CHAPTER-ONE

INTRODUCTION

1.1 Background of the Study

The availability of adequate quality and quantity of the infrastructure (Electricity plant, roads, bridges, tunnels, canals, dams, ropeways, communication system etc) constitutes both an end and the means of faster and border-based socio-economic development. In the era of globalization, the required infrastructure services should be available abundantly and efficiently so as to expedite the socio economic development process and maintain the competitive edge of the economy. If such services are inadequate, the associated large transport, transit and transaction costs would reduce the competitive strength and adversely affect the long-term productivity and production prospects of the economy.

Nepal is rich in natural resources but the infrastructure facility to cash them is in very poor situation. Nepal is blessed with immense sources of water resources and huge hydropower potential. Hydropower is one of the cleanest, renewal and environmentally benign source of energy. There are about 6000 rivers and rivulets of which there are seven major rivers in the Koshi basin, seven major rivers in the Gandaki basin, and seven major rivers in the Karnali basin which are perennial, which add up to 45000 km. in length having a total drainage area about 19100 km^2 of which 74 % lies in Nepal. The average run off annually is estimated at about 225 billion cubic meters and hydroelectric power potential is estimated at 83,000 of which some 42000 MW can be economically harnessed .So far less than 1.5 of the available economic potential has been exploited and only 40 % of the populations have access to electricity. The Nepalese domestic demand of electricity is increasing, on average at 10% per year, with the largest growth in the residential, commercial and agriculture sector.

In most countries the power sector has largely been, and still is organized with public control and ownership, through government or municipality owned utilities. Nepal

Electricity Authority (NEA) has a dominating role in managing hydropower as a crucial public enterprise in Nepal. After the establishment of Independent Power Producers (IPPs) Organization in 2001, private sector is also working in the area of hydro electricity management in Nepal.

1.2 Development of Hydro Electricity in Nepal

Nepal has enjoying this convenient form of energy for about 100 years now. Advent of electricity in Nepal in the year 1911 with the establishment of Pharping hydropower plant (500 KW) to supply selected consumers in kathmandu heralded a new era of modern energy supply in Nepal As the demand for power increased gradually in capital, Sundarijal hydroelectric power plant (640 KW) was commissioned in 1936. As an early initiative from private sector, Padma Sundar Malla commissioned 1600 KW hydroelectric power plant at letang (Sikharbas, Morang) in 1939 under the title of Morang Hydro Power Co. Ltd. and supplied nearby areas.

First Periodic Plan for the planned development of the country began in 1956 for the period of 1956-57 to 1960-61. As initiatives of first five year plan, diesel sets were installed at Teku, Bhaktpur and Naxal. These augmentations were taken up as stopgap measures awaiting completions of Trishuli Hydel Project (18000KW with a standby of 3000 KW) and Panauti Hydel Project (2400 KW) taken up in 1960.

In the second Periodic Plan (1962-63 to 1964-65) Panauti Hydel Plant (2400KW) was added to Kathmandu Power System in 1965, Dharan and Nepalgunj were electrified through installations of diesel units. 3.3 kV and 11kv lines replaced original 2.3 kV distribution lines and a strong double circuit 11kv ring main system with capacity of 20 MW was completed. First 33 kv transmission line from Panauti to Bhaktapur was commissioned and first 66kv double circuit, transmission line connecting Trishuli with Birgunj through Kathamandu was also taken up to transmit power between Kathmandu and Central Terai Power Systems. This was a remarkable event as the Valley Power System stepped out of valley and took a step towards the national power system.

During the Third Plan (1965-66 to 1969-70) Patan Diesel (1470 kw), Hetauda Diesel (4470 kw), Trishuli Hydel Project (21000 kw), Pokhara (phewa) Hydro Power Project (1000kw) were commissioned whereas 10050 kW Sunkoshi Hydel Project and 240 KW Dhankuta Micro Hydel Project were commenced. Towns like Bhairawa, Krishnanagar, Butwal, Bharatpur, Rajbiraj, Kalaiya and Janakpur were electrified during this period by immediate installation of small power plants or by extending the existing distribution facilities or taking power from India.

By the end of Fourth Plan (1970-71 to 1974-75), 10050kw Sunkoshi Hydel project, 15000 kw Gandak and 354 kw Jhupra (Surkhet) were commissioned. First 132 kV Transmission line from Gandak to Hetauda was also commissioned during the period. Fifth Plan (1975-76 to 1979-80) is marked for initiatives on development of Small Hydro Power Plants with an aim to electrify all district head quarters. Small Hydro Plants commissioned during the period are Tinau (950 KW),Gajuri (25 KW), Dhading (20 KW),Thansing (15 KW), Doti Project (200 KW) and Phidim Project (240 KW). Gandak Project (15000 KW) was also commissioned in 1980. Nepal faced severs load shedding by the end of this plan period.

Sixth Plan Period (1980-81 to 1984-85) saw some major developments as Kulekhani-1 (60 MW), Devighat Hydel Project (14.1 MW) as well as small hydro projects including Baglung (200 KW), Jomsom (240 KW) and Syangja (80 KW) were commissioned during the period. At the same time works on Kulekhani -2 as cascade of Kulekhani-1 commenced. Increased Electrification caused a shoot in peak demand for which a new diesel plant (10 MW) with four units of 2.5 MW each was installed at Hetauda.

Seventh Plan Period (1985-86 to 1989-90) added Marshyangdi (69 MW), Kulekhani-2 (14 MW), Seti (1.5 MW) power plants in integrated Nepal Power System. Country faced trade embargo from India resulting in a delayed completion and cost overrun of Marshyandi.

Eight Periodic Plan (1992-93 to 1996-97) introduced new hydropower Development Policy followed by Electricity Act 1992. New Act opened the generation sector to private power producers. As a result Jhimruk (12MW), Adhikhola (5.1 MW) were

added in the system by private producers where as Tatopani (2MW) and Multifuel Thermal Power Plant (39 MW) were induced in the system by NEA.

Ninth Period Plan from 1997-98 to 2001-02 added maximum capacity in the system. Independent Power Producers completed Khimti (60 MW) and Bhotekosi (36 MW) where NEA completed 6.2 MW Puwa, 14 MW Modi and 144 MW Kaligandaki.

Tenth Periodic Plan (2002-03 to 2006-07) added 7.5MW Indrawati, 20 MW chilime, 3MW Piluwa Khola, 2.5 MW Sunkoshi Small, 1.5 MW Chahukhola, 0.98 Baramchi, 0.5 MW Rairang, 3.45 MW Khudi and 0.183 MW Syange from private side.11th periodic plan (2008-09 to 2010-011) added 88.32 MW.Thus with a modest start of 500 KW in 1911, total installed capacity in Nepal is 705.MW today.

1.3 Management of Hydro Electricity in Nepal

In most countries the hydro electricity sector has largely been, and still is managed with public control and ownership, through government or municipality owned utilities. Over time, as the power sector is being deregulated and unbundled and becoming more open to competition, some sub-sectors primarily generation, have been opened up to private ownership. This applies also to an increasing number of developing countries. However hydropower largely remains still in the public domain and generation is for the most part publicly owned and controlled and Nepal is not also far from the above conditions. In this context the prevailing electricity management condition in Nepal can be viewed in two broad sector one from private sector, which represents by IPPs (Individual Power Producers) and other from public sector, which represents by NEA (Nepal Electricity Authority).

1.3.1 Private Sector in Hydroelectricity Development

After 1990, the government initiated the process of economic liberalization and declared its sincere belief in private led growth, limiting the role of the government only to the creation of conducive-environment for market regulated economic decision-making. Hydropower development was the most important sector opened for private sector participation, which until then was under the exclusive domain of NEA

(a state enterprise). This policy opened new opportunities for the private sector investment, local as well as foreign.

The following guiding policies have been promulgated for encouraging private sector participation especially in hydropower sector

) Hydropower development policy, 1992

) Water resource act 1992

) Electricity act 1992

) Electricity regulation 1993

) Water resource regulation 1993

Hydropower Development Policy, 1992 Was Introduced With Following Objectives.

) To supply electricity as per the demands of the people in urban and rural areas through the development of the high potentiality of the water resources that exists in the country.

) To enhance the development of hydropower project to meet the energy needs required for the industrial development in the country.

) To motivate the national and foreign private sector investment for the development of hydroelectric power.

Following are the main Hydropower Development Policies;-

) To carry out hydropower projects of various standards and capacities to meet the interim and long-term electricity requirements.

) To give emphasis to the program of rural electrification in order to render assistance in the development of agriculture production and cottage and small-scale industries in the hill and Terai regions.

) To use the indigenous labor, skill and resources as well as foreign investment and technology for the development of hydropower.

) To give emphasis to the development of transport system to be run by hydroelectric power in order to substitute the petroleum products.

) To export hydroelectricity produced in excess to the national demand.

) To diversify the utilization of electricity.

) To make supply and distribution of electricity regular and reliable.

） To have the maximum control in the leakage of electricity.

） To make electricity sufficiently available to the people and to make the rate of electricity tariff more practical.

） To extend the use of electricity for making the minimum utilization of fuel wood and to render necessary assistance in the conservation of forest and environment.

While hydropower development policy, 1992 serves as a roadmap for the development of hydropower sector in Nepal, Electricity Act, 1992 sets the laws and rules for hydropower projects in Nepal. This Act includes detailed rules beginning from provision of license, restriction on the issuance of license to royalty, facilities in relation to income tax, foreign exchange, custom duties and assessment of electricity tariff and sale of generated electricity.

This act has also imposed rules for environment protection by power plants and penalties for following: -

） Acting against this act.

） Generating, transmitting and distributing electricity without obtaining license.

） Misuse of electricity and for causing adverse effect to any electricity generation plant or transmission center of transmission or distribution line.

However, for any investors, especially private investor, the main highlight of this Act would be facilities related to income tax, foreign exchange and custom duties and rule of no nationalization. Taking advantage of the new policy of welcoming private foreign investment in this sector, seventeen IPPs have already been generating hydropower (See Table 1.1)

Table 1.1

Hydropower Projects Developed By IPPs

S.No.	Hydropower Projects	Owner	Capacity (KW)
1	Khimti Khola	HPL	60000
2	Bhotekosi	BKPC	36000
3	Chilime	CPC	22000
4	Jhimruk	BPC	12000
5	Indrawati	NHPC	7500
6	Andhi Khola	BPC	5100
7	Khudi	KhudiHP	3450
8	Piluwa Khola	AVHP	3000
9	Sunkoshi Small	Sanima HP	2500
10	Thoppalkhola	ThoppalkholaHP	1650
11	Chakukhola	APN	1500
12	Phemekhola	KhorangaHP	995
13	Baramchi	Unique Hydel	980
14	Sisnekhola	Gautam Buddha HP	750
15	Rairang	RairangHPD	500
16	Salinadi	Kathmandu Small HP	232
17	Sangekhola	Sange Bidyut Company	183
		Total	**156340**

Source: - Nepal Electricity Authority, 2011

Independent Power Producers Association, Nepal (IPPAN) was established in the year 2001 as a non-profit; non-government autonomous organization with an aim of facility. It has been organizing seminars to highlight the opportunities and prospects for investment in the hydropower sector and to exchange ideas, technology and expertise among IPPAN and government intuitions in Nepal and elsewhere.

IPPs are developing twenty-two other projects for a combined capacity of 67970 KW, of which six are under construction and sixteen are in preliminary work in progress.

1.3.2 Nepal Electricity Authority in Hydroelectricity Development

1.3.2.1 Introduction

Nepal Electricity Authority (NEA) was created on August 16, 1985 (Bhadra 1, 2042) under the Nepal Electricity Act 1984, through the merger of Department of Electricity of Ministry of Water Resources, Nepal Electricity Corporation and related Development Boards.

To remedy the inherent weakness associated with these fragmented electricity organizations with overlapping and duplication of works, merger of these individual organizations become necessary to achieve efficiency and reliable service. NEA is the semi-government institution. The board of the directors is committee established by the government. That committee operates those activities, which are held in the institution. There are eight members in the Board including the minister for water resource. The Head Office of the NEA is at Durbarmarga, Katmandu.

Mainly, NEA has two Sectors namely

〕 Business Group.

〕 Corporate Offices.

The main purpose of Business Group is to implement plan and policies of NEA. Under this group, five main sub group as shown on the structure does the works related to consumer service, electrification, and generation, transmission and system operation and engineering services. Likewise the corporate offices are related to planning, monitoring and IT, administration, finance and internal auditing. The Population Census-2007 report that the population having access to electricity service had reached 40 percent with 33 percent of the population availing the service from the Grid and NEA off-grid facilities, the remaining 7 percent being attributed to micro hydro plants developed by local entrepreneurs and other alternate sources.

