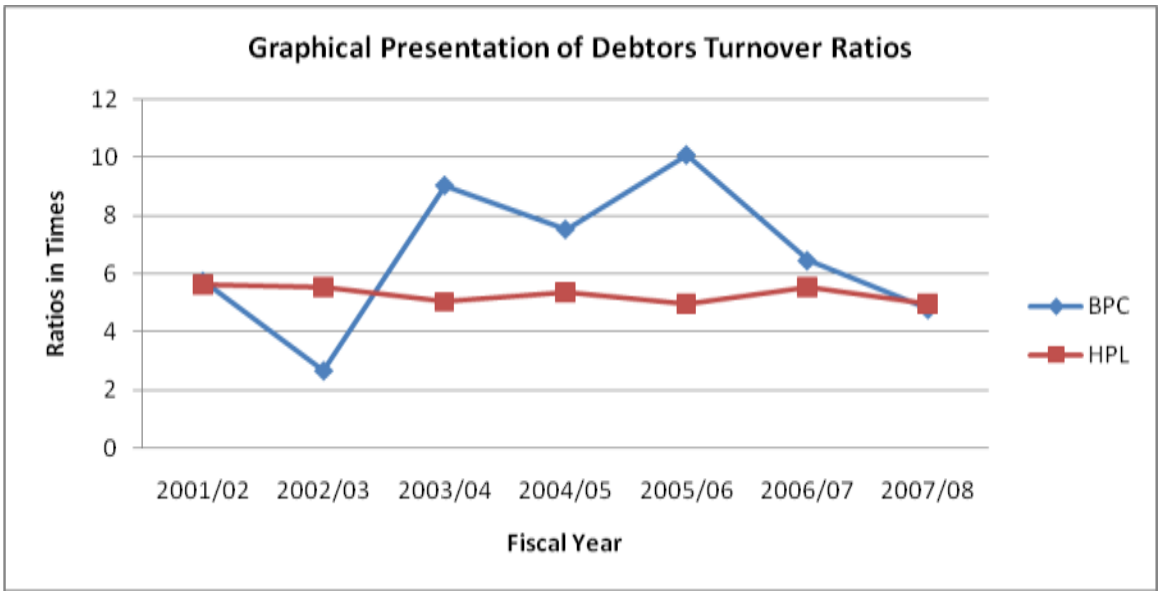
Fiscal Year	Sales		Closing Debtors		Ratio (Times)	
	BPC	HPL	BPC	HPL	BPC	HPL
2001/02	236,278	2171,039	41,190	386,388	5.74	5.62
2002/03	96,364	2193,850	36,224	396,465	2.66	5.53
2003/04	283,167	2092,032	31,309	416,028	9.04	5.03
2004/05	323,134	2104,124	42,921	393,674	7.53	5.34
2005/06	358,419	2121,897	35,512	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
Mean ($\overline{X}$)					6.611	5.28
Standard Deviation (σ)					2.350	0.269
Coefficient of Variation (CV) %					35.55	5.09

Sources: Annual Report of BPC &HPL (F/Y 2001/02-2007/08)

Above table reveals a fluctuating trend of DTR of BPC except fiscal year 2007/08 and slightly increasing and decreasing trend of DTR of HPL. Due to considerably increased amount of debtors or receivable, the DTR of BPC and HPL have dropped to 4.77 and 4.96 respectively after experiencing a high turnover in the year 2007/08.

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 35.55% and 5.09% respectively.

Figure No 4.5



The graphical presentation of DTRs shows that the DTR of BPC has experienced rapid ups and downs through the study period. In contrast, the DTR of HPL has slightly decreased from first F/Y to 3rd F/Y then slightly increased in F/Y 2004/05 then slightly decreased or increased through the study period.

Debtors Turnover Ratio of Butwal Power Company

(In, 000)

Fiscal Year	Sales	Closing Debtors	Ratio(Times)
2008/09	4,30,800	1,71,359	2.51
2009/10	4,53,431	93,690	4.84

Source: Annual Report of BPC (2009/10)

The debtor's turnover ratio of Butwal Power Company has decreased in the year 2009. But in the Fiscal year 2010 it has increased.

d) Average Collection Period (ACP)

Table No 4.6

Calculation of Average Collection Period

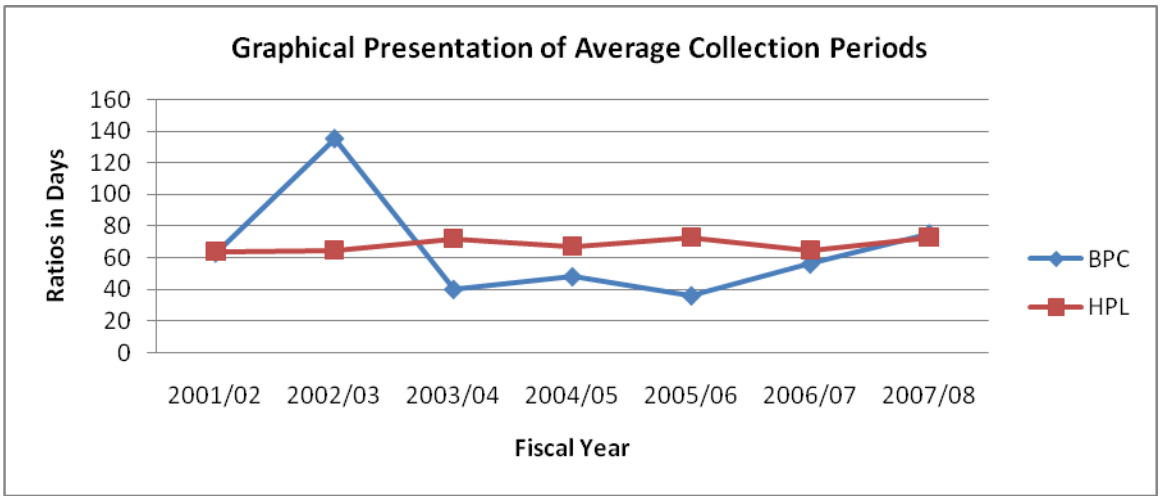
(In, 000)

Fiscal Year	Days in a Year	Debtors Turnover Ratio		Average Collection Period (Days)	
		BPC	HPL	BPC	HPL
2001/02	360	5.74	5.62	63	64
2002/03	360	2.66	5.53	135	65
2003/04	360	9.04	5.03	40	72
2004/05	360	7.53	5.34	48	67
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
Mean ($\overline{X}$)				65	68
Standard Deviation (σ)				30.659	8.527
Coefficient of Variation (CV) %				47.17	12.54

Sources: Annual Report of BPC &HPL (F/Y 2001/02-2007/08)

Above table reveals a very fluctuating trend of ACP of BPC with a mean of 65 days. Except F/Y 2007/08, last four fiscal years of BPC present a very recovering trend of ACP and more enthusiastic than that of HPL. ACP of HPL is 3 days more than BPC but Stable trend of AC It has less volatility in ratios presented by CV of 12.54%. In contrast, BPC has a CV of 47.17% which indicates its instable trait of receivable management.

Figure No 4.6



The Graphical presentation of ACPs shows that ACP of BPC experienced rapid ups and down for the first 3 years of study and since then it has remained considerably consistent. In Contrast, the ACP of HPL has slightly increasing or decreasing trend over the study period.

Calculation of Average Collection Period

(In, 000)

Fiscal Year	Days in Year	Debtors Ratio	Average Collection Period(days)
2008/09	360	2.51	144
2009/10	360	4.84	75

Source: Annual Report of BPC (2009/10)

In the Fiscal year 2008/09, the average collection period of Butwal Power Company has remained 144 days, which is quite higher then the last year. But in the year 2009/2010 it has decreased to 75 days.

e) Capital Employed Turnover Ratio

Table No 4.7

Calculation of Capital Employed Turnover Ratio

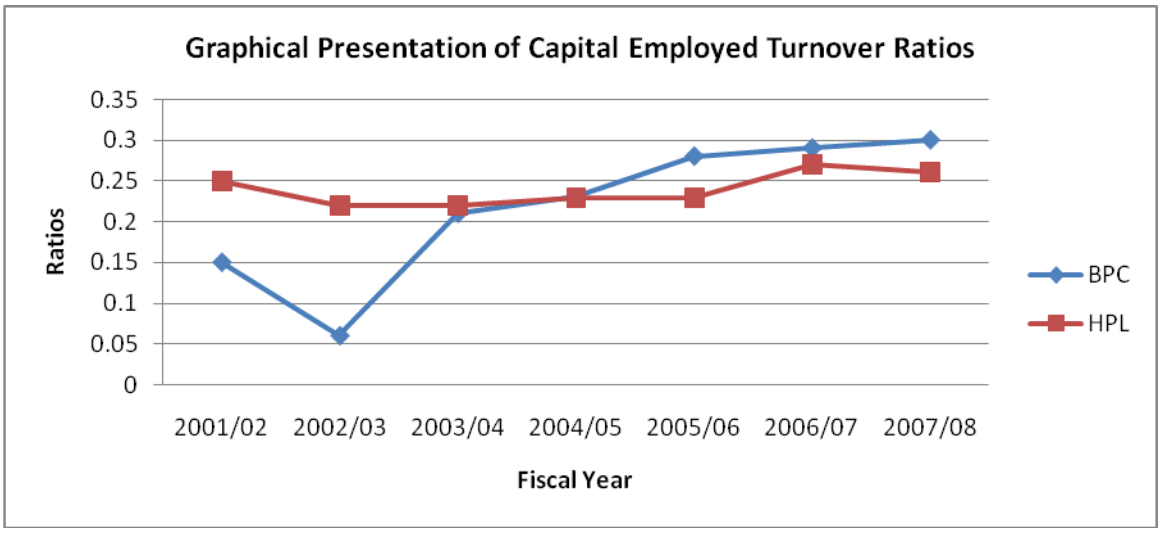
(In, 000)

Fiscal Year	Sales		Capital Employed		Ratio (Times)	
	BPC	HPL	BPC	HPL	BPC	HPL
2001/02	236,278	2171,039	1568,153	8805,791	0.15	0.25
2002/03	96,364	2193,850	1545,298	9913,215	0.06	0.22
2003/04	283,167	2092,032	1345,784	9625,740	0.21	0.22
2004/05	323,134	2104,124	1380,528	9289,046	0.23	0.23
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
Mean ($\overline{X}$)					0.217	0.24
Standard Deviation (σ)					0.081	0.017
Coefficient of Variation (CV) %					37.33	7.08

Sources: Annual Report of BPC &HPL (F/Y 2001/02-2007/08)

Above table, depicts that the Capital Turnover ratio of BPC is increasing trend except F/Y 2002/03. In contrast the capital turnover ratio of HPL is decreasing in F/Y 2002/03 and stable in 2003/04 then slightly increasing trend except F/Y 2007/08. Coefficient of variation (CV) of BPC is more (37.33) then HPL (7.08) because of low average mean and high fluctuation in 2003/03. CETR of HPL is satisfactory trend.

Figure No 4.7



The Graphical presentation of Capital Employed ratios shows that capital employed ratio of BPC experience rapid down in 2002/03 and rapidly increase in 2003/04 then slightly increase since 2003/04 to 2007/08. In contrast, the Capital employed turnover ratio of HPL has slightly increased or decreased 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.

a) Net Profit Margin

Table No 4.8

Calculation of Net Profit Margin

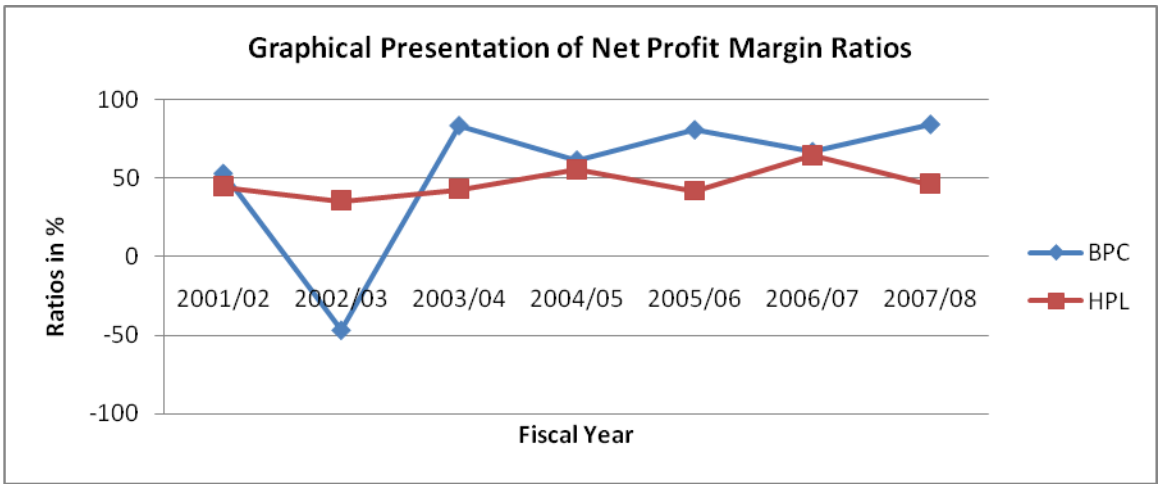
(In, 000)

Fiscal Year	Net Profit After Tax		Sales		Ratio %	
	BPC	HPL	BPC	HPL	BPC	HPL
2001/02	124,626	960,034	236,278	2171,039	52.75	44.22
2002/03	(44,944)	773,597	96,364	2193,850	-46.64	35.26
2003/04	235,418	893,285	283,167	2092,032	83.14	42.70
2004/05	197,761	1162,551	323,134	2104,124	61.20	55.25
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
				Mean ($\overline{X}$)	54.49	47.02
				Standard Deviation (σ)	34.71	8.94
				Coefficient of Variation (CV) %	63.70	19.01

Sources: Annual Report of BPC &HPL (F/Y 2001/02-2007/08)

Above table reveals a fluctuating trend of BPC. In F/Y 2002/03, BPC has suffered a loss of 64.64% due to decreased sales. However, the NPR has remained admirable in later years with an overall mean ratio of 54.49%. In contrast, NPR of HPL has increasing or decreasing trend over study period but stable then BPC. Mean of HPL has not better 47.02% but HPL has less volatility because of low fluctuation trend of NPR then BPC. The CV with respect to NPR of BPC and HPL are 63.70% and 19.01% respectively.