1.3.2.2 Objectives

The objectives for establishing Nepal Electricity Authority can be traced as follows:

〕 To establish a single organization that would work in all sector of electricity planning, survey, production, operation, maintenance and distribution of electricity.

⟩ To utilize and develop the huge amount of water resources of Nepal in more coordinated way.

⟩ To provide equal and extensive skill development opportunities for all employees working in the field of electricity.

⟩ To overcome the duplication of works being practiced formerly by the existence of several electricity agencies.

NEA Act 2041 B.S. Places the following objectives

⟩ To manage electricity supply by way of effective generation, transmission and distribution.

⟩ To supply electricity by way of proper generation, transmission and distribution to make the supply system reliable and accessible under the prevailing law.

⟩ To develop and implement the program for the production, transmission and distributes of electricity supply.

⟩ For the convenience of the people and industry feasible project in economically viable area is developed to insure the supply by the generation, transmission and distribution of electricity.

At present, NEA is working on " 10000 MW IN 10 YEARS: OUR MISSION OUR COMMITMENT" and 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.

1.3.2.3 Responsibilities

NEA Act, 2041 places the following responsibilities upon NEA.

⟩ To recommend short- term and long-term policies to Government of Nepal (GoN) on matters relating to electricity supply.

⟩ To supply electricity by undertaking the generation, transmission and distribution in accordance with the prevailing law.

⟩ To formulate plans and programs for electricity generation, transmission and distribution and other related activities, and construct, operate, protect and maintain electricity generation station sub-stations, distribution centers,

transmission and distribution lines and related facilities in order to implement its plans and programs.

) To make arrangements for electricity generation transmission and distribution for industrial and agricultural development as well as for the general public on the basis of techno-economic viability of power generation projects.

) To fix electricity tariff and other charges relating to electricity supply services

) To carry out necessary research in the field of electricity generation transmission and distribution.

) To make arrangements for the development of skilled human resources in the areas of electricity generation, transmission and distribution through advanced-level training and education programs.

) To provide technical guidance and consultancy in matters related to electricity generation, transmission and distribution.

) To provide technical guidance and consultancy in matters related to electricity generation, transmission and distribution.

) To perform other functions in order to accomplish the objectives of the NEA.

According to NEA's website *www.nea.org.np,* its major responsibilities are:

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

) To recommend, determine and realize tariff structure for electricity consumption with prior approval of GoN (Government of Nepal);

) To arrange for training and study so as to produce skilled manpower in generation, transmission, distribution and other sectors.

1.3.2.4 Present Performance of NEA

NEA presently serves 20,03,245 consumers across all the 75 district of the country. Although the population benefited by electricity supply remained around a figure of 50 percent. NEA's sub-transmission and distribution infrastructure could cover double the figure if NEA had the financial amenities, the generation capacity and demand from the consumers. Supply of electricity is provided through thirteen medium-sized and forty- six small hydropower projects. Besides the hydropower projects, NEA operates three diesel and one multi-fuel thermal power plants. In terms of installed

capacity, hydroelectric power accounts 559.951 and thermal power 55.028. In addition, approximately 50 MW of power is imported from India through an inter-governmental Power Exchange Agreement using 132kv, 33kv and 11kv lines as exchange links. This exchange quantum is expected to be enhanced to a level of 150 MW through ongoing inter –governmental negotiations. Although the country has a total of 705.42 installed hydropower capacity, only 550 MW power can be generated during the winter season when power demand is at its peak. An overview of existing power plants is presented in the annex.

1.4 Statement of the Problems

Electricity\Hydropower, being a backbone of all developmental activities, plays vital role in nation development. Nepal Electricity Authority (NEA) has a dominating role in managing hydropower\electricity as a crucial public enterprise in Nepal. But the financial position of NEA is not so good and there are also many problems.

In the past, along with its wide range of services its overall financial position was quite remarkable and it had set itself an example for other public Enterprises. But, now a day, financial position of NEA is not found satisfactory. In recent some years, financial position of this public enterprise has become headline of almost all newspaper and due to load shedding problem it has become a topic of discussion from common people to parliament. It is known that millions of rupees from sale of electricity are in receivables. The NEA has been unable to earn profit, pay dividend to government in its investment, contribute to government revenue and all these things hamper in further investment in hydro sector and it has also negatively affect the nation's economy and other infrastructure development.

NEA's financial position has been rapidly declining. As the financial position has been detouring, the government had brought the policy to unbundle its structure.
- What is the financial position of NEA ?
- What is the difference between today's and previous financial position of NEA?
- When did NEA start to decline and from when declining rate worsened?
- What will be the alternative financial strategy for NEA?
- What are the barriers & risks of NEA at present?

〕 What are the causes for continuous declining financial position of NEA?

To go through such questions, it has been felt essential to study and analyze NEA's Financial Position for different periods and from different angles. Hence, for study on financial position of NEA a period of 10 years has been taken
.

1.5 Objectives of the Study

Studying a financial position of any organization is a complex process. There is no single financial statement that sets forth all of the qualitative and quantitative information reflecting financial position. We must move beyond the balance sheet and perform their further analysis to get the complete picture. Although income statements and cash flow statements are important and do provide information relevant to financial position. The balance sheet is a basic "snapshot" of financial position at a particular point in time and is a logical starting point for assessing an organization's financial position. The balance sheet delineates the entity's resource structure, or major classes and amounts of assets, as well as its capital structure, or major classes and amounts of liabilities and equity. In this respect, the basic objective of this study is to analyze the financial position of NEA. The other objectives of the study are as the following: -

〕 To study and analyze the financial performance of Nepal Electricity Authority.
〕 To examine the strengths and weaknesses of Nepal Electricity Authority.
〕 To evaluate the challenge and opportunities of Nepal Electricity Authority.
〕 To suggest Nepal Electricity Authority in order to improve financial position on the basis of findings of this study.

1.6 Need and Importance of the Study

It has been already stated that till some years back the overall financial position of NEA was quite satisfactory. It was able to generate enough profit and thereby to distribute handsome amount of profit as dividend to government, bonus to staff and contribution to government revenue in terms of tax were also quite satisfactory. In recent some years, its financial position and performance have disappointed to all concerned stakeholders. It has been unable to contribute government revenue as dividend or as tax, unable to distribute bonus to staff. So it cannot be confidently said

that running of this organization in present status will not be burden for the government tomorrow. Yesterday successful organization (NEA) is truly speaking, going in financial crisis. Why did this situation actually exist? Why is its financial position going down and down overnight? Who may be held responsible for this situation of NEA? In what situation is it surviving today? What will be tomorrow's situation? What may be taken as remedial factors for its improvement? This research is under taken to search the answer of these question. A number of research works may be found on the topics related to NEA. However all of them found to be focus either on different individual branch of NEA or in Overall performance of NEA and they also should not address the present financial position of NEA. Hence it has been thought an important topic and matter to address recent financial position of NEA. The result of the study is thought to be important for the following groups:

〕 **Management of NEA:** With the help of the report of this study, the management may apply corrective action/ measures for the improvement of NEA.

〕 **Policy Formulators:** The policy formulators of NEA or from government may gain something from the result of the study. The present and past policy relating to NEA, which has been analyzed from this study, may be feedback for the new policy formulation in this sector.

〕 **General Public:** Being the service user of NEA, the general public may be interested about financial position of NEA. The result of this study may provide something to conclude about present problem and financial position of NEA for them.

〕 **Individual Power Producer:** Being the monopoly power purchaser of IPPs, they may also interest in financial position of NEA. This study may be useful to them.

〕 **Financial Resource Provider:** The short term and Long term Loan provider, international organization and other financial resource provider have concern on financial position of NEA and this study may helpful in their various financing decision on NEA.

1.7 Limitations of the Study

Assessing the quality of any organization's financial position is a challenging job. Many qualitative and quantitative factors that influence an organization's may not be

obvious from its financial statements. Many factors must be reviewed to gain a comprehensive understanding of the organization's financial position. In these constraints, this study will carry out to fulfill the requirement of master degree so; there are limitations of this study. Some of them are as follows: -

〕 Due to the time, resources, experience and expertise constraints, not all the related areas have possible to cover in depth.

〕 In the absence of sufficient information, the study will covered only ten fiscal years i.e. from 2002/03 to 2011/12.

〕 This study is manly based on secondary data. Accuracy depends upon the data collection and provided by NEA. As well as primary data, also included.

1.8 Organization of the Study

Chapter 1: Introduction

This introductory chapter includes brief development of hydroelectricity in Nepal, introduction of related organization, act and policies governing hydropower in Nepal. It also includes an Introduction, brief view and organizational structure of NEA, statement of the problem, need and importance of the study, objective of the study, and limitation of the study.

Chapter 2: Review of Literature

This chapter deals with conceptual framework and review of literature. Introduction of financial position, different tools and aspects in analyzing financial position, different journals, books; dissertation, reports and facts received from them are also included.

Chapter 3: Research Methodology

This chapter includes introduction, research design, data collection, the population samples, period covered, nature and scope of source of data, data gathering instruments, statistical tools etc.

Chapter 4: Presentation and Analysis of Data

This chapter includes data, tables and analysis of computed data. Financial ratio analysis, mean, standard deviation, co-efficient of variance, probable errors, correlation and regression are presented. Diagram of different variables are also shown, major findings from computed data is presented at the end of this chapter.

Chapter 5: Summary, Conclusion and Recommendations

This is the concluding chapter, where a brief summary of the whole study is given, conclusion of the study is explained and recommendations are put forward. Recommendations are based on the study of financial position of Nepal Electricity Authority.

CHAPTER-TWO

REVIEW OF LITERATURE

2.1 Introduction

It is very important to study the materials on the topic of research and that what is called review of literature. The review of literature is a fundamental part of planning of the study. The main purpose of literature review is to find out what works have been done in the area of the research problem and what have to be done in the field of the research study being undertaken. Every research requires a clear-cut idea on his problem of the study and its solution, which emerges from the review of literature. Scientific research must be based on past knowledge. The previous studies cannot be ignored because they provide the foundation of the present study.

This chapter reviews the available literature relating to financial position, Nepal Electricity Authority and view expressed by various scholars and researchers on the study of financial position of NEA and other public enterprises. So far as study on financial position of Nepal Electricity Authority is concerned, the management experts and student describing the financial position relevant to this topic have undertaken some studies. This chapter deal review of literature in the following two broad frameworks:

⟩ **Conceptual Review**
⟩ **Review of Related Studies**

2.1.1 Conceptual Review

For the conceptual review purpose, the researcher has undergone conceptual aspects of financial position & review of related studies. Therefore, the objective of this heading is to provide the essential knowledge of financial position, financial statements & tools of financial position analysis.

2.1.1.1 Concept of Financial Position

Financial position is the indicator of overall financial condition and performance of any organization. The elements directly related to the measurement of financial

position are assets, liabilities and equity. The financial position forms the view of composition of assets, liabilities and equity. The common financial statements reflecting financial position are balance sheet, income statement and statements changes in financial condition.

The financial statements are the summarized form of financial reports, which accountant prepares of an enterprise at the end of the financial year. A complete set of financial statements normally includes a balance sheet, an income statement, a statement of changes in financial position (which may be represents in variety of ways, or example as a statement of cash flows or statements of funds flow), and those notes and other statements and explanatory material that are integral part of the financial statement.

Studying a financial position of any organization is a complex process. There is no single financial statement that sets forth all of the qualitative and quantitative information reflecting financial position. We must move beyond the balance sheet and perform their further analysis to get the complete picture. Although income statements and cash flow statements are important and do provide information relevant to financial position. The balance sheet is a basic "snapshot" of financial position at a particular point in time and is a logical starting point for assessing an organization's financial position. The balance sheet delineates the entity's resource structure, or major classes and amounts of assets, as well as its capital structure, or major classes and amounts of liabilities and equity
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2.1.1.2 Financial Statements

A complete set of financial statements includes the following components:

1. Balance sheet;

2. Income statement;

3. A statement showing either:

   a) All changes in equity; or

   b) Changes in equity other than those arising from capital transactions with owners and distributions to owners;

4. Cash flow statement; and

5. Accounting policies and explanatory notes.

1. Balance Sheet

The Balance sheet or the statement of financial position is one of the most significant financial statements. It indicates the financial condition or state of affairs of a business at a particular moment of time. It is the mirror of the financial position of the firm at a particulars date. Balance sheet is the fundamental accounting report. According to I.M Pandey, balance sheet contains information about the resources & obligation of a business entity & about its owner's interest in a business at a particular point of time. In accounting language balance sheet communicates information about the assets, liabilities & owner's equity for the business firm as on specific date. It provides snapshots of financial position of the firm at the close of firm's accounting period. Balance sheet indicates the financial position of the firm. It also indicates the result and outcome of the firms investment, along with financial & dividend decision.