Figure No 4.8



The graphical presentation of NPR shows that after experiencing a massive drop in F/Y 2002/03 and rapid recovery the following year, the NPR of BPC since then, has been experiencing ups and downs in its NPR to a range of 20%. In contrast, the NPR of HPL has been decreasing and increasing in its NPR to a range of 4 to 18%

Calculation of Net Profit Margin of Butwal Power Company

In (000)

Fiscal Year	Net Profit After Tax	Sales	Ratio (%)
2008/09	2,91,592	4,30,800	67.68%
2009/10	2,24,233	4,53,431	49.45%

Source: Annual Report of BPC (2009/10)

b) Operating Profit Ratio

Table No 4.9

Calculation of Operating Profit Ratio

(In, 000)

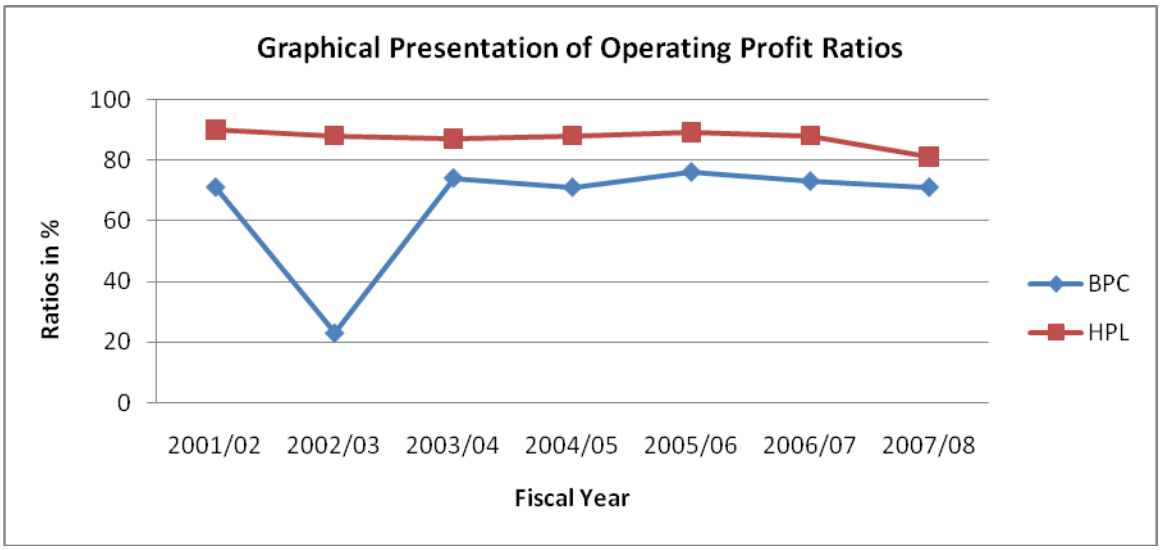
Fiscal Year	Operating Profit		Sales		Ratio %	
	BPC	HPL	BPC	HPL	BPC	HPL
2001/02	167,142	1944,732	236,278	2171,039	71	90
2002/03	22,123	1927,893	96,364	2193,850	23	88
2003/04	209,373	1828,348	283,167	2092,032	74	87
2004/05	230,695	1843,544	323,134	2104,124	71	88
2005/06	272,809	1895,080	358,419	2121,897	76	89
2006/07	276,296	2033,076	379,769	2307,461	73	88
2007/08	299,046	1736,457	421,687	2132,995	71	81
				Mean ($\overline{X}$)	66	87
				Standard Deviation (σ)	15.77	7.56
				Coefficient of Variation (CV) %	23.89	8.69

Sources: Annual Report of BPC &HPL (F/Y 2001/02-2007/08)

Table 4.10 depicts that the operating Profit Ratio of BPC has stable except fiscal year 2002/03. Slightly increasing or decreasing trend over study period. Similarly the operating profit ratio of HPL has better and stable, slightly increasing or decreasing trend over study period. CV of BPC and HPL are 23.89% and 8.69% respectively.

The operating profit ratio of BPC and HPL seems to be better. Generally a 40% ratio is supposed good and only in F/Y 2002/03 has less than 40% of BPC but, HPL Maintain better OPR all over study period.

Figure No 4.9



The Graphical presentation of operating profit ratios shows that operating profit ratio of BPC has rapidly drop in F/Y 20002/03 and rapidly recovered in F/Y 2003/04 then increasing trend before last fiscal year 2007/08 and slightly decreased in 2007/08.

Similarly, operating profit ratios of HPL has slightly increasing and decreasing trend over the study period, slightly decreasing trend in first three year. Increasing in next two years then decreasing in last two years but stable.

c) Operating Expenses Ratio (OER)

Table No 4.10

Calculation of Operating Expenses Ratio

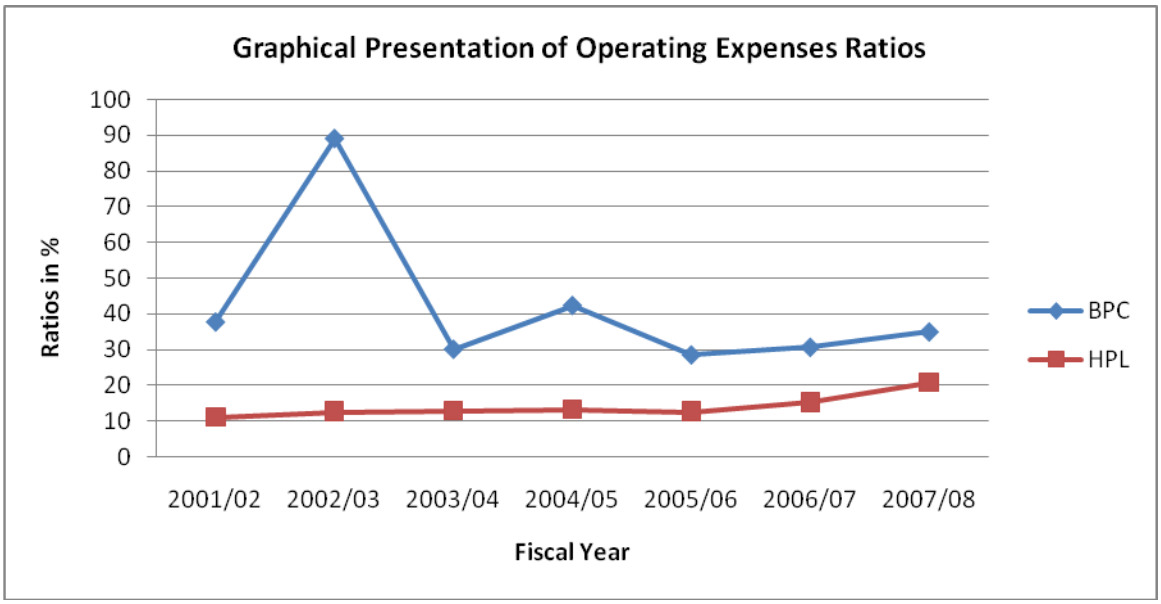
(In, 000)

Fiscal Year	Operating Expenses		Sales		Ratio %	
	BPC	HPL	BPC	HPL	BPC	HPL
2001/02	89,303	242,951	236,278	2171,039	37.80	11.19
2002/03	85,856	280,076	96,364	2193,850	89.10	12.76
2003/04	85,485	271,344	283,167	2092,032	30.19	12.97
2004/05	104,799	280,733	323,134	2104,124	42.43	13.34
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
Mean ($\overline{X}$)					40.55	14.18
Standard Deviation (σ)					20.03	2.95
Coefficient of Variation (CV) %					49.40	20.80

Sources: Annual Report of BPC &HPL (F/Y 2001/02-2007/08)

Above table a shows a fluctuating trend of Operating Expenses Ratio of BPC with a range of 60.51% and mean ratio of 40.55%. After fiscal year 2002/03, BPC has been able to maintain a decreasing trend of operating expenses ratio around 30%. In Contrast, HPL has maintained an admirably low and consistent trend of OER with a mean ratio of 14.18% and CV of 20.80%. 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 49.40%

Figure No 4.10



The graphical presentation of OERs shows that after a huge increase in F/Y 2002/03, the OER of BPC dropped massively the following year and since, then it has been experiencing small ups and downs in its OER. In contrast, the OER of HPL has remained much stable since the first year of its operation.

d) Return On Total Assets (ROTA)

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Table No 4.11

Calculation of Return on Total Assets Ratio

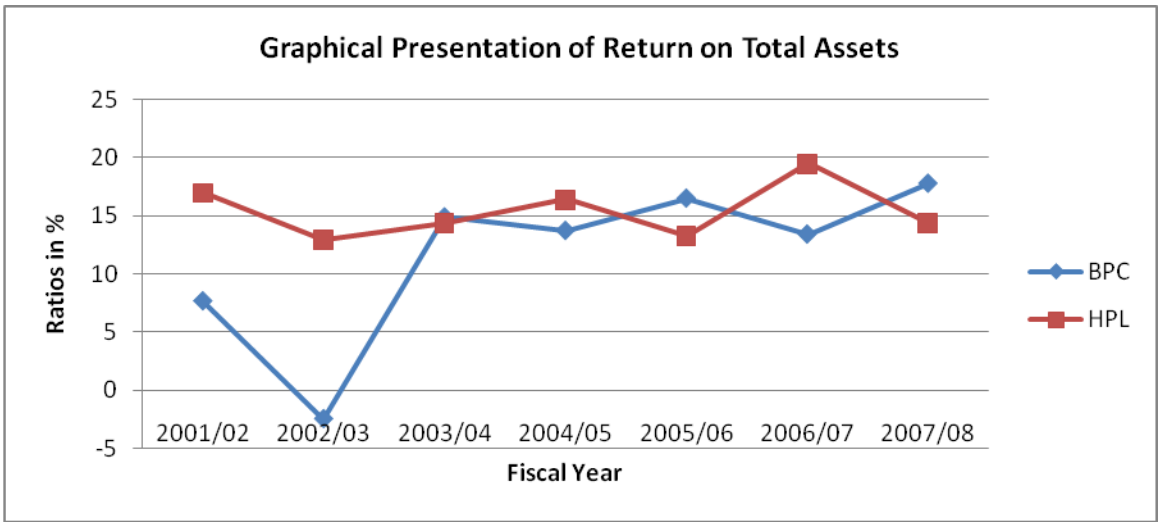
(In, 000)

Fiscal Year	Net Profit + Interest		Total Assets		Ratio %	
	BPC	HPL	BPC	HPL	BPC	HPL
2001/02	124,626	1644,573	1622,165	9679,770	7.68	16.99
2002/03	(44,944)	1423,961	1825,464	10999,525	(2.46)	12.95
2003/04	235,418	1458,182	1579,195	10110,846	14.91	14.42
2004/05	197,761	1655,154	1439,238	10098,600	13.74	16.39
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	1986,926	8728,710	17.81	14.38
Mean ($\overline{X}$)					11.66	15.42
Standard Deviation (σ)					6.36	2.14
Coefficient of Variation (CV) %					54.55	13.88

Sources: Annual Report of BPC &HPL (F/Y 2001/02-2007/08)

Above table reveals a fluctuating trend of ROTA of BPC with a mean ratio of 11.66%. BPC does not carry loan burden therefore does not include interest calculation while computing ROTA. In F/Y 2002/03, BPC has suffered a negative ROTA of 2046% due to a loss of Rs 44,944. However, thereafter, the ROTA has been satisfactory. In contrast, HPL has maintained stable trend of ROTA. It has slightly fluctuation with an overall mean ratio of 15 .42. ROTA of HPL has slightly increased in one year then slightly decreased in another year and it also more stability in ratios which is indicated by a CV of 13.88%. BPC, with a lower mean ratio of ROTA and higher CV of ratios Proves to be less attractive than HPL to investors and lenders.

Figure No 4.11



The Graphical presentation of ROTA ratios shows that the ROTA of BPC dropped in F/Y 2002/03; however it recovered profusely the following year. Since F/Y 2003/04, the ROE of BPC has been experiencing small ups and downs in ROTA. In contrast, the ROTA of HPL has been slightly increased or decreased over 7 year study period except F/Y 2006/07.