2. Income Statement

Income Statement is the scoreboard of the firm's performance during a particular period of time. It shows the result of trading and non- trading operations during a period of time. It presents the summary of revenue earned & costs incurred earning this revenue in a comparative form. The different is the net profit or net loss. In operational terms, the accounting report that summarizes the revenue items, the expense items & difference between them for an accounting period is called the income statement.

Thus, income statement reflects the efficiency of the firm. However, it may not be the true representative of the efficiency. The income statement is the reflection of the firm's performance during the particular period of time. Income statement occupies a significant place in portraying the result of business operation.

3. Statement of Changes in Financial Position

The statements that are prepared to show the changes in assets, liabilities and owner's equity between dates of two balance sheets is referred to as *The Statement of Changes in Financial Position.* This statement of summaries the changes in assets and liabilities resulting from financial and investment transactions during the period, as well as those changes which resulted due to changes in owners' equity; and the way in which the firm used its financial resources during the period.

2.1.1.3 Analysis of Financial Position

Analysis of financial position is a process of evaluating the relationship between component parts of financial statements to obtain a better understanding of a firm's position and performance.

The financial statement of the business enterprises are initiated to provide much to basic data uses for decision making and in general evaluation of performance by various groups such as current owners, potential investors, creditors, Government agencies and some interested competitors. For example, owners and potential investors are normally interested in the present earnings, future earnings prospects of business of the similar case may different to the other parties. Thus the detailed analysis and interpretation of financial statement is usually required in order to obtain the true financial position of any organization which may be relevant for the specific prospects of particular user.

Many qualitative and quantitative factors that influence an organization's financial position may not be obvious from its financial statements. Because there is no single definition of what constitutes a high quality financial statement many factors must be reviewed to gain a comprehensive understanding of the strength of a company's financial position.

Financial position analysis is the process of identifying the financial strength & weakness of a firm by establishing proper relationship between the items of balance sheet, & profit & loss account. Management of an enterprise is interested in all aspect of financial analysis in order to evaluate its operating performance to audit its internal financial control system & to develop a strategy of bargaining for fund from external resources.

The basis for financial analysis is the financial information obtained from profit and loss account and balance sheet. That's why, I.M. Pandey says "the financial information is needed to compare & evaluate the firm's earning ability. It is also required to aid in investment decision making."

Analysis & interpretation of financial statements is an attempt to determine the liquidity, solvency, efficiency & profitability position of an organization & also

highlight the sources & uses of fund, on the basis of data supplied by financial statements. Analysis & interpretation of financial statements fulfill the different needs of the concerned parties like owners, lenders & the management itself about their invested interests by providing them with adequate information & lifting them to know whether their interest are promoted or not. A series of financial statements analysis & interpretation of different years help one to forecast & measure the trend regarding the firm's ability to meet the short term & long-term liabilities.

The first task of the financial analyst is to select the information relevant to the decision under consideration from the total information contained in the financial statements. The second step involves in financial analysis is to arrange the information in such a way to highlight significant relationship between the variables. The final step is the interpretation and drawing of inferences and conclusions. In brief, financial analysis is the process of collection, arrangement of data, showing relationship among them and evaluating and interpreting the results.

2.1.1.4. Tools of financial statement Analysis

Financial statements merely do not give perfect information about a business concern therefore various type of tools are used to analyze financial statement. These tools are called tools of financial analysis. The tools of financial analysis are needed to show the relationship and change, among the more widely used of these tools are horizontal analysis, ratio analysis and funds flow analysis.

With the help of various financial tools we can identify the actual situation of a business concern. A brief explanation of ratio analysis among these tools has been given below:

Ratio Analysis

Ratio analysis has been major tool used in the interpretation and evaluation of financial analysis. The term ratio refers to the numerical quantitative relationship between the two items/variables. A ratio is calculated by dividing one item of the relationship with the other base. In financial analysis, a ratio is used as a yardstick for the evaluation of financial performance of the firm. "The analysis of financial ratio involves two types of comparison. First, the present ratio may be compared with the past and expected future ratios for the same company and second, the method of

comparison involves comparing the ratios of one firm with those of similar firm or with industry averages at the same point, in time. Such comparison gives insight into the financial performance of the firm." Ratio analysis is widely in use. Ratios themselves are not conclusion they are only the means. The ratios are calculated from data available in the financial statement of an enterprise.

The ratio completed from the available data are numerical, there should not be the tendency to regard them as a precise portrayals of a firm true financial status. For some firms, accounting data may closely approximate economic reality, for others, it is necessary to go beyond the figures in order to obtain their financial condition of performance.

Types of Ratio

Different ratios can be calculated from the available data in the financial statement. Broadly ratios are classified in four groups. They are:

a. Liquidity ratios

b. Capital structure/leverage ratios

c. Activity ratios

d. Profitability ratios.

a) Liquidity Ratios

Liquidity refers to the ability of enterprises to pay its current liabilities. Liquidity implies the utilization of funds on the firm either they are idle or they are very little. A proper balance between the two contradictory requirements i.e. liquidity & profitability are required for the efficient financial management. The current and quick ratios are the most widely used ratios for the general purpose to measure the liquidity position of an enterprise.

b) Capital Structure/ Leverage Ratios

The capital structure/ leverage ratio is associated with the long-term solvency of an enterprise. The long-term creditors would judge the soundness of a firm on the basis of long-term financial strength measured in terms its ability to pay the interest regularly as well as repay the installment of principal due to dates or in one lump sum at the time of maturity. Leverage ratios show how much of an enterprise fund are financed by debt & equity this ratios also shows the prospects for future financing.

The capital structure ratio indicates the soundness of capital structure of an enterprise. It can be calculated on two ways. The first approach is to examine what proportion of borrow capital occupies in the capital structure i.e. calculation of the debt to total capital ratio. The second approach is to examine the number of times the interest earned covered by earnings & to calculate the fixed charges covered by earnings.

c) Activity Ratios

An activity ratio may be defined as the test of relationship between sales & various assets of the firm. Depending upon various types of assets there are various types of activity ratios. Activity ratios are employed to evaluate the efficiencies with which the firm manages & utilizes its assets. These ratios are also called turnover ratios because they indicate the speed with which the assets are being converted or turned over into sales .So activity ratios presume that there exists an appropriate relation between sales & various assets. The more important activity ratios for general-purpose analysis are inventory turnover, total assets turnover ratio, fixed assets turnover ratio and capital employed ratio.

d) Profitability Ratios

Profitability is very important aspects of management of any enterprise. Profitability shows the overall performance of enterprise. The profitability ratios are calculated to measure the operative effectiveness of the enterprise. Besides management of the company, creditors & owners are also interested in the profitability ratios of the firm. Profitability ratios can be calculated on the basis of either sales or investment. The important profitability ratios calculated in relation to sales are gross profit margin & operating profit margin. Similarly the important profitability ratios calculated in relation to investment are return on shareholders equity. Return on capital employed & return on fixed assets. Together these ratios indicate the firm's efficiency of operation.

2.2 Review of Related Studies

2.2.1 Review of Related Articles

Analytical studies of an enterprise pertaining to the financial position are essential to know their profit potentiality, operating efficiency and decision-making technique. In

our country as well, the financial experts and other analysts have made some research towards financial position of different corporation by using various analytical tools. Some of the available research studies relating to the financial aspects of PEs in Nepal have been reviewed.

The research on **Performance of PEs in Nepal** jointly conducted by **ISS** and **CCC**(1975) as a part of the research project entitled "Performance of PE in Asia" jointly sponsored by International Development Research Center, Ottawa, Canada and Government of Nepal made in mid 1975,is the first comprehensive research work in public enterprises in Nepal. In the study it was found that the main criteria for providing financial assistance by Government of Nepal was not based on normal corporate portfolio structure and needs, but on crisis policy of adequate working capital had been instrumental in bringing about a circular consolation of property in many PEs. Absence of sufficient equity cushions has led to the poor performance of many PEs.

The management consultant company (1979) conducted a study on **the performance of PEs of Nepal**. In the study it was concluded that the assets management in general and current assets management in particular were the weakest points in Nepalese PEs. The report also pointed out that because of the lack or operational objection, application of the long run planning, use of modern management tools capital budgeting and efforts towards cost control had been made so far.

R.J. Hugus(1998) has presented on important report titled **"Toward A Power Sector Strategy"** that the existing power in Nepal is small fragment and unable to meet the existing demand of electricity .It is also pointed out that the lack of an abundant power supply aggravates the energy problems that are characterized by a high usage of fuel wood and disappearance of forest cover, and by a growing dependency on imported hydrocarbons which is exerting pressure in the country's balance of payment situation. Development of hydroelectricity resources could mitigate the energy problems, contribute to industrial expansion and increase export by direct sales of energy or by selective development for energy-intensive industries. While there is obvious need to develop hydroelectric resources there is a number of constraints. The main constrained are high capital investment requires relative to resources available.

Other constraints are lack of information for evaluation of alternative courses, which could be-followed in hydropower development.

Arjun Kumar Karki (2008) has presented the report on financial performance of NEA in **Nepal Electricity Authority, fiscal year 2007/08, A year in Review.** According to report, NEA's financial performance has not remained up to the level of expectation, largely because of the reasons beyond our control. The insecurity situation prevailing in the Terai, recurring fuel crisis, frequent strikes and work stoppages presented an atmosphere, which was hardly conducive for normal operation of the business. The transition phase of the country was exploited to the hilt by the unscrupulous elements and goons as our properties were vandalized; our staffs were subject to physical threats, extortions and manhandling. The atmosphere permeated with security concern deprived us the opportunity to show better performance in the fronts like loss reduction, meter reading, cash collection and so forth. Furthermore opportunity presented by the growth in demand could not be translated into sales due to limitation of supply sources. Apart from this, increased operating cost caused by unprecedented hike in fuel price and other commodities, increased volume of energy import and regular increase in salary also pushed the operating cost up. Thus review of customer tariff gradual recovery of accumulated loss, loss reduction, creation of fund for hydropower development and for addressing future inflation-these have emerged as the major issues, which promptly need to address for sustainability of the organization

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2.2.2 Review of Related Thesis
Very few researches have made in the areas of financial position of NEA. Most of the research has not fully able to explain the financial condition of this organization in recent years. Very few dissertations have been available in the financial position. Thus an attempt has been made to review the available thesis, which is relevant to this study. Most research works have been done in the areas of manufacturing and other public utilities. But there are few in the areas of financial position of NEA.

Om Krishna Shrestha submitted a thesis to Institute of Business Administration, Commerce and Public Administration, T.U. on **"A financial performance evaluation study of Nepal Electricity Corporation"** in 2003 (with special reference

to finance aspect). The basic objectives of this study were to evaluate the financial performance of NEA, to suggest measures for the improvement of the performance of NEA and to assess the financial position of NEA. The study covered seven years period i.e. from the FY 1995-96 to 2002-03. In this study he found that NEA has highly fluctuating, funds were mainly collected through share capital, loans, and depreciation funds were mainly used in expanding fixed assets and the contribution of NEC to national economy in the form of value added was increasing. He concluded that the net working capital position was not satisfactory. Operation ratio was unsatisfactory due to high operating expenses; the position of funds collection was in heavily fluctuant. The trend was satisfactory mainly from utilization point of views. He also pointed out that the contribution to the national economy in the form of value added was noticeable, pricing structure had noticeable impact on the profitability situation, impact of power generation and revenue generation on profitability was poor and no control measure was in operation at NEC.

Purna Prashad Shrestha (2006) conducted a study in the comparative financial analysis of "**Water Supply and Sewerage Corporation and Nepal Electricity Corporation**" in 2006 with the object of individual and comparative financial analysis of water supply and sewerage corporation (WSSC) and Nepal Electricity Authority to identify the finical weakness and strength of these public Enterprise. It was revealed by the study that the liquidity position of both the enterprises was deteriorating and the liquidity of current assets was poor due to excessive inventory holdings. The liquidity position of NEA was worse then that of WSSC. The capital structures of both companies were low geared and NEA enjoyed more favorable position to secure debts than WSSC. The turnover ratios of both enterprises were extremely low; the case in NEA was little better than WSSC. Most of the funds were found spent on the acquisition of fixed assents in case of both enterprises. However NEA spent more funds for this purpose on an average.