Calculation of Return on Total Assets of Butwal Power Company

In (000)

Fiscal Year	Net Profit After Tax	Total Assets	Ratio (%)
2008/09	2,91,592	22,64,200	12.87%
2009/10	2,24,233	23,41,444	9.56%

Source: Annual Report of BPC (2009/10)

e) Return on Shareholders' Equity (ROSHE)

Table No 4.12

Calculation of Return on Shareholders' Equity

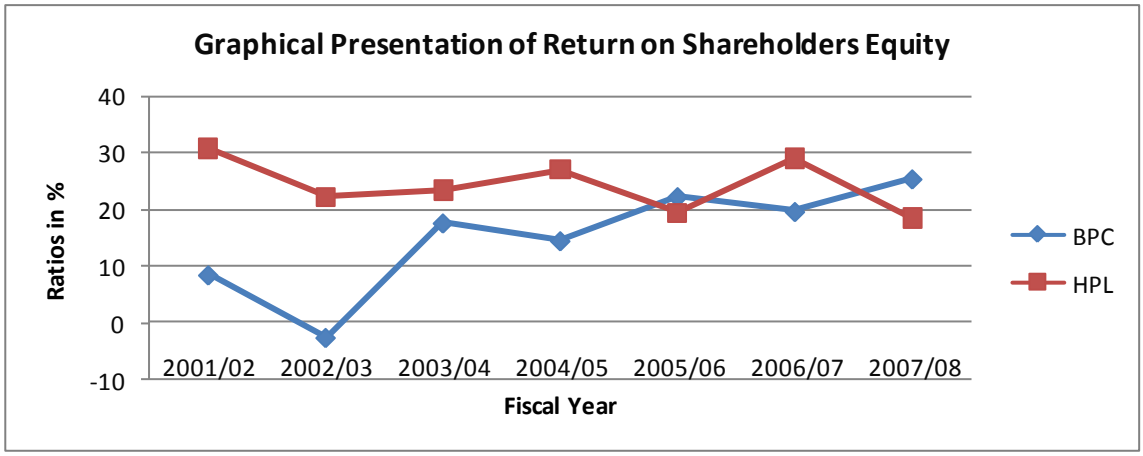
(In, 000)

Fiscal Year	Net Profit After Tax		Shareholders' Equity		Ratio %	
	BPC	HPL	BPC	HPL	BPC	HPL
2001/02	124,626	960,034	1515,075	3123,889	8.23	30.73
2002/03	(44,944)	773,597	1537,645	3483,863	(2.92)	22.21
2003/04	235,418	893,285	1345,784	3818,257	17.49	23.39
2004/05	197,761	1162,551	1380,528	4302,006	14.32	27.02
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
Mean ($\overline{X}$)					14.88	24.30
Standard Deviation (σ)					9.24	4.36
Coefficient of Variation (CV) %					62.10	17.94

Sources: Annual Report of BPC &HPL (F/Y 2001/02-2007/08)

Above table reveals a fluctuating trend of BPC with a mean ratio of 14.88%. In F/Y 2002/03, BPC has suffered a negative ROE of 2.92%, due to loss of Rs 44,944. However, after that the ROE has been satisfactory revolving around 20%. In Contrast, HPL has maintained considerable higher trend of ROE with an overall mean ratio of 24.30% and CV of 17.94%. HPL has also slightly fluctuated since fiscal year 2004/05but has higher ROE than BPC. BPC with a lower mean ratio of ROE and higher CV of ratios proves to be less attractive than HPL to shareholders.

Figure No 4.12



The Graphical Presentation of ROE ratios that the ROE of BPC dropped in F/Y 2002/03: however it recovered profusely the following year and at last year BPC has maintain higher ROE. Similarly ROE of HPL has slightly fluctuated since F/Y 2002/05 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 No 4.13

Calculation of Leverage Ratios

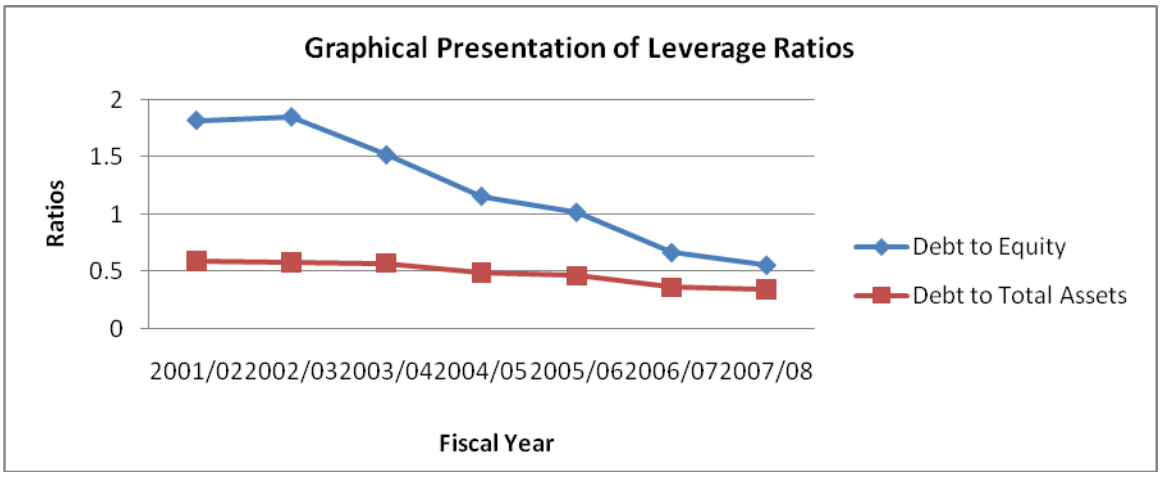
(In, 000)

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
2001/02	5681,902	3123,889	9679,770	1.82	0.59
2002/03	6429,352	3483,863	10999,525	1.85	0.58
2003/04	5807,484	3818,257	10110,846	1.52	0.57
2004/05	4987,040	4302,006	10098,600	1.16	0.49
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	2968227	5317,483	8728,710	0.56	0.34
Mean ($\overline{X}$)				1.23	0.48
Standard Deviation (σ)				0.48	0.12
Coefficient of Variation (CV) %				39.02	25

Sources: Annual Report of BPC &HPL (F/Y 2001/02-2007/08)

Above table reveals a decreasing trend of leverage ratios of HPL. The debt to shareholders equity ratio has fallen from 1.85 to 0.56 in last six years due to continuously decrease in long- term debt except F/Y 2002/03 and increase in shareholders equity. Similarly, the debt to total assets ratio has fallen from 0.59 to 0.34 in last 7 years.

Figure No 4.13



The Graphical presentation of leverage shows that the leverage ratios of HPL have been decreased 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) Earning Per Share (EPS)

Table No 4.14

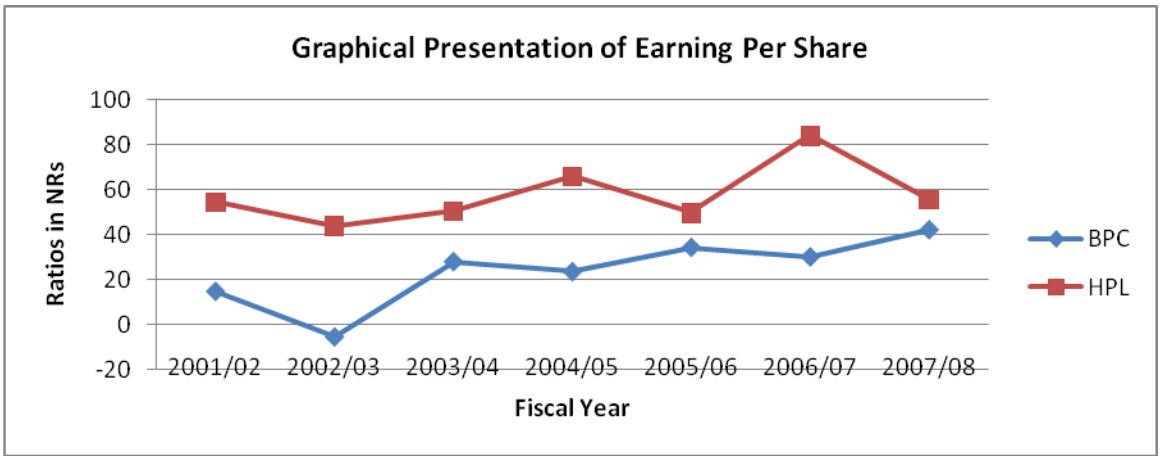
Calculation of Earning Per Share

Fiscal Year	Earning After Tax		No of Equity Share		Rs	
	BPC	HPL	BPC	HPL	BPC	HPL
2001/02	124,626,123	960,034,374	8390,580	17641,439	14.85	54.42
2002/03	(44,944,141)	773,597,416	8390,580	17641,439	(5.36)	43.85
2003/04	235,418,698	893,285,038	8390,580	17641,439	28.06	50.64
2004/05	197,761,775	1162,550,597	8390,580	17641,439	23.57	65.90
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
Mean ($\overline{X}$)					23.97	57.76
Standard Deviation (σ)					14.05	12.41
Coefficient of Variation (CV) %					58.61	21.49

Sources: Annual Report of BPC &HPL (F/Y 2001/02-2007/08)

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 23.97. HPL is yielding on better mean EPS of Rs 57.76. In F/Y 2002/03, BPC has suffered a negative EPS of Rs 5.36 due to a loss of Rs 44,944,141. However, thereafter the EPS of BPC has 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 58.61% and 21.49% respectively.

Figure No 4.14



The Graphical presentation of EPS ratios shows that the EPS of BPC dropped in F/Y 2002/03: however it recovered profusely the following years. Since, F/Y 2003.04, the EPS of BPC has been experiencing small ups and downs in its EPS. In contrast, the EPS of HPL has been experiencing bigger ups and downs since F/Y 2004/05 in its EPS.

b) Dividend Per Share (DPS)

Table No 4.15

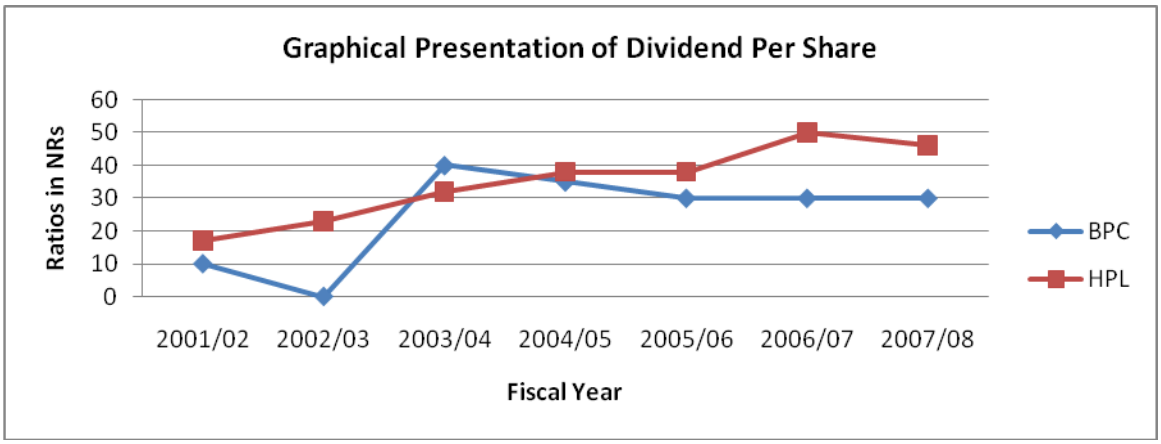
Calculation of Dividend per Share

Fiscal Year	Total Distributed dividend		No of Equity Share		Rs	
	BPC	HPL	BPC	HPL	BPC	HPL
2001/02	83,905,800	293,358,000	8390,580	17641,439	10	17
2002/03	0	413,623,000	8390,580	17641,439	0	23
2003/04	335,623,200	558,891,200	8390,580	17641,439	40	32
2004/05	293,670,300	678,801,400	8390,580	17641,439	35	38
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
Mean ($\overline{X}$)					25	34.86
Standard Deviation (σ)					13.36	10.95
Coefficient of Variation (CV) %					53.44	31.41

Sources: Annual Report of BPC &HPL (F/Y 2001/02-2007/08)

Above table reveals fluctuating trend of DPS of BPC in Fiscal Year 2002/03, BPC has not distributed any dividend due to ma loss of Rs 44,944, While DPS of BPC of last 3 years is constant i.e. Rs 30. In Contrast, the DPS of HPL is increasing trend except last year. DPS of HPL is better than BPC. The Mean DPS of BPC and HPL are Rs 25 and Rs 34.86 respectively. The CV with respect to DPS of BPC and HPL are 53.44% and 31.41% respectively which indicates high fluctuations in DPS of BPC rather than HPL.