Rabindra Dev Bhatta's research **"An Evaluation of Financial position of NEA"** in 2003 had the following finding and recommendations.

Findings

⌡ There is no effective utilization of assets in NEA.

- NEA has been seriously facing the problem on the collection of receivable. The accounts receivable in NEA is high. So average collection period is also high in each fiscal year.

- NEA has generated very low returns and in some years negative profitability throughout the study period.

- The capacity of assets in the generation of revenue is not satisfactory and the revenue earned is very low in comparison to investment made in the assets of NEA.

- Increasing cost in each fiscal year is an important issue of NEA. It has not adopted the cost control tools and techniques.

- NEA is not able to fulfill the requirement of funds from internal sources by successful operation of the corporation's activities. It has been taking considerable amount of loan to fulfill the requirements of funds.

- Electricity leakage, theft and wastage have been the major reasons reducing the profit earning capacity of NEA.

- High maintenance expenditures as shown in the profit and loss accounts have been an important factor in reducing the profitability of NEA.

Recommendations of Bhatta's researches are

- Improvement of the liquidity position.
- Management of operating as well as non-operating expenses.
- Development of efficient system of revenue collection.
- NEA should prepare highly qualified, dynamic and energetic personnel.
- Reduce over staffing provide training to staff to increase their productivity.
- Immediate action should be taken.
- More autonomy should be provided.
- Efficient utilization of fixed assets.
- Make investment in small projects and avoid big projects without prior feasibility analysis in terms of finance and corporation cost benefits.
- The capacity should be fully utilized.
- The financial position of the corporation should be timely evaluated.
- Improvements in the present Accounting system.

The thesis report submitted by **Madan Kandel** on **"Financial Performance and Employee Opinion on the Performance of NEA"** in 2005 says that, Nepal Electricity Authority was not efficiently utilized its Assets .NEA has facing the problem of outstanding debt collection. The account receivable of NEA is very high. NEA generates negative profitability through the study period. There is no effective cost control mechanism in NEA because cost is increasing every year. Electricity leakage, theft and wastage have been the major reasons behind reducing profit-earning capacity of NEA.

Similarly another thesis on "**A Comparative Ratio Analysis of Public Utility Sector with Reference to Nepal Electricity Authority, Nepal Water Supply Corporation and Nepal Telecom**" (2010), submitted by **Promod parajuli** pointed that, there is low efficiency in Utilization of assets in NEA.NEA is facing serious problem of outstanding debt collection. Debtor's turnover is slow and Average Collection Period is very high. NEA has poor utilization of assets in generation of sales revenue. There is no effective cost control mechanism, which results high operating expenses. Electricity leakage, theft and wastage are very high, which is major reason for reducing profit earning capacity. NEA has high debt composition in capital structure, which adds the burden of interest.

CHAPTER – THREE

RESEARCH METHODOLOGY

3.1 Introduction

Research Methodology is the systems and procedures adopted to successfully accomplish the dissertation objective envisaged. This research methodology supports to explore the facts as well support to achieve the objective of dissertation. The main objective of this study is to find out the actual financial position of NEA. Financial statements and their analysis are the tools for finding out the financial position of any organization. A systematic research study requires a proper methodology to achieve the set objective. This study has also developed the definite methodologies to achieve the set objective. So this chapter has been attempted to present a basic frame of methodology within which the research will be conducted. Therefore this chapter deals the research design, types and sources of data, data collection procedures and methods of analysis

3.2 Research Design

A research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure. It is the plan and formulation of investigation idea and strategy so as to obtain answers to research questions and to control variance.

Strategy, as used here, is also more specific than plan. In other words, strategy implies how the research objectives will be reached and how the problems encountered in the research will be tackled.

The plan is the overall scheme on program of research. It includes an outline of what the investigator will do from writing the hypothesis and their operational implication to the final analysis of data. The structure of the research is more specific. It is the outline, the scheme, and the paradigm of the operation of the variables. When we draw diagrams that outline the variables and their relation and juxtaposition we build structural schemes for accomplishing the operational research purpose.

The research design of this study is descriptive as well as analytical. This study is an examination and evaluation of financial position of NEA. The study is closely related with the various indicators revealed from the financial statements of NEA.

In this study, the financial position of NEA is based upon the historical financial activities. To analyze the financial position of NEA is the main objective of the study. So, the study is based on certain research designs. This study emphasizes on descriptive and analytical study of collected data over a period of time (Data are taken from NEA's balance sheet and income statement and the analysis is basically made on the basis of these 10 years data) and it gives suggestion on the improvement of the financial position of NEA.

3.3 Nature and Sources of Data

This study is mainly based on the secondary data. Primary data are also used to support secondary data. The primary data are collected from the NEA's different department's staff of different level The main source of secondary data for the purpose of this study is the published financial statement of NEA for the period of last ten years (2002/2003 to 2011/2012). Data are also taken from several other sources like government report; bulletin and other published statements of NEA, its magazines and studies made on this subject.

3.4 Data collection Procedure

There are several methods of data collection and they generally fall into primary and secondary. According to selltiz, wrightsman and cook as quoted by Ritchie (1989), the purpose of the various data collection techniques is to produce truth worthily evidence that is relevant to the research question being asked.

For the purpose of this study, following methods are used:

Primary data:

Primary data are collected by taking the oral interview and meeting with staff of Nepal Electricity Authority. To get reliable information discussion was also conducted with staff of Nepal Electricity Authority. Mainly the questionnaires as

shown in the annex are used on five directors and departments' chiefs, ten account chiefs and ten assistant staff of Nepal Electricity Authority.

Secondary data:

The secondary data are collected from published accounting statements of Nepal Electricity Authority, report of national planning commission, central bureaus of statistic and other source. The review of theory relating to this study is based on textbooks, official publication, Journals and previous research studies.

3.5 Methods of Analysis

The study has used both descriptive as well as inferential techniques of analysis. Data so obtained have no meaning unless they are arranged and presented in a systematic way. Further, they need to be verified and simplified for the purpose of analysis. Moreover, data and information so gathered are to be checked, edited and tabulated in such ways that provide convenience for computation and interpretation.

The relevant data have been inserted in meaningful tables. Only the data that are relevant to the study have been presented in the tabular form in the understandable way and unnecessary data have been excluded. To achieve the predetermined objective of the research, certain financial and statistical tools are used.

In order to make an analysis of available data, following methods have been employed.

a) Various books, journals, publications, and other related literatures were studied as the first step to begin the study.

b) Data collected and tabulated by using various techniques.

c) Tabulated data are analyzed by using financial and statistical tools.

d) With the help of analysis, conclusions were drawn and recommendations were suggested.

3.6 Analytical Tools Used

The following are the usual methods for interpreting the financial statements:

3.6.1 Commoner's method:

Those who are not well versed in accounting principles and practices generally note the absolute amount of profit after tax, and the sales revenue earned during the year.

In the published statements, figures are available for the current year and also for the previous year .By comparing figures relating to two or more consecutive years, one can have some idea about the performance of a company during a given period. Some people are also allergic to figures. They simply want to the rate of dividend declared during the year and compare it with the rate declared during the previous year. They do not take the trouble of determining the following items:

I.   Whether profitability achieved during the year is satisfactory as compared to the rates earned in the immediate past.

II.   If profitability shows a downward trend, the reasons therefore.

III.   Whether the company's profitability is satisfactory as compared to that of companies in the same trade?

IV.   Whether the company's debt paying ability in the short-term is adequate.

V.   If the company has relied on borrowed capital is the profit earned sufficient to enable the company to pay interest and installment payments as and when these become due for payment.

VI.   If the company's financing policy sound and adequate in relation to its profitability?

VII.   Is the cost structure of the company reasonable? If so, what are the categories and types of cost which may be considered unreasonable?

VIII.   Is capacity utilization satisfactory? If not, what are the reasons?

IX.   Is the company's market share for its products declining? If so, what remedial actions are being contemplated by the management? Is the management aware of this adverse trend? If so, whether any modernization/diversification/ expansion plans are in the offering?

X.   Is dividend policy satisfactory? If dividend payout is low as compared to profit earned, what plans does the company propose to launch to make the best possible use of funds retained within the business?

3.6.2 Ratio Analysis

The first approach will not provide any clues to the areas just mentioned under items (I) to (X).A rational approach in the circumstances is to build up ratios in different areas and interpret them so as to get clues regarding the effectiveness of financial position. Hence, Ratio Analysis tool is used in this study.

Ratio analysis is a widely used tool of financial analysis. Ratio analysis is powerful and important tool and technique of financial analysis, which helps in identifying the health of the organization. In other words ratio analysis helps the analyzer make quantative judgment on the firm's financial position as well as performance. Ratio analysis is a powerful tool for financial analysis. " Ratio refers to the numerical or quantative relationship between two variables. A ratio is calculated by dividing one item of the relationship with other". The primary purpose of ratio is to point out areas of further investigation. Ratio analysis uses a major tool in interpretation and evaluation of financial statement.

Ratio analysis stands for the process of determining and presenting the relationship of items and groups of items in the financial statement. According to Van Horne "to evaluate the financial condition and performance of a firm, the financial analysis needs certain yardsticks. The yardstick frequency used is a ratio or index relating to pieces of financial data to each other.". Ratio is a powerful and important tool and technique of financial analysis, which helps in identifying the financial health of the organization. In other word, ratio helps to find out the firm's financial position as well as performance.

Ratio may be classified in number of ways keeping in the view the particular purpose. There are different about classification of ratio analysis. According to Van Horne "different types of ratios are used in day to day. Generally, four types of ratios namely liquidity, leverage, turnover, and profitability ratios are used in analysis of financial position of a company".

3.6.2.1 Liquidity Ratio

Liquidity ratio measures the short-term solvency of organization. It analyzes the ability of organization to pay the short-term obligation. Under this the following ratios are calculated:

i) Current Ratio

ii) Quick /Acid Test /Liquid Ratio

i) Current Ratio

The current ratio is a measure of the firm's short term solvency. It indicates the availability of current assets in rupees for every one rupee of current liabilities. It is computed by dividing current assets by current liabilities.

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

Current Assets include cash and those assets, which can be converted into cash within one year. Bank balance, marketable securities, debtors and stock (inventories) are some example of current assets.

All obligations maturing within a year are included in current liabilities. Thus current liabilities includes creditors, bills payable, accrued expenses, bank over drafts, income tax liabilities and long term debt maturing in the current year.

ii) Quick Ratio

It is also known as Acid test ratio or liquid ratio. The ratio shows the liquidity of the organization in real sense. Liquid Assets are current asset loss prepaid and stock. This ratio measures the ability or firm to pay current liability immediately. It is calculated as below:

$$\text{Quick Ratio} = \frac{\text{Quick Asset}}{\text{Current liability}}$$

Where,

Quick Asset = Current Asset – stock– prepaid expenses.

The standard quick ratio is thought to be 1:1 i.e. liquid asset should be equal to current liability. If the ratio is higher the short term financial position is supposed to be very sound.

3.6.2.2 Leverage Ratio

It is also termed as solvency ratio or capital structure ratio. Solvency means the ability of the business to pay its outside liabilities. The leverage ratios are calculated to judge the long-term financial position of a firm. This ratio measures the enterprise's ability to pay the interest regularly and to repay the principal on maturity. The following ratios are included under leverage ratio: -

i)   Debt Equity Ratio (D/E Ratio)

ii)   Debt to Total Capital Ratio (DTC Ratio)

iii) Interest Coverage Ratio (IC Ratio)

iv)   Fixed Coverage Ratio (FC Ratio)

i) Debt Equity Ratio (D/E Ratio)

This ratio is calculated to judge long-term financial position of the business/ organization. The ratio establishes relationship between long term loans and owner's fund. It is calculated as follows:

$$\text{Debt Equity Ratio} = \frac{\text{Long Term Debt}}{\text{Share Holder's Equity}}$$

The ideal debt equity ratio is accepted as 2:1 meaning that long-term liability of the organization should ideally be two times of shareholder's fund.

A high ratio shows the large share of financing by the creditor as compared to that of owner. The creditor prefer low debt equity ratio, a low debt equity ratio implies larger safety margin for creditors.

ii) Debt to Total Capital Ratio (DTC Ratio)

This ratio shows the relationship between the long term debt and total capital. Total capital includes shareholders equity as well as long term debt. This ratio is variation of debt equity ratio and gives the similar indications.

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

<div align="center">**OR**</div>

$$= \frac{\text{Total Debt}}{\text{Capital Employed + Current Liability}}$$

A low ratio represents security to creditors in existing credit on the contrary; a high ratio represents a greater risk to creditor as well as shareholders.

iii) Interest Coverage Ratio (IC Ratio)

This ratio shows how many times the profit covers the interest. It shows the margin of cover to lenders of the organization. It is always desirable to have profit more than the interest payable on debentures and other loans. In case profit is either equal or less than the interest, the position will be unsafe and it will show that there is nothing left for the shareholders and position of lender is also unsafe.

It is calculated as:

$$\text{Interest Coverage Ratio} = \frac{\text{NPBIT}}{\text{Interest}}$$

Where, NPBIT = Net Profit before Interest and Tax.

A high ratio is a sign of low burden of borrowing of organization and lower utilization of borrowing capital. Form the point of view of creditors, debenture holders and loan creditors, the higher the coverage the greater the ability of the firm to make the payment of interest.

iv)Fixed Coverage Ratio (FC Ratio)

This is the ratio of net profit before interest and tax of fixed charge. It indicates the number of times coverage by NPBIAT. The fixed charge includes interest, preference dividend and debt payment. It is calculated as:

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

It shows the ability of the organization to make the payment of fixed charges. Hence, the higher coverage ratio is preferable for the company. Higher the coverage higher will be profitability.

3.6.2.3 Turnover / Activity / Efficiency Ratio

Turnover means sales, so turnover ratios are related to sales. It is an accepted fact that sales have direct relationship with the performance of the organization. Higher sales mean better performance, which really means better efficiency and productivity. Higher sales also mean more production, which is undoubtly, the result of the best possible utilization of physical resources i.e. machine, and material and active participation of human resources. In this way, word 'Turnover', 'Efficiency' and 'Activity' are synonymous.

The relationship between sales and recourses is indicated by this ratio. This ratio reflects how efficiency the company is managing its resources.

Under this the following ratios are calculated:

i)   Inventory Turnover Ratio (IT Ratio)

ii)   Debtors Turnover Ratio (DT Ratio)

iii)   Average collection Period (ACP)

iv)   Fixed Asset Turnover Ratio (FAT Ratio)

v)   Total Asset Turnover Ratio (TAT Ratio)

vi)   Capital Employed Ratio (CE Ratio)

i) Inventory Turnover Ratio (IT Ratio)

This ratio measures how many times the average stock is sold during the year. Promptness of the sales indicates better performance of organization. It also shows the efficiency of the concern. Immediate sales of goods produced require further production, which consequently activates the productive process, and it's responsible for rapid development of the business.

Higher inventory turnover ratio is always beneficial to the concern. Lower IT ratio shows that the stock is blocked and not immediately sold. It shows the poor performance and inefficiency of the management.

The ratio establishes the relationship between costs of goods sold and average stock. Every business has to keep optimum quantity of stock so that the production work may be carried on smoothly. If the average inventory kept during the year is more than ordinary requirement the amount spent on its purchase will be unnecessarily blocked and there will be problem of storing it. It is always advisable to keep the required quantity of the stock.

The ratio is calculated as:

$$\text{Inventory Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Average Stock}}$$

OR

$$\text{IT Ratio} = \frac{\text{Net Sales}}{\text{Closing Stock}}$$

Where,
Cost of Goods Sold = Net Sales- Gross Margin

$$\text{Average Stock} = \frac{\text{Opening Stock + Closing Stock}}{2}$$

ii) Debtors Turnover Ratio (DT Ratio)

A firm can sell goods on cash or credit. Credit is the important factor of sales promotion. By implementing the liberal credit policy, the sales can be increased. But one thing here should be notified that the collection period from this type of debt must be short. The efficiency of the concern for the collection is measured by this ratio. This ratio measures the velocity of debt collection of a firm. It is also termed as 'Receivable Turnover Ratio'. It shows the relationship between credit sales and average debtors.

It is computed as:

$$\text{DT Ratio} = \frac{\text{Net Credit Sales}}{\text{Average Debtors}}$$

Where,
Net Credit Sales = Total Sales- Cash Sales – Returned

$$\text{Average Debtors} = \frac{\text{Opening Debtors + Closing Debtors}}{2}$$

In absence of credit sales and opening debtors, the following formula can be used.

$$DT \ Ratio = \frac{Sales}{Closing \ Debtors}$$

The higher the ratio, the more efficiency is the management on collecting the debtors. A higher ratio indicates that within a short period, the firm is collecting the cash from debtors.

iii) Average collection period (ACP)

It represents the average number of days for collecting the cash from debtors. It measures the efficiency of the concern for collecting from debtors. It indicates the rapidity or slowness with which the money is collected from the debtors.

It can be calculated on the basic of the following formula

$$ACP = \frac{Debtors \ x \ (12 \ months/ \ 52 \ weeks/ \ 365 \ days)}{Credit \ sales}$$

OR

$$= \frac{12 \ month/ \ 52 \ weeks/ \ 365 \ days}{Debtors \ Turnover}$$

OR

$$= \frac{Debtors}{Sales \ / \ Day}$$

The minimum time is preferable because it shows that the firm is efficient in collection of cash from debtors.

iv)Fixed Asset Turnover Ratio (FAT Ratio)

Fixed asset are used in the business for producing goods to be sold. The effective utilization of Fixed Asset will result in increased production and reduced cost. It also ensures whether investment in the assets have been judicious or not.

This ratio is calculated as

$$FAT \ Ratio = \frac{Net \ Sales}{Net \ Fixed \ Asset}$$

Where,

Net Fixed Assets = Fixed Asset – Depreciation

The higher ratio reflects better utilization of fixed asset. A low ratio is indicative of the poor utilization of the existing plant capacity that will result in reduction of production and increase in cost of production.

v) Total Asset Turnover Ratio (TAT Ratio)

This ratio shows the relationship between total assets and sales. It indicates how well the firm's total assets are being used to generate its sales.

A higher ratio is preferable. A higher ratio implies better utilization of total assets and vice versa.

$$\text{Total Asset Turnover Ratio} = \frac{\text{Net Sales}}{\text{Total Assets}}$$

vi)Capital Employed Turnover Ratio (CET Ratio)

This Ratio establishes the relationship between the amount of sales and capital employed. It shows how efficiency capital employed in the company has been utilized in generating its sales revenue.

It is calculated as:

$$\text{CET Ratio} = \frac{\text{Sales}}{\text{Capital Employed}}$$

Where,

Capital Employed = Share Capital + Retained Earning + Long Term Debt –Preli. exp.

Higher the ratio, the more efficient is the management on utilization of capital. The capital employed includes shareholder equity and long term liabilities.

3.6.2.4 Profitability Ratio

Profitability refers to the ability of the organization to earn profit. It shows the efficiency of the business. These ratios measure the profit earning capacity of the organization. Profitability has direct link with sales. This is why; we calculate these

ratios on the basis of sales. Return on capital and investment is calculated on the basis of capital employed.

Maximization of profit is the main objective of each and every organization. It is very necessary to earn maximum profit for the successful running of a business concern. Profitability can be measured in two ways:

(a) Profitability in relation to sales.

(b) Profitability in relation to Investment.

The following ratios can be ascertained considering the sales as basis:

i)   Gross Margin Ratio

ii)   Net Profit Ratio

iii) Operating Ratio

i) Gross Profit Ratio (GP Ratio)

Gross profit ratio is also termed as gross profit margin. This ratio shows the relationship between gross profit and net sales and it measures the overall performance of the organization in terms of sales. It is generally expressed in percentage.

The formula to calculate G.P. ratio is

$$GP\ Ratio = \frac{Gross\ Profit}{Net\ Sales} \times 100$$

Where,

Gross Profit = Net sales- Cost of Goods Sold

A higher ratio is a sign of efficient management, which reflect lower cost of goods sold and maximum profit.

ii) Net Profit Ratio (NP Ratio)

This ratio establishes the relationship between sales and net profit. Net Profit is gross profit less selling, distribution and financial expenses. Net profit, for calculating this ratio is picked up from the profit and loss account. It should be noted that net profit is ascertained after adding operating and non-operating income to Gross Profit deducting both operating and non-operating expenses there from.

This ratio is calculated by dividing net profit after tax (NPAT) by net sales. It is expressed in terms of percentage as

$$\text{NP Ratio} = \frac{\text{Net Profit After Tax}}{\text{Net Sales}} \times 100$$

A higher ratio is an indication of higher overall efficiency of the business and better utilization of total resources. Poor financial planning and low efficiency is the indication of lower ratio.

iii) Operating Ratio

The operating ratio is an important ratio that explains changes in the net profit margin. Dividing all operating expenses-cost of goods sold, selling expenses, general expenses and administrative expenses-by Sales expenses compute this ratio.

This ratio is calculated as:

$$\text{Operating Ratio} = \frac{\text{Operating Expenses}}{\text{Net Sales}}$$

A higher ratio is the indication of high operating expenses and which reduce the profit of the organization and vice-versa.

Similarly the following ratios can be ascertained considering the investment as basis:

i) Return on Asset (ROA)

ii) Return on Shareholder's Equity (ROSE)

iii) Return on Capital Employed (ROCE)

iv) Return on Common Shareholder's Equity (ROCSE)

i) Return on Asset (ROA)

This ratio establishes the relationship between net profit and total asset. This ratio is also called 'Profit to Asset Ratio'. It is shown in percentage.

To ascertain it different formula can be used which are as follows:

$$ROA \;=\; \frac{NPAT}{Total\ Asset}$$

OR

$$=\; \frac{NPAT\text{-}\ Pref.\ Dividend}{Total\ Asset}$$

OR

$$=\; \frac{NPAT + Interest}{Total\ Asset}$$

OR

$$=\; \frac{NPAT - Pref.\ Dividend}{Total\ Tangible\ Asset}$$

This ratio measures the profitability of all financial resources invested in the firms' asset. Hence, the higher ratio implies that the available source and tools are employed efficiently.

ii) Return on Shareholder's Equity (ROSE)

This ratio shows the relation between the net profit after tax and shareholder's funds. Shareholders' funds include equity share capital, preference share capital, reserve and surplus, reserve funds, general reserve, capital reserve and share premium. The fictitious assets should be deducted from total shareholder's equity for finding out this ratio.

This ratio is calculated as:

$$ROSE = \frac{Net\ Profit\ After\ Tax}{Shareholder's\ Equity}$$

OR

$$= \frac{\text{Net Profit After Tax + Interest}}{\text{Shareholder's Equity}}$$

This indicates how well the firm has used the recourse contributed by the owner. Higher is the ratio, the more efficient the management and utilization of shareholder's fund.

3.6.3 Statistical Tools

Various statistical tools can be used to analyze the data available to the researcher. These tools are used in research in order to draw their liable conclusion through the analysis of financial data.

Following tools are used for the purpose.

i) Arithmetic Mean ($\overline{X}$)

ii) Coefficient of Variation (CV)

iii) Co- efficient of Correlation (r)

iv) Probable Error of Correlation Coefficient (PE)

v) Least Square Linear Trend

i) Arithmetic Mean ($\overline{X}$)

An average is a single value selected from a group of values to represent them in same way, which is supposed to stand for whole group of which it is a part, as typical of all the values in the group. Out of various measures of the central tendency, arithmetic mean is one of the useful tools applicable here. It is easy to calculate and understand and based on all observations.

Arithmetic mean of a given set of observation is their sum dividend by the number of observation. In general, if X_1, X_2, X3 ...Xn, are the given observations, and then arithmetic mean usually denoted by X is given by:

$$\overline{X} \; X \frac{X_1 \; \Gamma \; X_2 \; \Gamma \; X_3 \; \Gamma ....X_n}{N} \; X \frac{\overline{X}}{N}$$

Where,

$\overline{X}$ = Arithmetic mean

N = Number of Observation

ii) Coefficient of Variation (CV)

According to Prof. Karl Pearson, Coefficient of variation is the percentage variance in the mean, Standard deviation being considered as the total variation in the mean, it is one of the relative measures of dispersion that is useful in comparing the amount of variation in data group with different mean.