Figure No 4.15



The graphical presentation of DPS ratios shows that BPC have been experiencing highly fluctuating DPS ratios through the beginning of the study period. The EPS of BPC dropped 0 % in F/Y 2002/03; however it jumped on 40% the following year then the DPS ratios of BPC can be stable in last 3 years. In contrast DPS ratios of HPL has stable and increasing trend from starting study period to 6 years and slightly decreased in F/Y 2007/08.

c) Dividend Payout Ratio (DPR)

Table No 4.16

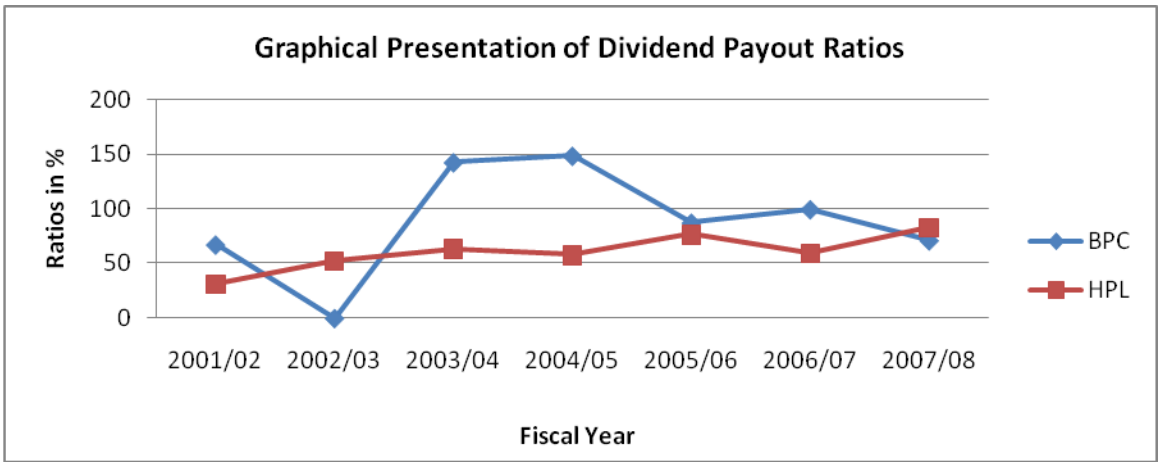
Calculation of Dividend Payout Ratio

Fiscal Year	Dividend Per Share		Earning Per Share		Ratios %	
	BPC	HPL	BPC	HPL	BPC	HPL
2001/02	10	17	14.85	54.42	67.34	31.24
2002/03	0	23	(5.36)	43.85	0	52.45
2003/04	40	32	28.06	50.64	142.55	63.19
2004/05	35	38	23.57	65.90	148.49	57.66
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
Mean ($\overline{X}$)					88.05	60.43
Standard Deviation (σ)					46.64	15.46
Coefficient of Variation (CV) %					52.97	25.58

Sources: Annual Report of BPC &HPL (F/Y 2001/02-2007/08)

Above table reveals the fluctuating trend of DPR of both Companies. In F/Y 2002/03, BPC has not distributed any dividend due to loss of Rs 44944. The DPR of F/Y 2003/04, 2004/05 &2005/06 has been much luring to the investors of BPC revolving around 120%. 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 52.97% and 25.58%. Due to high fluctuation, CV of BPC is higher than HPL.

Figure No 4.16



The Graphical presentation of DPR ratios shows that BPC has been experiencing highly fluctuating DPR through the study period. The DPR of BPC dropped to 0% in F/Y 2002/03; however it jumped on 142% the following year. The DPR ratio of HPL has lower than BPC in ove3rall study period but it can be considered much stable than that of BPC.

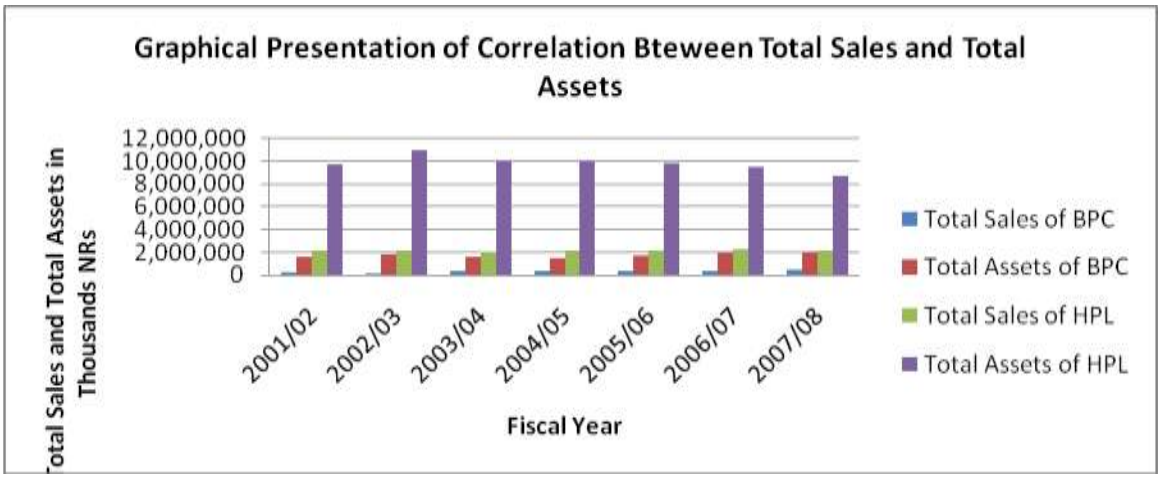
4.1.4.2 Correlation Analysis

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.

Figure No 4.17



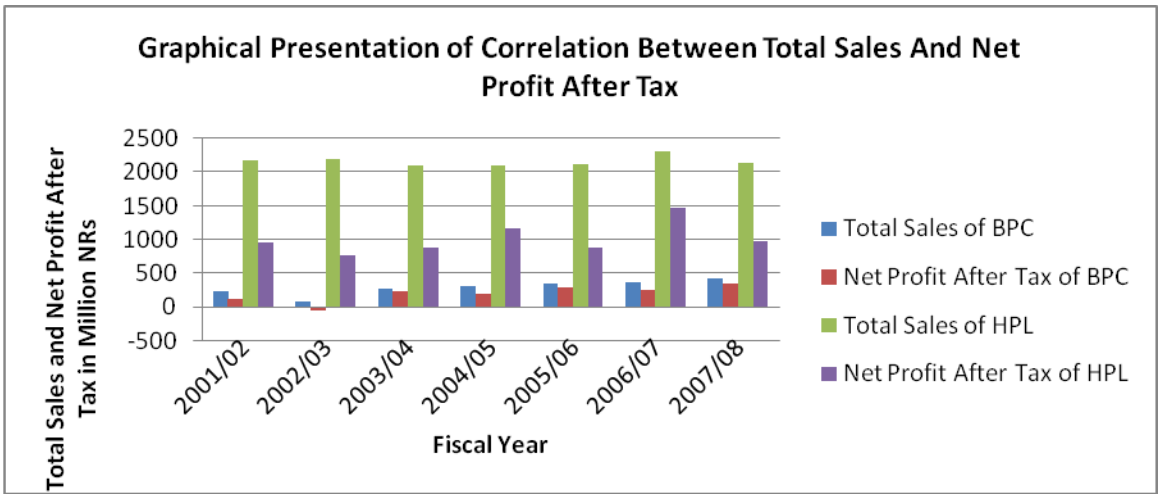
The coefficient of correlation between Sales (X) and Total Assets (Y) of BPC and HPL came to be 0.221 and -0.079 respectively. This suggests that the two variables have positive relation to each other in BPC and Negative relation to each other in HPL.

However, coefficient of correlation in BPC appeared less than 6 times of PE i.e. $0.221<6\times0.242$ which implies that the relation between sales and total assets is not at significant level. Similarly coefficient of correlation in HPL also appeared less than 6 times of PE i.e. $-0.079<6\times0.253$, 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.

Figure No 4.18



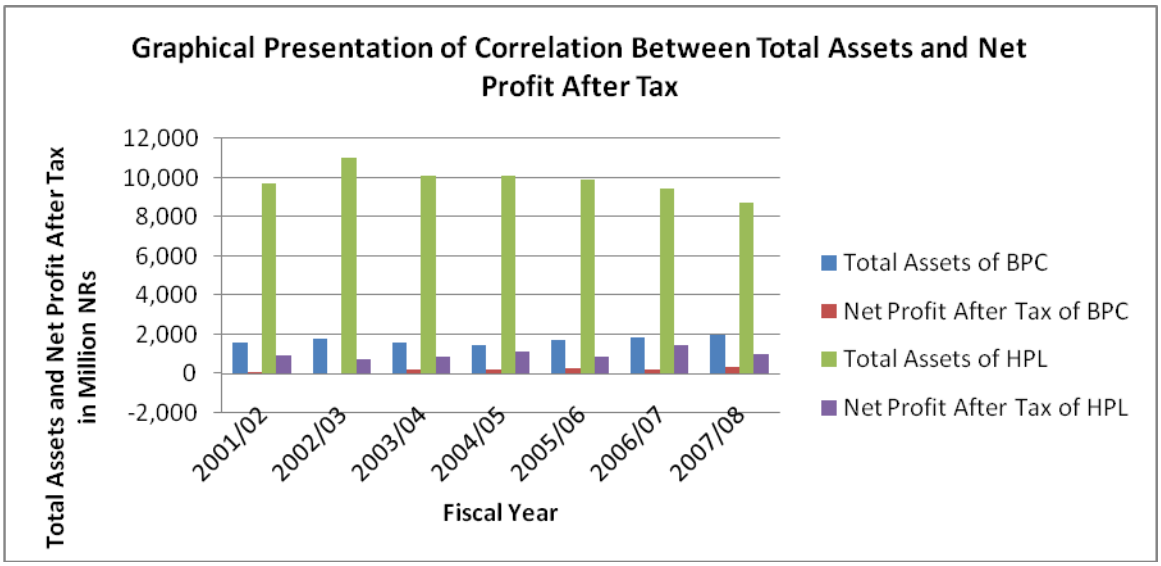
The Coefficient of Correlation between Sales (X) and Net Profit after Tax (Y) of BPC and HPL to 0.970 and 0.629 respectively, this suggests that the two variables have positive relation to each other.

Coefficient of Correlation in BPC appeared greater than 6 times of PE i.e. $0.970>6\times0.015$ which implies that the relation between sales and net profit after tax is positive at significant level. Similarly, Coefficient of Correlation in HPL appeared less than 6 times of PE i.e. $0.629<6\times0.154$ which implies that the relation between sales and net profit after tax is positive but not 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.

Figure No 4.19



The Coefficient of correlation between Total Assets (X) and Net Profit after Tax (Y) of BPC came to be 0.196. This suggests that the two variables have positive relation to each other. Similarly the coefficient of correlation between total Assets (X) and Net Profit after Tax (Y) of HPL came to be -0.423, this suggests that the two variables have negative relation to each other and , it is likely that decrease in total assets is associated to increase in net profit after tax of HPL.

However, the coefficient of correlation in BPC appeared less than six times of PE i.e. $0.196<6\times0.245$ which implies that the relation between total assets and net profit after tax is not a significant level. Similarly, the coefficient of correlation in HPL also appeared less than six times of PE i.e. $-0.423<6\times0.209$ which implies that the relation between total assets and net profit after tax is not a significant level.

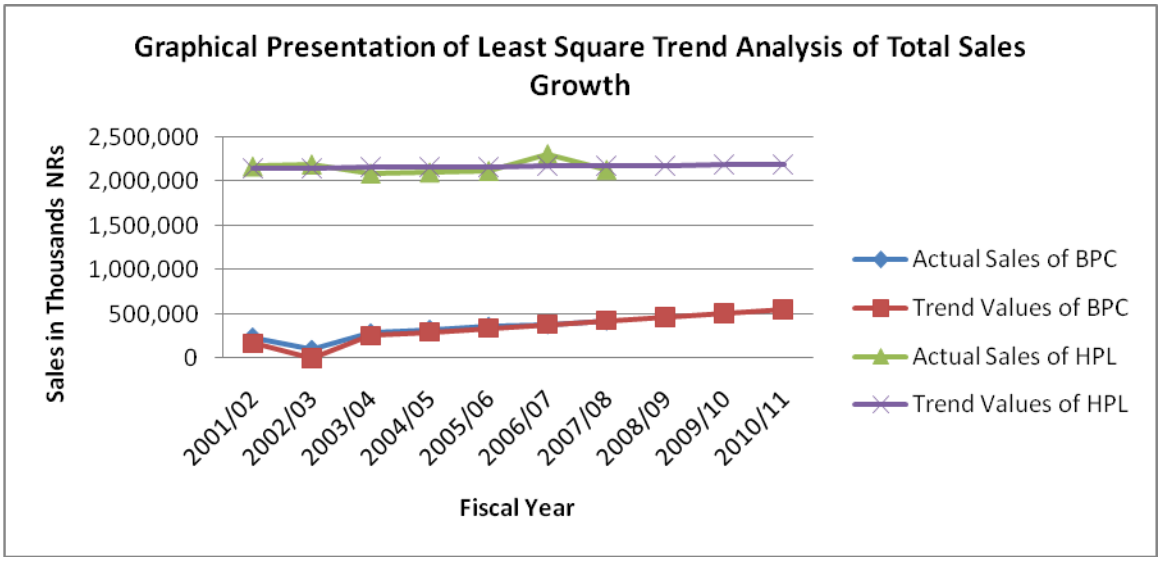
4.1.5 Least Square Linear Growth Trend Analysis

Trend Analysis is a mathematical method which is widely used to find out future tendencies based on past findings and present assumption. Further more it is applied for findings out a trend line for those series which change periodically in absolute amount.

I) Least Square Trend Analysis of Total Sales Growth

Least Square Trend Analysis of Total Sales Growth of both Companies for the different sampled years has been calculated in Appendix B.

Figure No 4.20



The Y-intercept (a) and slope of the trend line (b) of total sales of BPC remained to be Rs 299,831.14 and Rs 42796.04 respectively. During the study period, total sales of BPC exposed an increasing trend. The trend equation of total sales is given by:

Y_c =299,831.14+ 42,796.04X

According to the above trend equation, the forecasted value of total sales of BPC for coming three years would be Rs 471,015.3, 513,811.34 and Rs 556,607.38 thousand respectively.