Coefficient of variation, denoted by C.V. is given by:

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

Where, σ = Standard Deviation = $\sqrt{\dfrac{X^2}{n} - \dfrac{X}{n}^2}$

For comparing the variability of two distributions we compute the coefficient of variation for each distribution. A distribution with smaller CV is said to be more homogeneous or uniform or less variable than other. Conversely, a series with greater CV is said to be more variable or heterogeneous than the other.

iii) Karl Pearson's Coefficient of Correlation (r)

It is a statistical tool for measuring the intensity of the magnitude of linear relationship between two series. Karl person's measure known as Pearson's Correlation between two variables/series X and Y is usually denoted by r and can be obtained as:

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

Where,

N   =   Number of observation in series X and Y

ΣX =   Sum of observation in series X

ΣY =   Sum of observation in series Y

ΣX^2 =   Sum of squared observation in series X

$$\phi Y^2 = \text{Sum of squared observation in series Y}$$

$$\phi XY = \text{Sum of the product of observation in series X and Y}$$

Value of r lies between -1 and $+1$, r=1 implies that there is a perfect correlation between the variables. The variables, r= -1, implies at there is a perfect negative correlation between the variables, r= 0 means the variables are uncorrelated but r= 0 does not always mean that the variable are uncorrelated, they may be in some other form such as logarithm, quadratic, exponential etc.

iv) Probable Error of Correlation Coefficient (PE)

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

$$\text{P.E.} = 0.6745 \text{ x } \frac{1Zr^2}{\sqrt{N}}$$

$$\text{Where,} \qquad \frac{1Zr^2}{\sqrt{N}} = \text{Standard Error}$$

Reason for taking 0.6745 is that in a normal distribution 50% of observations lie in the range $\mu = \pm 0.6745 \, \exists$ Where μ and $\exists$ denote the population mean and standard deviation.

P.E. is used to test if an observed value of sample correlation coefficient is significant of any correlation in the population. If r < 6 PE correlation is not significant and if r > 6 P.E, r is define significant.

v) Least Square Linear Trend

Trend analysis is a 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 value increase by absolute amount per unit of time. The linear trend values from a series in arithmetic progression.

Mathematically Y $= a + b X$

Where,

Y = The 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:

Y = Na + b X

XY = a X + b X$_2$

Since,

$$\mathbf{X = 0,} \qquad \mathbf{a =} \quad \frac{Y}{N} \quad \mathbf{and} \quad \mathbf{b =} \quad \frac{XY}{X^2}$$

3.6.4 Graphs:

Graph helps to show the general trend of the ratios in respect to the time period. It is a very common way of presenting data for two variables, which have a relationship, in a figure or chart of graph that works best when the data is continuous. A figure is used to show the changes of dependent variable in relation to the change of independent variables. It is common practice to place the independent variable along x- axis and dependent variables along y-axis. For the calculation, the researcher has selected the financial ratios as dependent variables and the time in years as independent variables.

3.7 Methods of presentation and analysis:

Simple methods of analysis have been used, data presentation and analysis has been divided into small sub-topics. Every result has been tabulated and clear interpretation on it has been given simultaneously. Detail of calculations has been presented in appendices at the end of the report. Tables, diagrams and graphs have been used to make report clear and easily understandable. Summary, conclusion and recommendation have been presented at the last chapter of the report.

CHAPTER – FOUR

PRESENTATION AND ANALYSIS OF DATA

4. Introduction

This chapter includes the presentation, analysis and interpretation of data collected from various sources in order to achieve the objectives of this study. The basic objective of this part of study is to analyze the financial position of Nepal Electricity Authority. In this chapter data are presented and analyzed to find out the liquidity, leverage, turnover and profitability position. Likewise the relationship between sales, fixed assets and other variables are identified by using various statistical tools.

4.1 Ratio Analysis

Ratio Analysis is used to compare a firm's financial performance and status to that of other firms or to itself overtime .Ratio analysis is one of the important tools broadly used in financial position analysis of a firm. A ratio analysis is a mathematical relationship between two related items expressed in quantitative form. A ratio may be expressed in proportion, in rate or items, or in percentage. Hence, analysis of financial statement with the help of ratio may be termed as ratio analysis. It implies the process of computing, determining and presenting the relationship of items or groups of items of financial statements (i.e. income statement and balance sheep). The ratio analysis also involves the comparison and interpretation of these ratios and the use of them for future projection.

For this research study also, the ratio analysis has been taken as an important tool. Hence, various types of ratios have been calculated for the financial position analysis of NEA.

4.1.1 Liquidity Ratio

It is extremely essential for a firm to be able to meet its obligations as they become due. Liquidity ratios measure the ability of the firm to meet its current obligation. In fact analysis of liquidity needs the preparation of cash budgets and cash flows statements but liquidity ratios by establishing the relationship between cash and other

current assets to current obligation, provides a quick measure of liquidity .A firm should ensure that it does not suffer from lack of liquidity (illiquidity), and also that it is not too much highly liquid. The failure of a company to meet its obligations, due to lack of sufficient liquidity, will result in bad credit ratings, loss of creditor's confidence, or even in law suits resulting in the closure of the company. A very high degree of liquidity is also bad; idle assets earn nothing. The firm's fund will be unnecessarily tied up in current assets. Therefore it is necessary to strike a proper balance between liquidity and lack of liquidity. The ratios which indicate the extent of liquidity or lack of it are current ratio and quick ratio.

For Nepal Electricity Authority the following table 4.1 shows the Current Ratio and Quick Ratio (for Calculation See annex 1 & 2).

Table 4.1

Liquidity Ratios of Nepal Electricity Authority.

Year	Current Ratio	Quick Ratio
2002/03	0.73	0.29
2003/04	0.62	0.36
2004/05	0.54	0.33
2005/06	0.49	0.29
2006/07	0.45	0.27
2007/08	0.45	0.29
2008/09	0.43	0.26
2009/010	0.35	0.20
2010/011	0.32	0.14
2011/012	0.30	0.18
Mean	**0.69**	**0.26**
Standard Deviation	**0.26**	**0.067**
Coefficient of variation	**0.39**	**0.257**

Figure-4.1

Liquidity Ratios of Nepal Electricity Authority
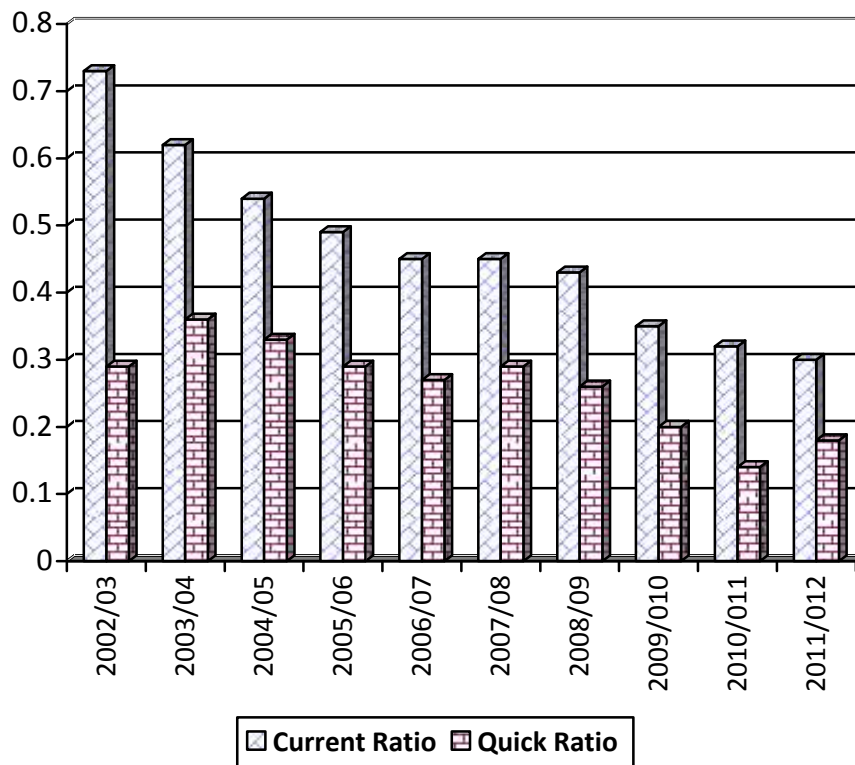
4.1.1.1 Current Ratio (CR)

Above table shows the Current Ratios of NEA. The Current Ratios for the study period remained, 0.73, 0.62, 0.54, 0.49, 0.45, 0.45 , 0.43,0.35,0.32 and 0.30 from the F/Y 2002/2003 to F/Y 2011/012 respectively. The Mean, Standard Deviation and Coefficient of Variation of Current Ratio are 0.69, 0.26 and 0.39 respectively.

4.1.1.2 Quick Ratio (QR)

Similarly the Quick Ratios for the study period are 0.29,0.36,0.36,0.29,0.27, 0.29,0.26,0.20,0.14, and0.18 respectively from F/Y 2002/03 to F/Y 2011/012 .The Mean, Standard Deviation and Coefficient of Variation of Quick Ratio are 0.26,0.067 and 0.257 respectively.

The Current Ratio of NEA as shown in figure is in decreasing trend and the Quick Ratio of NEA is in fluctuating trend for the study period. According to the standard as developed by Deloitte & Touche IQ, the Current Ratio and Quick Ratio for Utility

Company is 0.83 and 0.50 respectively. After the F/Y 2007/08 both the Ratios are less than the standard. The standard deviation and coefficient of variation shows that the Current Ratio of NEA is less consistent than Quick Ratio. All ten years figures shows that the liquidity position of NEA is not very strong during the periods.

4.1.2 Leverage Ratio

The long-term creditors like debenture holders and financial institutions are more concerned with the firm's long-term financial strength. In fact a firm should have short term as well as long-term strong financial position. To judge the long-term financial position of NEA, Leverage ratio is calculated as shown in the following table. (See annex 3, 4 & 5 for calculation).

Table 4.2

Leverage Ratios of Nepal Electricity Authority

Year	D\E Ratio	DTTCR	ICR
2002/03	2.16	0.683326	0.49
2003/04	2.52	0.716194	0.85
2004/05	2.70	0.729797	0.50
2005/06	2.81	0.737313	0.57
2006/07	2.65	0.725742	0.58
2007/08	2.30	0.688138	1.13
2008/09	2.44	0.701836	-0.04
2009/010	2.55	0.712051	-1.08
2010/011	3.02	0.744788	-0.89
2011/012	2.29	0.792757	-0.84
Mean	2.54	0.72	0.13
Standard Deviation	**0.25**	**0.7202**	**0.76**
Coefficient of Variation	**0.10**	**0.99586**	**5.980606181**

Figure-4.2

Leverage Ratios of Nepal Electricity Authority
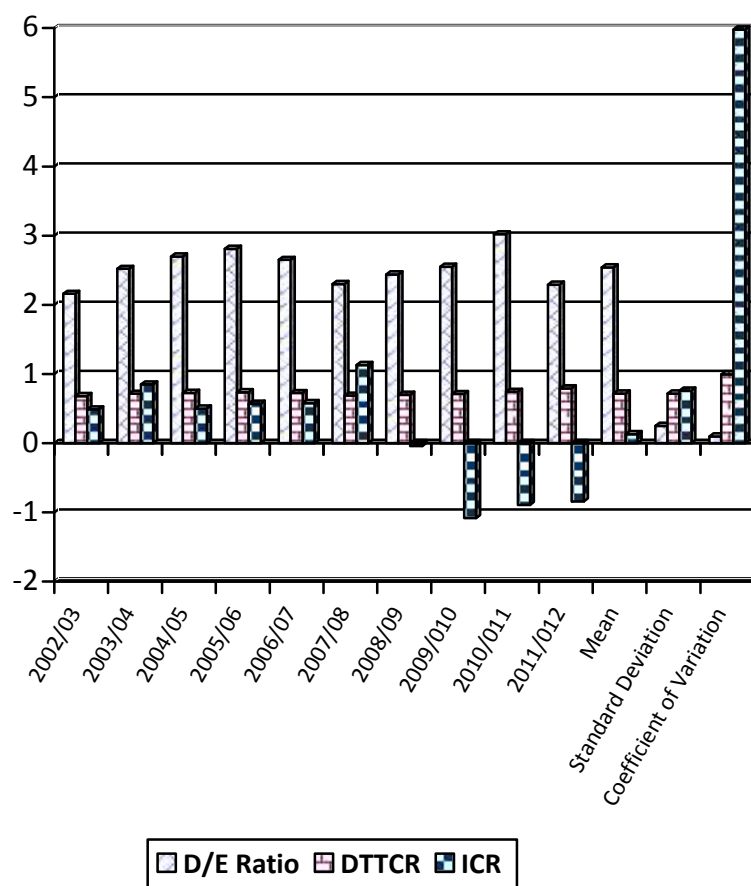
4.1.2.1 Debt Equity Ratio (D/E Ratio)

The debt equity ratio is the measure of relative claims of creditors and owners against the firm's assets. This ratio is calculated to judge long-term financial position of the firm. The ratio establishes relationship between long-term loans and owner's fund. 1.70:1 ratio of Debt- equity is considered as standard as made by Deloitte &Touch IO for utilities sector. From the above table, figure and annex-3, it can be observed that the total debt increases from NRs.37325.61 million to 62631.85 in FY 2003 to FY 2012. Similarly equity also increased to 17297.81 million to 27372.36 in FY 2003 to FY 2012.The average debt equity ratio is 2.54.The ratio of debt equity is in increasing trend till FY 2011 .In that period D/E ratio increased from 2.55 to 3.02 .In year 2011 and 2012 the ratio is in decreasing trend. In that period the ratio is 3.02 and 2.29 respectively. Again the D/E ratio increased to 3.02 in Year 2011. The Standard

Deviation and Coefficient of Variation shows that Debt Equity Ratio is less consistent than Debt to Total Capital Ratio and more Consistent than Interest Coverage Ratio.

The large amount of debt in capital structure says that NEA should pay huge amount of revenue for hiring long term loan. In this situation, NEA cannot save the income thus NEA should review the hiring policy of long term loan.

4.1.2.2 Debt to Total Capitalization Ratio   (DTC Ratio)

The term 'total' capitalization comprises long-term debt, share capital and reserve and surplus. The ratio of debt to total capitalization is calculated by dividing total debt by total capitalization. No hard and fast rule can be set down as to what proper relationship should be. Earning power of an organization may justify a higher percentage. It is, however ,necessary to note that a too heavy debt burden reduces the margin of safety for lenders, increases fixed charges upon earnings, decreases earning available for distribution to shareholders, and in the case of continued inadequate or no profits may invite insolvency and force reorganization.

The above table 4.2 and annex-4 depicts that the debt to total capital ratio has been increasing gradually. In 2003 it was 0.68 and continuously increased to 0.73 in 2006. It decreased to 0.68 in 2008 and again increased to 0.70 in 2009. Average value of DTTC for the study period is 0.72 which shows management of debt and total capital is not satisfactory in NEA. The value of Standard Deviation and Coefficient of Variation shows that DTC Ratio is more consistent than DE ratio and IC ratio. The heavy and increasing debt burden may invite insolvency and force reorganization to NEA.

4.1.2.3 Interest Coverage Ratio (IC Ratio)

This ratio is calculated to indicate the ability of a firm to pay interest charges on its borrowed capital. It is also called 'Debt Service Ratio' or 'Time Interest Earned Ratio'. A high ratio is a sign of low burden of borrowing and lower utilization of borrowed capital.

The above table 4.2 and the annex-5 shows that the Interest Coverage Ratio (IC Ratio) of NEA is not satisfactory and also in fluctuating   order. It was mostly less than 1. It shows that NEA has very critical position to pay interest on its borrowing.

The value of Standard Deviation and Covariance shows that there is less consistency in IC ratio than DE Ratio and DTC Ratio. Being low IC Ratio is critical condition for shareholder in one hand and no security of the investment of creditor. One significant factor that adversely affected NEA's financial position was the upward fluctuation of foreign currency in which NEA have to pay interest.

4.1.3 Turnover / Activity / Efficiency Ratio

How efficiently the assets are utilized can be judged by using different types of turnover ratio. To find out the efficiency on utilization of NEA's resources, the following ratio analysis items are used under this group. The table 4.3 shows the different types of ratios relevant to efficiency of NEA (see annex 6, 7, 8, 9 & 10 for Calculation).

Table 4.3

Turnover Ratios of Nepal Electricity Authority

Year	FATOR	TATOR	ITR	DTR	ACP
2002/03	0.17	0.148544425	8.96	4.15	154.54
2003/04	0.19	0.164235482	10.83	3.26	179.96
2004/05	0.19	0.1681228	11.33	3.18	167.08
2005/06	0.18	0.000161873	9.18	3.41	142.43
2006/07	0.18	0.159567771	9.84	3.26	135.49
2007/08	0.18	0.156837306	9.64	2.81	158.34
2008/09	0.17	0.149624494	8.36	2.63	165.66
2009/010	0.15	0.133188569	6.67	2.97	132.89
2010/011	0.16	0.145922481	7.06	2.81	154.03
2011/012	0.16	0.143262431	7.17	2.46	172.54
Mean	0.17	0.14	8.90	3.09	156.30
Standard Deviation	**0.012**	**0.047**	**1.51**	**0.23**	**14.9**
Coefficient of Variation	**0.069683177**	**0.343199057**	**0.170**	**0.07**	**0.10**

Figure 4.3

Turnover Ratios of Nepal Electricity Authority
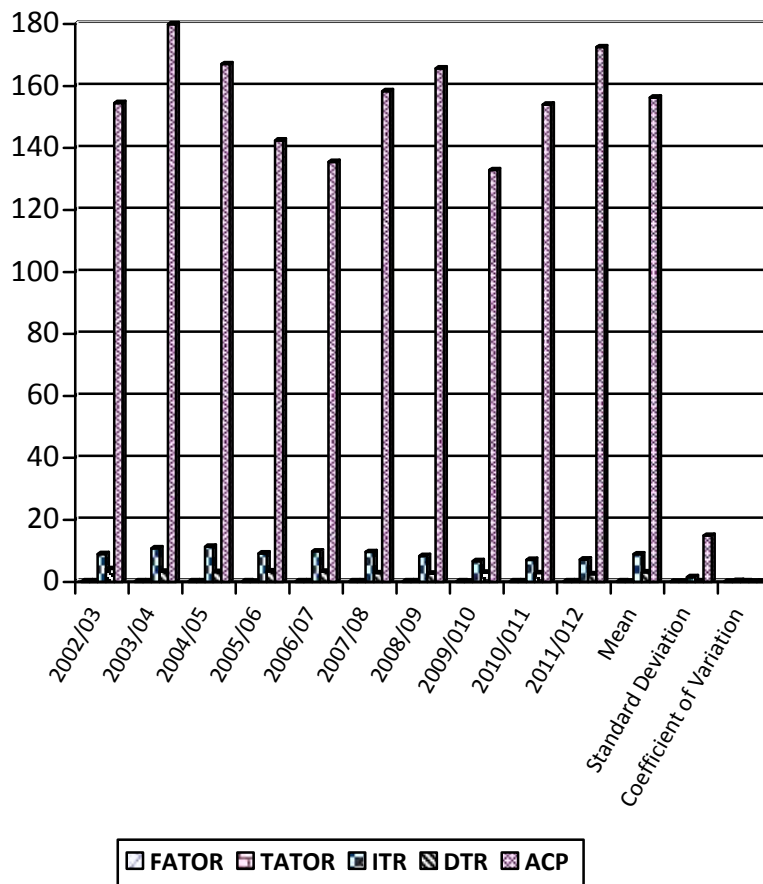
4.1.3.1 Inventory Turnover Ratio (IT Ratio)

The inventory or stock turnover indicates the efficiency of the firms' inventory management. This ratio measure how many times, the average stock is sold during the year. It can be calculated by dividing sales from closing stocks.

A high inventory turnover is indicative of efficient inventory management and low inventory turnover implies excessive inventory levels that warranted by production and sales activities.

According to the above table 4.3 and annex-8 shows that, the inventory ratio of NEA is 8.90 times on average. It varied from 5.96 times to 7.97 times from the FY 2002 to the Year 2011/012. It shows that the inventory turnover ratio of NEA is not satisfactory and it indicates that stock management in NEA is poor performance.

However it needs to be recorded that NEA is not an organization that needs large amount of mercantile inventory. The requirement of inventory in NEA is spare parts of power station, substation, transmission line and distribution lines.

4.1.3.2 Debtors turnover ratio (DT Ratio)

Debtor turnover ratio is calculated to identify the quality or liquidity of debtors. It indicates the number of times average debtors are turned over during a year. It is found out by dividing sales by closing debtors. The higher debtor turnover ratio indicates efficient collection of debts. It shows the short period collection of cash from debtor.

In above table 4.3 and annex-9, it can be seen that the receivable is in increasing trend over ten years study period. It increased from NRs. 2284.9 million to NRs.7282 million from the year to 2003 to the year 2012. The revenue from sales of electricity is also in an increasing trend and it increased from NRs. 9476.2 million to NRs.17946.82 million from the year 2003 to the year 2012.

DT Ratio of NEA during the study period was not satisfactory its DT Ratio in 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011 and 2012 were 4.15, 3.26, 3.18, 3.41, 3.26, 2.81, 2.63, 2.97, 2.81 and 2.46 respectively. It is decreasing continuously. So this indicates that NEA is loosing its receivables management.

4.1.3.3 Average Collection period (AC Period)

Average collection period ratio brings out the nature of firm's credit policy and the quality of the debtors more clearly. It is calculate to know the average number of days/months for which a firm has to wait before trade debtors is converted into cash. The simple way to calculate this ratio is dividing days in a year by debtor turnover ratio. The above table 4.3 and annex-10 shows the actual situation of Average Collection Period of NEA.

While calculating average collection period, it has been observed that the collection period for the year 2003, 2004, 2005 2006 2007, 2008, 2009, 2010, 2011 and 2012 were 154.54, 179.96, 167.08, 142.43, 135.49, 158.34, 165.66, 132.89, 154.03 and 172.54 respectively. The mean of ACP is 156.30 day. Lower ACP is good for any

organization. NEA does not have good ACP because its lowest ACP is 132.89 days, during the year 2010, which indicates that debtors are paying the due only after 132 days which is very long period. Long ACP effects profitability of the organization adversely.

The above trend line shows average collection period of NEA. According to the trend line, the average collection period of NEA is fluctuating. It shows that the collection of bill is not satisfactory as it is increasing except in some of the years that show the satisfactory collection period.

NEA being a government undertaking although with an autonomous status did not seem to be serious in collecting the outstanding receivable looking at the various report. The famous researcher in this field Dr. Monohar Krishna Shrestha has quoted in his research studies that timely legal action was not adequately taken to all defaulting customers nor has the government been serious to direct its offices to pay electricity bill timely on the ground of budget constraints or due to administrative negligence.

NEA should take it seriously in the matter of collection of revenue. The NEA should improve the behavior and culture of the staff and it should be client oriented. The coordinated effort from all stakeholders may be the milestone in managing the worse condition of NEA's receivable management.

4.1.3.4 Fixed Assets Turnover Ratio (FATOR)

Fixed assets turnover ratio measures the efficiency with which the firm is utilizing its investment in its various net fixed assets. The ratio expressed that a rupee of investment in net fixed assets generates the resulted sales. Generally high fixed assets turnover ratio indicates efficient utilization of fixed assets while inefficiency in utilization is shown by low fixed turnover ratio.

The fixed assets turnover ratio is calculated by dividing sales by total fixed assets. According to the above table, figure and annex-6, the net sales of NEA has continuously increased during the study period. It varied from NRs.9476.20 million to NRs.17946.82 million from the year 2003 to the year 2012.

Along with the increase in net sales, the fixed assets of NEA have also increased as the same time. It varied from NRS.56471.71 million to NRs.111371.02 from the year 2003 to the year 2012. NEA has been expanding its services throughout the country for which it requires additional fixed assets like land and building, plant and machinery, transmission line, substation etc. thus the fixed assets of NEA have been increased every year with additional power plant and generation capacity. However the study from above table shows the poor utilization of fixed assets with in organization. The average FATOR is 0.17 only. This indicates the FATOR and poor utilization of fixed assets. One of the causes of poor utilization of fixed assets may be the assets remaining idle without any use.

The annex 7, also shows the sales and total assets of NEA .It shows that the sales are increasing gradually per year. Similarly the total assets of NEA are also gradually increasing every year.

The average return on total assets of NEA indicates that there has been unplanned investment in the assets without making proper analysis of cost and benefits. Attention did not seen to paid in the revenue generation aspect of assets and their effective utilization as well as the cost investments through the result of total assets turnover ratio does not seem to be satisfactory, it can be seen that the result is in the way to progress.

4.1.3.5 Total Assets Turnover Ratio (TAT Ratio)
Total assets turnover ratio indicates the sales generated per rupee of investment in the total assets constitute the fixed assets as well as current assets and investment of the firms. Generally, a high ratio suggests management's ability to make a good use of its total assets but low ratio may be caused by large outlays for fixed assets. This ratio is calculated by dividing sales from total assets. The above table, figure and annex-7 shows that, the sales of NEA have increased each year as compared to the revenue generating ability. Investment in assets has varied from NRs 63793.71 million to NRs. 125272.34 million from the year 2003 to the year 2012. Total assets are the sum of fixed assets and current assets of a firm. Fixed assets have direct impact over the generation of the sales there for the management must manage its total assets efficiently to generate maximum sales through their proper utilization. The above total

assets turnover ratios are increasing gradually till FY 2005 and decreasing 0.14 in FY2012. The position of TATOR indicates very poor status of NEA's assets utilization.