Similarly, the Y-intercept (a) and slope of the trend line (b) of total sales of HPL remained to be Rs 2160,485.43 and Rs 5105.53 respectively. During the study period,

total sales of HPL exposed an increasing trend. The trend equation of total sales is given by:

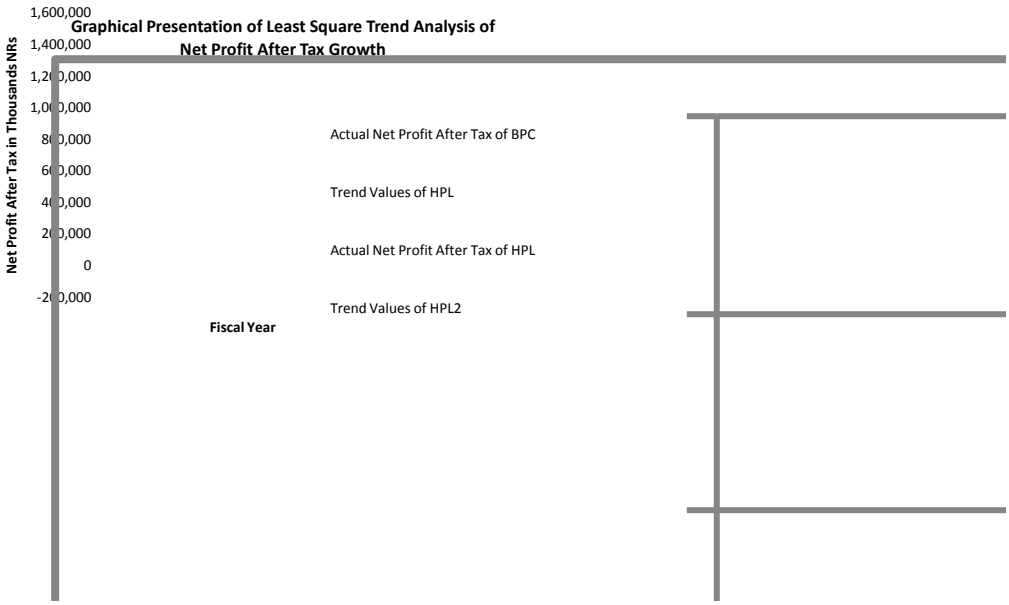
Y_c =2160, 485.43+ 5105.53X

According to the above trend equation, the forecasted value of total sales of HPL for coming three years would be Rs 2180,907.55, Rs 2186,013.08 and Rs 2191,118.81 thousand respectively.

II) Least Square Trend Analysis of Net Profit After Tax Growth

Least Square Trend Analysis of Net Profit after Tax Growth of both Companies for the different sampled years has been calculated in Appendix B.

Figure No 4.21



The Y-intercept (a) and slope of the trend line (b) of Net Profit after Tax of BPC remained to be Rs 201,142.71 and Rs 47,726 respectively. During the study period, Net

Profit after Tax of BPC exposed an increasing trend. The trend equation of Net Profit after Tax is given by:

Y_c =201,142.71+47,726X

According to the above trend equation, the forecasted value of Net Profit after tax of BPC for coming three years would be Rs 392,046.71, Rs 439,772.71 and Rs 487,498.71 thousand respectively.

Similarly, the Y-intercept (a) and slope of the trend line (b) of Net Profit after Tax of HPL remained to be Rs 1018,935.14 and Rs 52,433 respectively. During the study period, Net Profit after Tax of HPL exposed an increasing trend. The trend equation of Net Profit after Tax is given by:

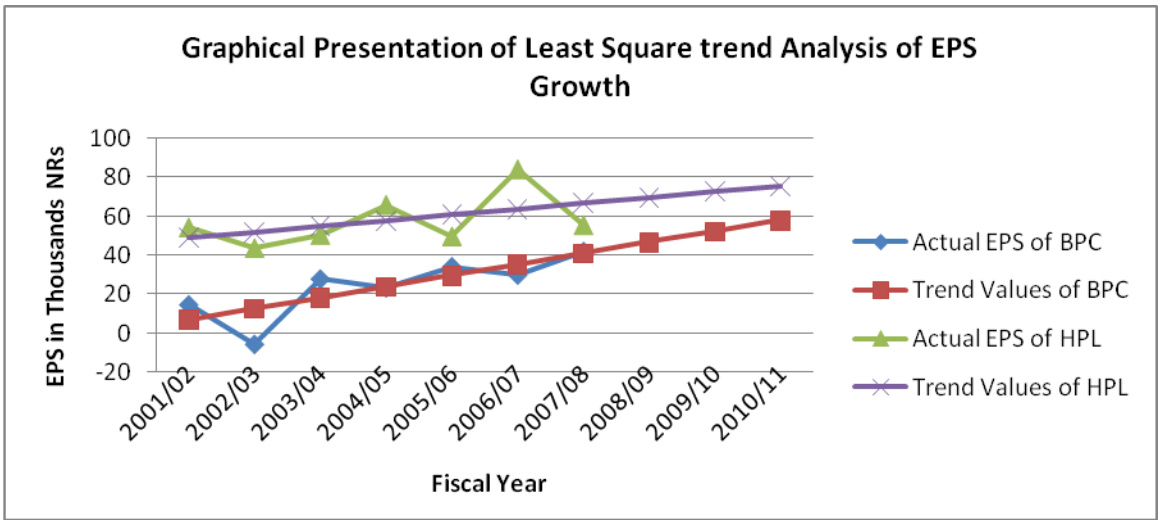
Y_c =1018, 935.14 + 52,433X

According to the above trend equation, the forecasted value of Net Profit after Tax of HPL for coming three years would be Rs 1228,667.14, Rs 1281,100.14 and Rs 1333,533.14 thousand respectively.

III) Least Square Trend Analysis of Earning Per Share Growth

Least Square Trend Analysis of Earning per Share Growth of both Companies for the different sampled years has been calculated in Appendix B.

Figure No 4.22



The Y-intercept (a) and slope of the trend line (b) of Earning per Share of BPC remained to be Rs 23.97 and Rs 5.69 respectively. During the study period, Earning per Share of BPC exposed an increasing trend. The trend equation of Earning per Share is given by:

$Y_c = 23.97 + 5.69X$

According to the above trend equation, the forecasted value of Earning per Share of BPC for coming three years would be Rs 46.73, Rs 52.42 and Rs 58.11 respectively.

Similarly, the Y-intercept (a) and slope of the trend line (b) Earning per Share of HPL remained to be Rs 57.76 and Rs 2.97 respectively. During the study period, Earning per Share of HPL exposed an increasing trend. The trend equation of EPS is given by:

$Y_c = 57.76 + 2.97X$

According to the above trend equation, the forecasted value of EPS of HPL for coming three years would be Rs 69.64, Rs 72.61 and Rs 75.58 thousand respectively

CHAPTER –V

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter is the final chapter of the research which briefly deals with the summary of the study. It also tries to draw the final conclusion of the study while attempting to offer various recommendations. This chapter is divided into three subheadings. First subheading deals with the summary of the study in which result of calculations found in previous chapter is presented. The second subheading is related with the conclusion of the study in which overall decisions made under the study are presented. The third subheading includes remedies or recommendations of the study.

4.1. Summary

This research work entitled "Financial Performance Evaluation of Hydropower companies- Comparative study between Butwal Power Company and Himal Power Company", has been carried out to know the financial performance of the companies. Most of the hydropower sectors lack monitoring and evaluation on financial performance. Nepal has a huge potential of hydropower which is sufficient to meet the energy needs of this Himalayan country and its giant southern neighbour is India. But the foaming waters are yet to be even partly harnessed, because of a shortage of funds and opposition to big multi-million dollar hydroelectric projects from a strong, environmental lobby.

In august 1995, the Arun III project, which dam planners claimed would cover the country's power needs well into the next century, had to be shelved when the world Bank pulled out from the dollar 1 billion scheme for environmental reasons. A surge in energy demand was already creating long power shortage in the capital city, Kathmandu. The government, left with little choice but to explore alternative power projects to meet the demand, gave the go-ahead to a number of projects that were in scale but easier to finance and build.

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 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. The main reason behind this may be because of the 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.

Although the demand for power is rising every year, generation have not been implemented in tandem. 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. 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 identification and implementation of projects involving relatively low investments is the key to providing affordable electricity to the people of Nepal.

- 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 is 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) tighter with the Norwegian companies statkraft SF, Alstom Power a.s (Formerly ABB kraft), and GE Energy a.s (Formerly Kvaaerner 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 other ratios. 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 2.77 and 69.89%, the mean and CV of current ratios of HPL came to be 2.94 and 21.43%. Similarly the mean and CV of quick ratio of BPC came to be 2.41 and 66.39%, the mean and CV of quick ratio of HPL came to be 2.93 and 21.50%

- 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 0.406 and 34.24%. Similarly, the mean and CV of FATORs of HPL came to be 0.281 and 9.25%. Similarly, the mean and CV of TATORs of BPC came to be 0.174 and 32.18%, the mean and CV of TATORs of HPL came to be 0.217 and 7.83%. Similarly, mean and CV of DTRs of BPC came to be 6.611 and 35.55%, the mean and CV of DTRs of HPL came to be 5.28 and 5.09%. Similarly the mean and CV of ACPs of BPC came to be 65 days and 47.17%, the mean and CV of ACPs of HPL came to be 68 days and 12.54%.

- Due to loss incurred in F/Y 2002/03, BPC present fluctuating trends of profitability ratios. Unlike 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 54.49% and 63.70%, the mean and CV of NPRs of HPL came to be 47.02% and 19.01%. Similarly the mean and CV of Operating profit ratios of BPC came to be 66% and 23.89%, the mean and CV of operating profit ratio of HPL came to be 87% and 8.69%. Similarly, the mean and CV of OERs of BPC came to be 40.55% and 49.40%, the mean and CV of OERs of HPL came to be 14.18% and 20.80%. Similarly, the mean and CV of ROTA ratio of BPC came to be 11.66% and 54.55%, the mean and CV of ROTA of HPL came to be 15.42% and 13.88%. Similarly, the mean and CV of ROE of BPC came to be 14.88% and 62.10%, the mean and CV of ROE of HPL came to be 24.30% and 17.94%.

- While BPC is all equity financed, the leverage ratios HPL reveal decreasing risk of insolvency each year. Except debt to equity in F/Y 2002/03, While the mean and CV of debt to shareholders equity of HPL came to be 1.23 and 39.02%, the mean and CV of debt to total assets ratios of HPL came to be o.48 and 25%.

- 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 23.97 and 58.61%, the mean and CV of EPS of HPL came to be Rs 57.76 and 21.49%. Similarly, the mean and CV of DPS ratios of BPC came to be Rs 25 and 53.44%, the mean and

CV of DPS of HPL came to be 34.86 and 31.41%. Similarly, the mean and CV of DPRs of BPC came to be Rs 88.05 and 52.97%, the mean and CV of DPRs of HPL came to be Rs 60 and 25.58%.

- Similarly, the probable errors of BPC and GPL came 0.242 and 0.253 respectively. The coefficient of correlation between sales and total assets of BPC shows positive. Similarly the coefficient of correlation between sales and total assets of HPL show negative. The coefficient of correlation between these two variables of BPC and HPL came 0.221 and -0.079 respectively.

- The coefficient of correlation between sales and net profit after tax of BPC shows positive relation and significant relation. Similarly, the coefficient of correlation between sales and net profit after tax of HPL shows positive relation but not significant relation. The coefficient of correlation between these two variables of BPC and HPL came 0.970 and 0.629 respectively. Similarly, the probable errors of BPC and HPL came to 0.015 and 0.154 respectively.

- The coefficient of correlation between total assets and net profit after tax of BPC shows positive relation. Similarly, the coefficient correlation between total assets and net profit after tax of HPL shows the negative relation. The coefficient of correlation between these two variables of BPC and HPL came to be 0.196 and -0.423 respectively. Similarly, the probable error of BPC and HPL came to be 0.245 and 0.209 respectively.

- According to the trend equation , the forecasted value of total sales of BPC for coming three years would be Rs 471,015.3, Rs 513,811.34 and Rs 556,667.38 thousand respectively. Similarly, the forecasted values of total sales of HPL for coming three years would be Rs 2180,907.55, Rs 2186,013.08 and Rs 2191,118.61 thousand respectively.

- According to the trend equation , the forecasted value of net profit after tax of BPC for coming three years would be Rs 392,046.71, Rs 439,772.71 and Rs 487,498.71 thousand respectively. Similarly, the forecasted values of net profit

after tax of HPL for coming three years would be Rs 1228,667.14, Rs 1281,100.14 and Rs 1333,533.14 thousand respectively.

- According to the trend equation, the forecasted value of EPS of BPC for coming three years would be Rs 46.73, Rs 52.42 and Rs 58.11 respectively. Similarly, the forecasted values of EPS of HPL for coming three years would be Rs 69.64, Rs 72.61 and Rs 75.58 respectively

4.2. Conclusion

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

- Both companies have maintained proper liquidity position. Which means both companies average ratios are above standard level, but incapability of BPC to meet current liabilities as compared HPL.
- 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 BPC 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.
- Though HPL has a two times higher EPS with compared to that of BPC, it tight custom of dividend payout ratio conceals the real charisma. In other hand, BPC being much liberal in distributing the earning in form of dividends. On 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 insignificant relation. Similarly, the coefficient of correlation between sales and total assets of HPL shows negative but not significant relation. It also reveals that it is likely that decreased in total assets is associated to increase in sales of HPL more than in sales of BPC.
- The coefficient of correlation between total sales and net profit after tax of BPC and HPL show positive relation and significant relation in BPC but not significant relation in HPL. 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.
- The growth trend analysis of total sales, net profit after tax and earning per share of BPC demonstrate a higher increasing trend than that of HPL.
- From the primary data analysis, it can 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.

SWOT analysis

Table No. 5.1

Companies	BPC	HPL
Strengths	• Availability of funds • No Loans and borrowings • Diversified sources of income	• Low operating expenses • Tax subsidy and increasing profits
Weaknesses	• Inefficient use of resources • High operating expenses • Lack of strategies to realize financial plans	• High level of fixed costs • Lack of strategies to realize financial plans
Opportunities	• Plenty of market availability • No competition	• Plenty of market availability • No competition • Sales electricity to NEA in US dollar
Threats	• High research cost • Tightening power purchase agreement by NEA	• High research cost • Different problems faced of local Communities

4.3. Recommendations

Based on conclusion, some recommendations are presented below:

- The liquidity of both companies is satisfactory but to BPC has to 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 need to 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. There is also a need for effective production management to control operating cost of BPC.
- 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 projected sales values can be met by setting production and sales plans and formulating proper policies and strategies. The private- public sectors should implement new techniques of management such as participative management, management by objective and total quality management.
- 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.

- As per hydropower policy, 1992 the government of Nepal shall 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. Likewise, the government shall provide income tax exemption facility to the hydroelectric projects constructed under to investment of private sector producing more than 1,000 KW for a period of fifteen years starting from the date of its commercial production. So, the hydropower companies are suggested to invest in the new hydropower projects utilizing such benefits to meet the present crisis of electricity in the country.
- 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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APPENDICES

- Appendix A

Computation of Correlation of Coefficient

- Appendix B

Computation of Trend Values

- Appendix C

Computation of Standard of deviation and Covariance

- Appendix D

Seven Year Summary of Financial Statements (Balance Sheet and Income Statement) of Butwal Power Company Limited (BPC) and Himal Power Limited (HPL)

Appendix A

Computation of Correlation of Coefficient and Probable Errors

I. Correlation between Total Sales and Total Assets of BPC

(In Thousand NRs)

Year	Sales(X)	Total Assets (Y)	X^2	Y^2	X×Y
2001/02	236,278	1,622,165	55,827,293,284	2,631,419,287,225	383,281,901,870
2002/03	96,364	1,825,464	9,286,020,496	3,332,318,815,296	175,909,012,896
2003/04	283,167	1,579,195	80,183,549,889	2,493,856,848,025	447,175,910,565
2004/05	323,134	1,439,238	104,441,581,956	2,071,406,020,644	465,066,731,892
2005/06	358,419	1,744,447	128,464,179,561	3,043,095,335,809	625,242,949,293
2006/07	379,769	1,882,271	144,224,493,361	3,542,944,117,441	714,828,175,399
2007/08	421,687	1,986,926	177,819,925,969	3,947,874,929,476	837,860,864,162
Total	∑X = 2098,818	∑Y = 12,079,706	$\sum X^2$ = 700,221,044,516	$\sum Y^2$ = 21,062,915,353,916	∑ X×Y = 3,649,365,546,077
Correlation(r) = 0.221					

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}} = 0.221$$

II. Correlation between Total Sales and Total Assets of HPL

(In Thousand NRs)

Year	Sales(X)	Total Assets (Y)	X^2	Y^2	X×Y
2001/02	2,171,039	9,679,770	4,713,410,339,521	93,697,947,252,900	21,015,158,181,030
2002/03	2,193,850	10,999,525	4,812,977,822,500	120,989,550,225,625	24,131,307,921,250
2003/04	2,092,032	10,110,846	4,376,597,889,024	102,229,206,835,716	21,152,213,379,072
2004/05	2,104,124	10,098,600	4,427,337,807,376	101,981,721,960,000	21,248,706,626,400
2005/06	2,121,897	9,897,922	4,502,446,878,609	97,968,859,918,084	21,002,370,998,034
2006/07	2,307,461	9,454,424	5,324,376,266,521	89,386,133,171,776	21,815,714,657,464
2007/08	2,132,995	8,728,710	4,549,667,670,025	76,190,378,264,100	18,618,294,786,450
Total	∑X = 15,123,398	∑Y = 68,969,797	$\sum X^2$ = 32,706,814,673,576	$\sum Y^2$ = 682,443,797,628,201	∑ X×Y = 148,983,766,549,700
Correlation(r) = -0.079					

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}} = -0.079$$

III. Correlation between Total Sales and Net profit after tax of BPC

(In Million NRs)

Year	Sales(X)	Net profit after tax (Y)	X^2	Y^2	X×Y
2001/02	236	125	55,696	15,625	29500
2002/03	96	(45)	9,216	2,025	(4320)
2003/04	283	235	80,089	55,225	66505
2004/05	323	198	104,329	39,204	63954
2005/06	358	288	128,164	82,944	103104
2006/07	380	253	144,400	64,009	96140
2007/08	422	354	178,084	125,316	149388
Total	$\sum X = 2098$	$\sum Y = 1408$	$\sum X^2 = 699,978$	$\sum Y^2 = 383,348$	$\sum X \times Y =$ 504,271
Correlation(r) = 0.970					

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}} = 0.970$$

IV. Correlation between Total Sales and Net profit after tax HPL

(In Million NRs)

Year	Sales(X)	Net profit after tax (Y)	X^2	Y^2	X×Y
2001/02	2,171	960	4,713,241	921,600	2,084,160
2002/03	2,194	774	4,813,636	599,076	1,698,156
2003/04	2,092	893	4,376,464	797,449	1,868,156
2004/05	2,104	1,163	4,426,816	1,352,569	2,446,952
2005/06	2,122	879	4,502,884	772,641	1,865,238
2006/07	2,307	1,483	5,322,249	299,289	3,421,281
2007/08	2,133	982	4,549,689	964,324	2,094,606
Total	$\sum X = 15,123$	$\sum Y = 7,134$	$\sum X^2 = 32,704,979$	$\sum Y^2 = 7,606,948$	$\sum X \times Y =$ 15,478,549
Correlation(r) = 0.629					

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}} = 0.629$$

V. Correlation between Total assets and Net profit after tax BPC

(In Million NRs)

Year	Total assets(X)	Net profit after tax (Y)	X^2	Y^2	X×Y
2001/02	1,622	125	2,630,884	15,625	202,750
2002/03	1,825	-45	3,330,625	2025	(82,125)
2003/04	1,579	235	2,493,241	55,225	371,065
2004/05	1,439	198	2,070,721	39,204	284,922
2005/06	1,744	288	3,041,536	82,944	502,272
2006/07	1,882	253	3,541,924	64,009	476,146
2007/08	1,987	354	3,948,169	125,316	703,398
Total	$\sum X = 12,078$	$\sum Y = 1,408$	$\sum X^2 = 21,057,100$	$\sum Y^2 = 384,348$	$\sum X \times Y = 2,458,428$
Correlation(r) = 0.196					

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}} = 0.196$$

VI. Correlation between Total assets and Net profit after tax HPL

(In Million NRs)

Year	Total assets(X)	Net profit after tax (Y)	X^2	Y^2	X×Y
2001/02	9,680	960	93,702,400	921,600	9,292,800
2002/03	10,999	774	120,978,001	599,076	8,513,226
2003/04	10,111	893	102,232,321	797,449	9,029,123
2004/05	10,099	1,163	101,989,801	1,352,569	11,745,137
2005/06	9,898	879	97,970,404	772,641	8,700,342
2006/07	9,454	1,483	89,378,116	2,199,289	14,020,282
2007/08	8,729	982	76,195,441	964,324	8,571,878
Total	$\sum X = 68,970$	$\sum Y = 7,134$	$\sum X^2 = 682,446,484$	$\sum Y^2 = 7,606,948$	$\sum X \times Y = 69,872,788$
Correlation(r) = -0.423					

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}} = -0.423$$

Appendix B

Computation of Trend Values

I. Least Square Trend Analysis of Total Sales Growth Of BPC

(In Thousand NRs)

Fiscal Year	Time	X =Time-4	Sales (Y)	X^2	X×Y	Trend Value (Y= α+bx)
2001/02	1	-3	236,278	9	-708,834	171,443.02
2002/03	2	-2	96,364	4	-192,728	214,239,06
2003/04	3	-1	283,167	1	-283,167	257,035.10
2004/05	4	0	323,134	0	0	299,831.14
2005/06	5	1	358,419	1	358,419	342,627.18
2006/07	6	2	379,769	4	759,538	385,423.21
2007/08	7	3	421,687	9	1,265,061	428,219.26
		∑X = 0	∑Y = 2098,818	$\sum X^2 = 28$	∑XY = 1,198,289	
α = 299831.14				b = 42796.04		
2008/09	8	4				471,015.30
2009/10	9	5				513,811.34
2010/11	10	6				556,607.38

Mathematically $Y = \alpha + bX$

Where, Y= Value of the dependent Variable

α = Y- intercept

b = slope of the trend line

X = Value of the independent Variable

Normal equations fitting above equation are:

$\sum Y = N\alpha + b\sum X$

$\sum XY = \alpha\sum X + b\sum \mathbf{X^2}$

Since, $\sum X = 0$, $a = \frac{\sum Y}{N}$, and $b = \frac{\sum XY}{\sum X^2}$

II. Least Square Trend Analysis of Total Sales Growth Of HPL

(In Thousand NRs)

Fiscal Year	Time	X =Time-4	Sales (Y)	X^2	X×Y	Trend Value (Y= α+bx)
2001/02	1	-3	2,171,039	9	-6,513,117	2,145,168.84
2002/03	2	-2	2,193,850	4	-4,387,700	2,150,374.37
2003/04	3	-1	2,092,032	1	-2,092,032	2,155,379.9
2004/05	4	0	2,104,124	0	0	2,160,485.43
2005/06	5	1	2,121,897	1	2,121,897	2,165,590.96
2006/07	6	2	2,307,461	4	4,614,922	2,170,696.49
2007/08	7	3	2,132,995	9	6,398,985	2,175,802.02
		$\sum X = 0$	$\sum Y =$ 15,523,398	$\sum X^2 = 28$	$\sum X \times Y =$ 142,955	
α = 2,160,485.43				b = 5,105.53		
2008/09	8	4				2,180,907.55
2009/10	9	5				2,186,013.08
2010/11	10	6				2,191,118.61

Mathematically $Y = a + bX$

Where, Y= Value of the dependent Variable

α= Y- intercept

b = slope of the trend line

X = Value of the independent Variable

Normal equations fitting above equation are:

$\sum Y = N\alpha + b\sum X$

$\sum XY = \alpha\sum X + b\sum \mathbf{X^2}$

Since, $\sum X = 0$, $a = \frac{\sum Y}{N}$, and $b = \frac{\sum XY}{\sum X^2}$

III. Least Square Trend Analysis of Net Profit After Tax Growth Of BPC

(In Thousand NRs)

Fiscal Year	Time	X =Time-4	Net Profit After Tax (Y)	X^2	X×Y	Trend Value (Y= α+bx)
2001/02	1	-3	124,626	9	-373,878	57,964.71
2002/03	2	-2	-44,944	4	89,888	105,690.71
2003/04	3	-1	235,418	1	-235,418	153,416.71
2004/05	4	0	197,761	0	0	201,142.71
2005/06	5	1	288,419	1	288,419	248,868.71
2006/07	6	2	252,840	4	505,680	296,594.71
2007/08	7	3	353,879	9	1061,637	344,320.71
		∑X = 0	∑Y = 1407,999	$\sum X^2 = 28$	∑X×Y = 1,336,328	
a = 201,142.71				b = 47,726		
2008/09	8	4				392,046.71
2009/10	9	5				439,772.71
2010/11	10	6				487,498.71

Mathematically $Y = \alpha + bX$

Where, Y= Value of the dependent Variable

α= Y- intercept

b = slope of the trend line

X = Value of the independent Variable

Normal equations fitting above equation are:

$$\sum Y = N\alpha + b\sum X$$

$$\sum XY = \alpha\sum X + b\sum \mathbf{X^2}$$

Since, $\sum X = 0$, $a = \frac{\sum Y}{N}$, and $b = \frac{\sum XY}{\sum X^2}$

IV. Least Square Trend Analysis of Net Profit After Tax Growth Of HPL

(In Thousand NRs)

Fiscal Year	Time	X =Time-4	Net Profit After Tax (Y)	X^2	X×Y	Trend Value (Y= α+bx)
2001/02	1	-3	960,034	9	-2,880,102	861,636.14
2002/03	2	-2	773,597	4	-1,547,194	914,069.14
2003/04	3	-1	893,285	1	-893,285	966,502.14
2004/05	4	0	1,162,551	0	0	1,018,935.14
2005/06	5	1	878,986	1	878,980	1,071,368.14
2006/07	6	2	1,482,560	4	2,965,120	1,123,801.14
2007/08	7	3	981,533	9	2,944,599	1,176,234.14
		∑X = 0	∑Y = 7,132,546	$\sum X^2 = 28$	∑X×Y = 1,468,124	
a = 1,018,935.14				b = 52,433		
2008/09	8	4				1,228,667.14
2009/10	9	5				1,281,100.14
2010/11	10	6				1,333,533.14

Mathematically $Y = \alpha + bX$

Where, Y= Value of the dependent Variable

α= Y- intercept

b = slope of the trend line

X = Value of the independent Variable

Normal equations fitting above equation are:

$\sum Y = N\alpha + b\sum X$

$\sum XY = \alpha\sum X + b\sum \mathbf{X^2}$

Since, $\sum X = 0$, $a = \frac{\sum Y}{N}$, and $b = \frac{\sum XY}{\sum X^2}$

V. Least Square Trend Analysis of Earning Per Share Growth Of BPC

(In Thousand NRs)

Fiscal Year	Time	X =Time-4	Earning Per Share (Y)	X^2	X×Y	Trend Value (Y= α+bx)
2001/02	1	-3	14.85	9	-44.55	6.9
2002/03	2	-2	(5.36)	4	10.72	12.59
2003/04	3	-1	28.06	1	-28.06	18.28
2004/05	4	0	23.57	0	0	23.97
2005/06	5	1	34.37	1	34.37	29.66
2006/07	6	2	30.13	4	60.26	35.35
2007/08	7	3	42.18	9	126.54	41.04
		$\sum X = 0$	$\sum Y =$ 167.8	$\sum X^2 = 28$	$\sum X \times Y =$ 159.28	
a = 23.97				b = 5.69		
2008/09	8	4				46.73
2009/10	9	5				52.42
2010/11	10	6				58.11

Mathematically $Y = \alpha + bX$

Where, Y= Value of the dependent Variable

α= Y- intercept

b = slope of the trend line

X = Value of the independent Variable

Normal equations fitting above equation are:

$\sum Y = N\alpha + b\sum X$

$\sum XY = \alpha\sum X + b\sum \mathbf{X^2}$

Since, $\sum X = 0$, $a = \frac{\sum Y}{N}$, and $b = \frac{\sum XY}{\sum X^2}$

VI. Least Square Trend Analysis of Earning Per Share Growth Of HPL

(In Thousand NRs)

Fiscal Year	Time	X =Time-4	Earning Per Share (Y)	X^2	X×Y	Trend Value (Y= α+bx)
2001/02	1	-3	54.42	9	-163.26	48.85
2002/03	2	-2	43.85	4	-87.7	51.82
2003/04	3	-1	50.64	1	-50.64	54.79
2004/05	4	0	65.90	0	0	57.76
2005/06	5	1	49.82	1	49.82	60.73
2006/07	6	2	84.04	4	168.08	63.7
2007/08	7	3	55.64	9	166.92	66.67
		∑X = 0	∑Y = 404.31	$\sum X^2 = 28$	∑X×Y = 83.22	
a = 57.76				b = 2.97		
2008/09	8	4				69.64
2009/10	9	5				72.61
2010/11	10	6				75.58

Mathematically $Y = \alpha + bX$

Where, Y= Value of the dependent Variable

α= Y- intercept

b = slope of the trend line

X = Value of the independent Variable

Normal equations fitting above equation are:

$\sum Y = N\alpha + b\sum X$

$\sum XY = \alpha\sum X + b\sum \mathbf{X^2}$

Since, $\sum X = 0$, $a = \frac{\sum Y}{N}$, and $b = \frac{\sum XY}{\sum x^2}$

Appendix C: Computation of Standard Deviation and Coefficient of Variance

Calculation of Current Ratio

Year	**BPC** **(X)**	**$(X-\overline{X})^2$**	**HPL** **(Y)**	**$(Y-Y)^2$**
2001/02	5.30	6.4009	2.41	0.2704
2002/03	1.86	0.8281	2.23	0.49
2003/04	2.32	0.2025	3.91	0.9604
2004/05	6.19	11.6964	2.70	0.0529
2005/06	1.25	2.3104	2.96	0.0009
2006/07	1.19	2.4964	2.51	0.1764
20007/08	1.30	2.1609	3.80	0.7569
		$\sum(X-\overline{X})^2$= 26.0956		**$\sum(Y-Y)^2$= 2.709**

S.D (σ) =$\sqrt{\sum(X-\bar{X})^2}$ / N

=$\sqrt{17.7592}$ / 7

=1.60

CV = $\frac{\sigma}{\bar{X}}$×100%

= 1.936 x 100% / 2.77

=69.89%

S.D (σ) =$\sqrt{\sum(X-\bar{X})^2}$ / N

=$\sqrt{}$ 2.762 / 7

=0.63

CV = $\frac{\sigma}{\bar{X}}$×100%

= 0.6.3 x 100% / 2.94

= 21.43%

Calculation of Quick Ratio

Year	**BPC (X)**	**$(X-\bar{X})^2$**	**HPL (Y)**	**$(Y-Y)^2$**
2001/02	4.37	3.8416	2.41	0.2809
2002/03	1.70	0.5041	2.23	0.5041
2.12	2.12	0.0841	3.91	0.9409
2004/05	5.31	8.41	2.70	0.0576
2005/06	1.12	1.6641	2.96	0.0004

2006/07	1.09	1.7424	2.53	0.1681
20007/08	1.18	1.5129	3.84	0.81
		$\sum(X-\overline{X})^2$= 17.7592		**$\sum(Y-Y)^2$= 2.762**

S.D (σ) =$\sqrt{\frac{\sum(X-\overline{X})^2}{N}}$

==$\sqrt{\frac{17.7592}{7}}$

=1.60

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

=$\frac{1.60}{2.41}$

= 66.39%

S.D (σ) =$\sqrt{\frac{\sum(X-\overline{X})^2}{N}}$

S.D (σ) =$\sqrt{\frac{2.762}{7}}$

=0.63

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

= $\frac{0.63}{2.93}$

=21.50%

Calculation of Fixed Asset Turnover Ratio

Year	**BPC (X)**	**$(X-\overline{X})^2$**	**HPL (Y)**	**$(Y-Y)^2$**
2001/02	0.30	0.01124	0.29	0.00081
2002/03	0.13	0.076176	0.26	0.000441
2.12	0.39	0.0003	0.25	0.00096
2004/05	0.45	0.002	0.27	0.000121
2005/06	0.48	0.005	0.28	0.000001

2006/07	0.51	0.0108	0.32	0.001521
20007/08	0.58	0.03027	0.30	0.00036
		$\sum(X-\overline{X})^2$= 0.135780		$\sum(Y-Y)^2$= 0.003485

S.D (σ) =$\sqrt{\frac{\sum(X-\overline{X})^2}{N}}$

==$\sqrt{\frac{0.135780}{7}}$

=0.139

S.D (σ) =$\sqrt{\frac{\sum(X-\overline{X})^2}{N}}$

S.D (σ) = $\sqrt{\frac{0.003485}{7}}$

=0.026

CV = $\frac{\sigma}{\overline{X}}$×100%

=0.139

0.406

= 34.24%

CV = $\frac{\sigma}{\overline{X}}$×100%

= 0.0223

0.281

=9.35%

Calculation of Total Asset Turnover Ratio

Year	**BPC (X)**	**$(X-\overline{X})^2$**	**HPL (Y)**	**$(Y-Y)^2$**
2001/02	0.15	0.000576	0.22	0.00009
2002/03	0.05	0.015376	0.19	0.000729

2.12	0.18	0.000036	0.21	0.000049
2004/05	0.22	0.002116	0.21	0.00049
2005/06	0.21	0.001296	0.21	0.00049
2006/07	0.20	0.000676	0.24	0.000529
20007/08	0.21	0.001296	0.24	0.000529
		$\sum(X-\bar{X})^2$= 0.021376		$\sum(Y-Y)^2$= 0.002776

S.D (σ) =$\sqrt{\frac{\sum(X-\bar{X})^2}{N}}$

==$\sqrt{\frac{0.021376}{7}}$

=0.056

CV = $\frac{\sigma}{\bar{X}}\times100\%$

= $\frac{0.056}{0.174}$

= 32.18%

S.D (σ) =$\sqrt{\frac{\sum(X-\bar{X})^2}{N}}$

S.D (σ) = $\sqrt{\frac{0.002776}{7}}$

=0.017

CV = $\frac{\sigma}{\bar{X}}\times100\%$

= $\frac{0.017}{0.217}$

=7.83%

Calculation of Debtors Turnover Ratio

Year	**BPC (X)**	**$(X-\bar{X})^2$**	**HPL (Y)**	**$(Y-Y)^2$**
2001/02	5.74	0.7586	5.62	0.2156
2002/03	2.66	15.610	5.53	0.0625

2.12	9.04	5.9000	5.03	0.0625
2004/05	7.53	0.84456	5.34	0.0036
2005/06	10.09	12.1034	4.96	0.1024
2006/07	6.45	0.02592	5.52	0.0576
20007/08	4.77	3.3892	4.96	0.1024
		$\sum(X-\overline{X})^2$= 38.63		$\sum(Y-Y)^2$= 0.5066

S.D (σ) =$\sqrt{\frac{\sum(X-\overline{X})^2}{N}}$

== $\frac{\sqrt{38.63}}{7}$

=2.350

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

= $\frac{2.350}{6.61}$

= 35.55%

S.D (σ) =$\sqrt{\frac{\sum(X-\overline{X})^2}{N}}$

= $\frac{\sqrt{0.5066}}{7}$

=0.269

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

= $\frac{0.299}{5.28}$

=5.09%

Calculation of Average Collection Period

Year	**BPC (X)**	**$(X-\overline{X})^2$**	**HPL (Y)**	**$(Y-Y)^2$**
2001/02	63	4	64	16
2002/03	135	4900	65	9

2003/04	40	625	72	16
2004/05	48	289	67	1
2005/06	36	841	73	25
2006/07	56	81	65	9
20007/08	75	100	73	25
		$\sum(X-\overline{X})^2$= 6840		$\sum(Y-Y)^2$= 101

S.D (σ) =$\sqrt{\frac{\sum(X-\overline{X})^2}{N}}$

==$\sqrt{\frac{6840}{7}}$

=31.25

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

= $\frac{31.25}{65}$

= 47.17%

S.D (σ) =$\sqrt{\frac{\sum(X-\overline{X})^2}{N}}$

= $\sqrt{\frac{101}{7}}$

=3.7984

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

= $\frac{3.7984}{68}$

=12.54%

Calculation of Capital Employed Turnover

Year	**BPC (X)**	**$(X-\overline{X})^2$**	**HPL (Y)**	**$(Y-Y)^2$**
2001/02	0.15	0.0045	0.258	0.0001
2002/03	0.06	0.025	0.22	0.0004

2003/04	0.21	0.00005	0.22	0.0004
2004/05	0.23	0.0002	0.23	0.0001
2005/06	0.28	0.004	0.23	0.0001
2006/07	0.29	0.0054	0.27	0.0009
20007/08	0.30	0.007	0.26	0.0004
		$\sum(X-\overline{X})^2$= 0.046039		$\sum(Y-Y)^2$= 0.0024

S.D (σ) =$\sqrt{\frac{\sum(X-\overline{X})^2}{N}}$

==$\sqrt{\frac{0.04609}{7}}$

=0.081

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

= $\frac{0.081}{0.217}$

= 37.33%

S.D (σ) =$\sqrt{\frac{\sum(X-\overline{X})^2}{N}}$

= $\sqrt{\frac{0.0024}{7}}$

=0.018

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

= $\frac{0.0024}{0.24}$

=7.08%

Calculation of Operating Expenses Ratio

Year	**BPC (X)**	**$(X-\overline{X})^2$**	**HPL (Y)**	**$(Y-Y)^2$**
2001/02	37.80	7.56	11.19	8.94
2002/03	89.10	2357.1	12.76	2.0164

2003/04	30.19	107.33	12.97	1.4641
2004/05	42.43	3.54	13.34	0.7056
2005/06	28.59	143.0416	12.80	1.9044
2006/07	30.17	96.83	15.33	1.3225
20007/08	35.02	30.58	20.87	44.756
		$\sum(X-\overline{X})^2$= 2745.98		$\sum(Y-Y)^2$= 61.1091

S.D (σ) =$\sqrt{\frac{\sum(X-\overline{X})^2}{N}}$

==$\sqrt{\frac{2745.98}{7}}$

=20

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

= $\frac{20}{40.55}$

= 49.40%

S.D (σ) =$\sqrt{\frac{\sum(X-\overline{X})^2}{N}}$

= $\sqrt{\frac{61.1091}{7}}$

=2.95

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

= $\frac{2.95}{14.18}$

=20.83%

Calculation of Return on Total Asset Ratio

Year	**BPC (X)**	**$(X-\overline{X})^2$**	**HPL (Y)**	**$(Y-Y)^2$**
2001/02	7.68	15.8404	16.99	2.46
2002/03	(2.46)	199.37	12.95	6.100

2003/04	14.91	10.56	14.42	1
2004/05	13.74	4.33	16.39	0.9409
2005/06	16.53	23.72	13.29	4.5369
2006/07	13.43	3.13	19.50	16.64
20007/08	17.81	37.83	14.38	1.0816
		$\sum(X-\overline{X})^2$= 294.78		$\sum(Y-Y)^2$= 32.76

S.D (σ) =$\sqrt{\frac{\sum(X-\overline{X})^2}{N}}$

==$\sqrt{\frac{294.78}{7}}$

=6.49

CV = $\frac{\sigma}{\overline{X}}\times100\%$

= $\frac{6.49}{11.66}$

= 54.55%

S.D (σ) =$\sqrt{\frac{\sum(X-\overline{X})^2}{N}}$

= $\sqrt{\frac{32.76}{7}}$

=2.16

CV = $\frac{\sigma}{\overline{X}}\times100\%$

= $\frac{2.16}{15.42}$

=13.88%

Calculation of Return on Shareholder's Equity

Year	**BPC (X)**	**$(X-\overline{X})^2$**	**HPL (Y)**	**$(Y-Y)^2$**
2001/02	8.23	44.22	30.73	41.35
2002/03	(2.42)	316.84	22.21	4.368

2003/04	17.49	6.81	23.39	0.8281
2004/05	14.32	0.3136	27.02	7.40
2005/06	22.18	53.29	19.47	23.33
2006/07	19.53	21.63	28.84	20.61
20007/08	25.35	109.62	18.46	34.10
		$\sum(X-\bar{X})^2$= 552.73		$\sum(Y-Y)^2$= 131.98

S.D (σ) = $\sqrt{\frac{\sum(X-\bar{X})^2}{N}}$

== $\sqrt{\frac{552.73}{7}}$

=9.24

S.D (σ) = $\sqrt{\frac{\sum(X-\bar{X})^2}{N}}$

= $\sqrt{\frac{131.98}{7}}$

=4.36

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

= $\frac{9.24}{14.88}$

= 62.10%

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

= $\frac{4.36}{24.30}$

=17.94%

Calculation of Return on Leverage Ratio

Year	**BPC (X)**	**$(X-\bar{X})^2$**	**HPL (Y)**	**$(Y-Y)^2$**
2001/02	1.82	0.3481	0.59	0.121
2002/03	1.85	0.3844	0.58	0.01

2003/04	1.52	0.0841	0.57	0.008
2004/05	1.16	0.0049	0.49	0.0001
2005/06	1.02	0.0441	0.46	0.0004
2006/07	0.67	0.3136	0.36	0.0144
20007/08	0.56	0.4489	0.34	0.0196
		$\sum(X-\overline{X})^2$= 1.63		$\sum(Y-Y)^2$= 0.0646

S.D (σ) =$\sqrt{\frac{\sum(X-\overline{X})^2}{N}}$

==$\sqrt{\frac{1.63}{7}}$

=0.48

CV = $\frac{\sigma}{\overline{X}}\times100\%$

= $\frac{0.48}{1.23}$

= 39.02%

S.D (σ) =$\sqrt{\frac{\sum(X-\overline{X})^2}{N}}$

= $\sqrt{\frac{0.0646}{7}}$

=0.12

CV = $\frac{\sigma}{\overline{X}}\times100\%$

= $\frac{0.12}{0.48}$

=25%

Calculation of Earning Per Share

Year	**BPC (X)**	**$(X-\overline{X})^2$**	**HPL (Y)**	**$(Y-Y)^2$**
2001/02	14.85	83.174	54.42	11.2
2002/03	(5.36)	860.3	43.85	193.5

2003/04	28.06	16.73	50.64	50.70
2004/05	23.57	0.16	65.90	66.3
2005/06	34.37	108.16	49.82	63.04
2006/07	30.13	37.95	84.04	690.64
20007/08	42.18	331.60	55.64	4.49
		$\sum(X-\overline{X})^2$= 1438.03		$\sum(Y-Y)^2$= 1079.87

S.D (σ) =$\sqrt{\frac{\sum(X-\overline{X})^2}{N}}$

==$\sqrt{\frac{1438}{7}}$

=14.05

CV = $\frac{\sigma}{\overline{X}}\times100\%$

= $\frac{14.33}{23.97}$

= 58.61%

S.D (σ) =$\sqrt{\frac{\sum(X-\overline{X})^2}{N}}$

= $\sqrt{\frac{1079.87}{7}}$

=12.41

CV = $\frac{\sigma}{\overline{X}}\times100\%$

= $\frac{12.42}{57.76}$

=21.49%

Calculation of Dividend per Share

Year	**BPC (X)**	**$(X-\overline{X})^2$**	**HPL (Y)**	**$(Y-Y)^2$**
2001/02	10	225	17	318.9
2002/03	0	625	23	140.65

2003/04	40	225	32	8.1796
2004/05	35	100	38	9.8596
2005/06	30	25	38	9.8596
2006/07	30	25	50	229.3
20007/08	30	25	46	124.09
		$\sum(X-\bar{X})^2$= 1230		$\sum(Y-Y)^2$= 840.848

S.D (σ) =$\sqrt{\frac{\sum(X-\bar{X})^2}{N}}$

==$\sqrt{\frac{1230}{7}}$

=13.36

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

= $\frac{13.25}{25}$

= 53.44%

S.D (σ) =$\sqrt{\frac{\sum(X-\bar{X})^2}{N}}$

= $\sqrt{\frac{840.848}{7}}$

=10.95

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

= $\frac{10.95}{34.86}$

=31.41%

Calculation of Dividend Payout Ratio

Year	**BPC (X)**	**$(X-\bar{X})^2$**	**HPL (Y)**	**$(Y-Y)^2$**
2001/02	67.34	428.9	31.29	849.139
2002/03	0	7752.8	52.45	63.68

2003/04	142.55	2970.25	63.19	7.6176
2004/05	148.49	3652.99	57.66	7.6729
2005/06	87.29	0.5776	76.27	250.90
2006/07	99.57	132.71	59.50	0.8649
20007/08	71.12	286.63	82.67	494.617
		$\sum(X-\bar{X})^2$= 152224.8		$\sum(Y-Y)^2$= 1674.492

S.D (σ) = $\sqrt{\frac{\sum(X-\bar{X})^2}{N}}$

= $\sqrt{\frac{152224.8}{7}}$

=46.64

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

= $\frac{46.64}{88.05}$

= 52.97%

S.D (σ) = $\sqrt{\frac{\sum(X-\bar{X})^2}{N}}$

= $\sqrt{\frac{1674.492}{7}}$

=15.46

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

= $\frac{15.46}{60.43}$

=25.58%

Appendix C

I. Seven Year Summary of Financial Statements of Butwal Power Company Limited (BPC)

Balance Sheet

In Thousand NRs

Particulars	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
ASSETS & PROPERTY							

Fixed Assets	756,006	763,484	727,340	714,016	743,605	743,893	725,742
Capital Work in Progress	13,907	890	5,277	318	18,576	1,111	7,247
Long Term Investment	544,426	537,648	356,906	381,505	434,481	465,705	477,858
Current Assets	**286,201**	**520,987**	**481,833**	**335,582**	**543,416**	**670,674**	**776,079**
Stock	50,137	43,985	41,766	48,038	57,623	58,896	74,646
Current Work in Progress	7,829	6,898	8,163	9,477	19,394	23,258	29,944
Debtors and Receivables	41,190	36,224	31,309	42,921	35,512	58,918	88,407
Cash and Bank Balance	119,186	120,645	324,349	172,240	364,373	457,035	412,635
Advance and Deposit	67,859	313,235	76,246	62,906	66,514	72,567	170,447
Deferred Revenue Expenditure	12,625	2,455	7,839	7,817	4,369	888	4,765
TOTAL	**1622,165**	**1825,464**	**1579,195**	**1439,238**	**1744,447**	**1882,271**	**1991,691**
CAPITAL & EQUITY							
Equity	839,058	839,058	839,058	839,058	839,058	839,058	839,058
Reserve and Surplus	676,017	698,587	506,726	541,470	461,510	455,805	556,762
Funds	53,079	7,653	-	-	-	-	-
Current Liabilities	**54,012**	**280,166**	**207,655**	**54,172**	**433,619**	**562,584**	**595,871**
Bank Overdraft	-	-	-	-	-	89,947	183,956
Creditor & Payables	45,893	32,983	207,271	52,318	432,012	441,779	356,934
Advance &Deposit	544	247,183	384	1,854	1,607	30,858	29,433
Provisions	7,574	-	25,756	4,538	10,260	24,824	-
TOTAL	**1622,165**	**1825,464**	**1579,195**	**1439,238**	**1744,447**	**1882,271**	**1991,691**

Source: Annual Report of BPC (F/Y 2001/02 -2007/08)

Profit and Loss Account

In Thousand NRs

Particulars	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
INCOME							
Electricity Sales to NEA	213311	67954	249530	286795	318483	334166	372521
Electricity Sales to Customers	22967	28410	33637	36339	39936	45603	49166
Consultancy Service	16441	7768	8212	8831	11498	9535	18894
Total Operating Income	**256445**	**107979**	**294858**	**335494**	**375270**	**392938**	**446732**
Income from Other Sources	25076	165	236753	60218	116909	96403	196463
TOTAL INCOME	**281521**	**108144**	**531611**	**395712**	**492179**	**489341**	**643195**
EXPENDITURE							
Power Plant Expenses	39836	43702	47369	59600	57715	74565	82514
Distribution Expenses	29673	27170	27170	30296	31054	33303	48428
Consultancy Service	19794	14984	10946	14903	13692	8774	16743
Administrative Expenses	15249	25066	38371	41201	34990	37645	53508
Loss on Fixed Assets	-	73	376	-	6090	-	-
KHP Back End Payment	-	-	100075	-	-	-	-
Provision of loss of Investment	-	-	-	-	-	9479	6869
Depreciation	44770	42093	46131	47413	49959	51924	55103
Staff Bonus	3297	-	8933	4046	6791	5926	9504

TOTAL EXPENDITURE	**152619**	**153088**	**279371**	**197459**	**200291**	**226882**	**279915**
Net PROFIT Before Tax	128902	(44944)	252240	198253	291888	262459	363280
Income Tax Provision	4276	-	16822	492	3469	9619	9401
Net Profit After Tax	**124626**	**(44944)**	**235418**	**197761**	**288419**	**252840**	**353879**
Last Year Balance	423419	386166	381552	281346	185484	222131	222805
Income Tax Adjustment	(77973)	40330	-	47	(55)	(531)	(18570)
Dividend	(83906)	-	(335624)	(293670)	(251717)	(251635)	(251717)
Net Profit Transfer to B/S	**386166**	**381552**	**281346**	**185484**	**222131**	**222805**	**306397**

Source: Annual Report of BPC (F/Y 2001/0 2 -2007/08)

II. Seven Year Summary of Financial Statements of Himal Power Limited (HPL)

Balance Sheet

In Thousand NRs

Particulars	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
ASSETS & PROPERTY							
Fixed Assets	7548112	8570394	8213644	7908173	7551062	7203678	7002613
Capital Work in Progress	27139	11507	2466	8124	19877	20599	22866
Current Assets	**2104310**	**2417624**	**1894736**	**2182303**	**2326983**	**2230147**	**1703231**
Account Receivable/ Debtors	204310	396465	416028	393675	428146	417834	430109
Inventories	486	-	-	-	-	14993	19894
Cash and Bank Balance	1718131	1873603	1341952	1636866	1737778	1581610	1100228
Prepaid Advances, Loan	181592	147556	136756	151762	161062	200174	132094

&Deposit							
Deferred Revenue Expenses	-	-	-	-	-	15536	20907
TOTAL	**9679770**	**10999525**	**10110846**	**10098600**	**9897922**	**9454424**	**8728710**
CAPITAL & LIABILITIES							
Equity	1764144	1764144	1764144	1764144	1764144	1764144	1764144
Reserve & Surplus	1359745	1719719	2054113	2537862	2750583	3375912	3553339
Secured Loans	5681902	6429352	5807484	4987040	4598322	3432851	2968227
Current Liabilities	**873979**	**1086310**	**485105**	**809554**	**784873**	**881517**	**443000**
TOTAL	**9679770**	**10999525**	**10110846**	**10098600**	**9897922**	**9454424**	**8728710**

Source: Annual Report of HPL (F/Y 2001/02 -2007/08)

Profit And Loss Account

In Thousand NRs

Particulars	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
Revenue From Sale of Electricity	2171039	2193850	2092032	2104124	2121897	2307461	2132995
Other Income	16645	14209	7660	20154	3263	59	16
Interest Income	-	-	-	-	41545	79308	48553
Total Revenue	**2187683**	**2208059**	**2099692**	**2124278**	**2166705**	**2386827**	**2181563**
Operation & Administrative Expenses	242951	280076	271344	280733	271626	353751	445106
Profit From Operation	**1944732**	**1927983**	**1828348**	**1843544**	**1895079**	**2033076**	**1736457**
Interest	684539	650364	564897	492603	436257	360879	274064
Depreciation	302012	363403	390697	327661	391492	388112	330872
Foreign Exchange Gain/ Loss	(21446)	106288	(38761)	(163786)	170412	(241856)	131840

Write Off	-	18542	-	790	-	-	-
Deferred Tax	-	-	-	-	-	-	(5755)
(Profit) loss on disposal of Assets	-	-	-	-	6	13125	3872
Provision for Bonus	19593	15789	18230	23726	17938	30256	20031
Profit Before Tax	**960034**	**773597**	**893285**	**1162551**	**878986**	**1482560**	**981533**
Provision For Income Tax	-	-	-	-	-	-	-
Profit After Tax	**960034**	**773597**	**893285**	**1162551**	**878986**	**1482560**	**981533**
Balance of Profit as per Last Year	693068	1359744	1719719	2054113	2537862	2750583	3345383
Interim Dividend	-	-	(383014)	(678801)	(155320)	(330480)	(694185)
Proposed Dividend	(293358)	(413623)	(175877)	-	(510945)	(5572800	(109920)
Balance of Profit Transfer To B/S	**1359744**	**1719719**	**2054113**	**2537862**	**2750583**	**3345383**	**3522811**

Source: Annual Report of HPL (F/Y 2001/02 -2007/08)