4.1.4 Profitability Ratio

Profitability Ratios are the measure of a firms earning capacity and operation efficiency .A firm must earn sufficient amount of profit to survive and sustain in the future. With out profit no firm can exist and the future of the firm will be jeopardized. Therefore profit is the ultimate outcome of any organization.

Profitability ratios of a firm can be calculated in relation to sales and investment .NEA being a public utility the main objective of it is service rather than profit but profit is most for its sustainability. To find out the overall efficiency of NEA's operation the following profitability ratios have been found (see annex 11,12,13,14 &15 for calculation).

Table 4.4

Profitability Ratios of Nepal Electricity Authority

Year	OPR	NPR	OER	ROA	ROSE
2002/03	0.26	-0.09	0.621	-0.013492	-0.050
2003/04	0.39	-0.18	0.486	-0.029136	-0.124
2004/05	0.33	-0.15	0.570	-0.024922	-0.116
2005/06	0.29	-0.10	0.592	-0.016859	-0.083
2006/07	0.26	-0.10	0.625	-0.042888	-0.204
2007/08	0.28	0.02	0.625	0.002611	0.012
2008/09	0.24	-0.15	0.634	-0.023033	-0.110
2009/010	0.20	-0.35	0.690	-0.047089	-0.242
2010/011	0.12	-0.40	0.727	-0.058859	-0.359
2011/012	0.13	-0.36	0.738	-0.051980	-0.238
Mean	0.25	-0.19	0.63	-0.03	-0.15
Standard Deviation	**0.08**	**0.132**	**0.071**	**0.020000**	**0.1035**
Coefficient of variation	**0.32**	**-0.70**	**0.1125800**	**-0.6925**	**-0.6835**

Figure 4.4

Profitability Ratios of Nepal Electricity Authority
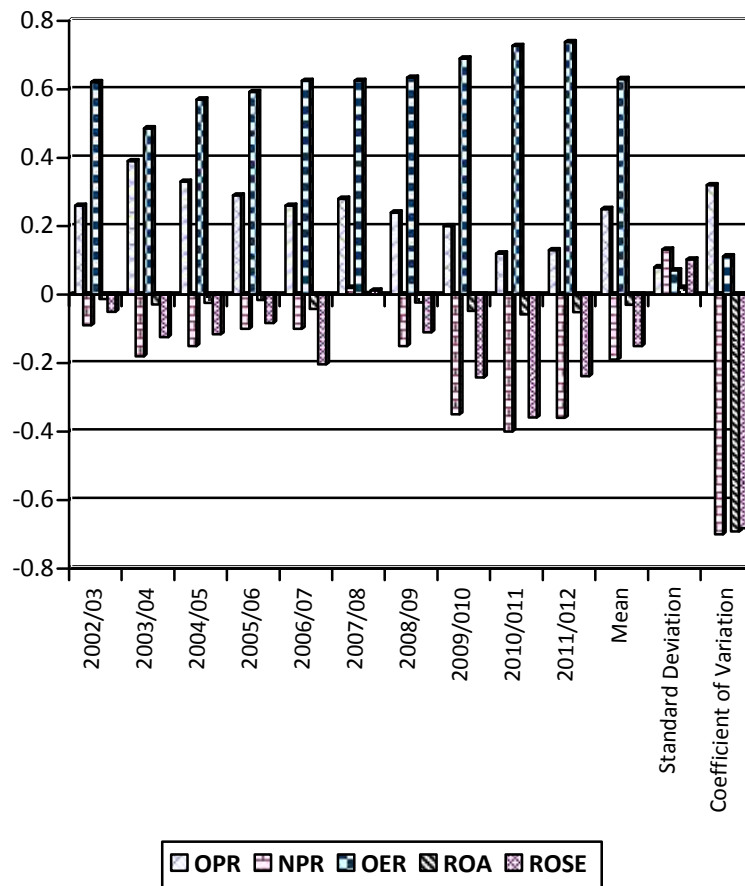
4.1.4.1 Operating Profit Ratio (OP Ratio)

One of the most common ratios in operational analysis is the calculation of operating profit as a percentage of net sales. A firm should have a reasonable operating profit margin to ensure adequate coverage for operating expenses of the firm and sufficient return to the owners of the business. Operating profit ratio expresses the relationship between operating profit and sales and is usually expressed in percentage. The operating profit should be adequate to cover operating expenses and to provide fixed charge, to pay dividend and build up reserves.

This ratio expresses the relationship between operating profit and sales. The higher ratio indicates the efficient condition of organization.

Above table shows the operating profit ratio of NEA is not satisfactory except the FY 2004 and 2005 which is 0.39 and 0.33 respectively. Operating profit at least should be more than 30% (i.e. 0.3) but all ratios in rest year is below the standard which 0.26 in 2003 0.29 in 2006, 0.26 in 2007 and continuously decreasing to 0.13 in 2012. There is continuous fluctuation in operating profit ratio and in decreasing condition too.

The graphical presentation of sales and operating profit as shown on annex-11 also shows that the operating profit is not increasing accordingly in the same ratio of sales. It also indicates that NEA is maintaining its operating expenses effectively so management should look seriously towards it.

4.1.4.2 Net Profit Margin / Ratio (NP Ratio)

The net profit margin establishes the relationship between profit and sales. The ratio measures the firm's ability to change each rupee sales in to net profit. Sales constitute the fundamental dynamic force in a business enterprise. Without sales of goods and services business may not be successful. The ratio of net profit to sales shows the profitability of the corporations indicating that the only increase in sales doesn't mean anything unless it commands profit.

It may be difficult to decide for public enterprise like NEA as to how much margin of net profit is reasonable. According to Brigham, a profit around seven percent can be considered reasonable for an electricity company.

The NP margin of above table presents the very poor condition of net profit of NEA. There is negative NP ratio (i.e. loss) in every year except FY 2008. The ratio of NP in 2008 is only 0.02 which is not satisfactory because NP ratio should be at least 7% (i.e. 0.07) to the sales. Here NP ratio NEA are (0.09) (0.18), (0.15), (0.10) ,(0.10), 0.02,(0.15) (0.35) and (0.40) in FY 2003 to 2012 respectively. Though NEA is facing heavy losses, it seems to be doing well in the sales of electricity. The expenses in NEA still does not seem to be in due control therefore the management of NEA should take initiative actions to be reduce necessary and wasteful expenses.

4.1.4.3 Operating Expenses Ratio (OE Ratio)

The net operating expenses ratio establish the relationship between operating expenses and sales .The operating expenses ratio is the yardstick of operating efficiency. The calculation of this ratio comprises computation of all operating expenses, cost of goods sold and general administrative expenses. It indicates the average aggregative variety in expenses, where some of the expenses may be increasing while some may be falling. This ratio throws light on managerial policies and programs .In general, higher operating ratio is inefficient due to higher operating cost in terms is sales. Lower operating ratio is favorable, as it will generate higher operating income, which will be sufficient to meet the interest, dividend and other expenses of the firm.

According to above table, graph and calculation as presented in annex-13, the OE Ratio of NEA during 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011 and 2012 is 0.621, 0.486, 0.570, 0.592, 0.625, 0.625, 0.634, 0.690, 0.727 and 0.738 respectively. The average operating expenses ratio during the study period is 0.63 shows that NEA has very high operating expenses which adversely affect the profitability.

4.1.4.4 Return on Asset (ROA)

Return on assets measures the productivity of the assets. It records the relationship between total assets and net profit. It is the proportion of net income after tax plus interest expenses to total assets (total investment).Return on total assets shows the percentage of net profit on total assets. The profitability of the firm is also measured in relation to investment. A firm makes a lot of investment on its assets with the expectation that the investment on such assets will yield a reasonable amount of profits. The return on total assets ratio measures the profitability of all financial resources employed in the firms' assets. As the relationship of satisfactory level profit is one of the main objectives of the firm, this ratio shows the extent to which this objective is being achieved. Higher return on total assets ratio shows higher earning of the firm in terms of its total assets. Lower ratio indicates unsound financial position due to low level of return.

From the above table ,figure and calculation as shown in annex-14, The ROA of NEA in 2003 to 2012 is-0.0135, -0.291, -0.0249, -0.0169, -0.0429, 0.0026, -0.0230, 0.0471, -0.05886 and -0.05198 respectively. The average ROA for the study period is 0.03 shows the very poor performance. The reason behind the low return on assets of NEA was mainly the huge investment made on assets then actually required and inefficient utilization of these assets. Due attention should be paid to effectively utilize these assets in order to generate a reasonable amount of profit on investment.

4.1.4.5 Return on Shareholders' Equity (ROSE)

Shareholders are the residual owners in the real séance of the word. They assume the maximum risk, and have the highest stake in the organization. Since the common shareholders are the real owners of the organization, the performance of its operation is judged on the basis of return on common equity. The return on shareholder's equity is the net profits after taxes and after preference dividends by the common shareholders; equity. From the above table, figures and annex-15, we can say that Return on Shareholders' Equity of NEA is very worse. Due to the loss it is always negative. ROSE is positive only during the year of 2007 but it is also very poor. ROSE during the study period of expects above is all negative. High loss during the year result high negative ROSE. This position of the organization reveals that price of shareholders is insecure. This position is very critical for any organization. NEA being the government's undertaking, the government and management is responsible for this situation which is needed to be reformed.

4.2 Statistical tools

Besides financial tools, statistical tools are also used to measure the relation of different variables. Under statistical tools Mean, Standard Deviation (SD), Correlation, Coefficient of variation (CV), Probable Error (PE) and Regression analysis between selected variables is used which are as follows:

4.2.1 Calculation of Mean, Standard Deviation (SD), Co-efficient Variance(CV), Probable Error(PE) , Correlation and Regression between Sales and Net Profit After Tax (NPAT) of

Table No. 4.5

Calculation of Statistical tools

Year	Sales	NPAT
2003	9476.20	-860.70
2004	11012.60	-1953.70
2005	11874.70	-1760.30
2006	12605.20	-1312.80
2007	13331.90	-1267.80
2008	14449.73	240.60
2009	15041.49	-2315.47
2010	14405.93	-5093.22
2011	17164.59	-6923.53
2012	17946.82	-6511.65
Total	**137309**	**-27758.6**
Mean	**13730.9**	**-2775.86**
Standard Deviation	**2502.35**	**2358.61**
Coefficient of Variation	**0.18**	**-0.85**
Correlation coefficient between Sales and NPAT		**-0.73**
Probable Error		**0.10**
6PE		**0.60**
Regression		**0.73**

Source : Balance Sheet and Computed

The above table shows the Mean, Standard Deviation (SD), Co-efficient of Variation (CV) of Sales (X) and NPAT (Y) of NEA. Mean Sales (X) is Rs. 13730.90 million and mean NPAT (Y)) is Rs. (2775.86) million. Standard Deviation of sales is Rs. 2502.35 million and SD of NPAT is Rs. 2358.61 million. Similarly, CV of sales is

0.18 and CV of NPAT is (0.85). CV of NPAT seems negative which shows its variability is less than the sales. A distribution with greater CV is said to be less consistent or more variable.

To analyze the relationship between Sales and NPAT; another statistical tool i.e. correlation of coefficient is also used. Karl Pearson's coefficient of correlation is used to find the relationship between sales and NPAT. Coefficient of correlating is denoted by 'r'.

Correlation between sales (X) and NPAT (Y) is (0.73) which shows the negative correlation of these two variables. It gives the result that NPAT doesn't change in the same direction as the change of sales.

To test the significance of 'r', we take help of Probable Error (PE). If the r is greater than 6 PE, the value of 'r' is significant.
From the above table, we have PE=0.10
Again,

6 PE=0.60
Our calculation shows that r<6PE (i.e. -0.73 < 0.60) which implies that the value of r is insignificant and NPAT goes in the same direction of sales.

4.2.2 Regression analysis between Sales and NPAT

A regression line can be fitted to show the relation between Sales and NPAT. In this analysis, Sales is taken as basic variable (X) and NPAT is taken as depended variable (Y).
The line of best fit is

X=13827.44+ (1.21) Y

This equation shows that the value of NPAT (i.e. Y) changes by (1.21) units when the value sales (i.e. X) change by one unit.

Figure -4.5

Figure of Sales & NPAT
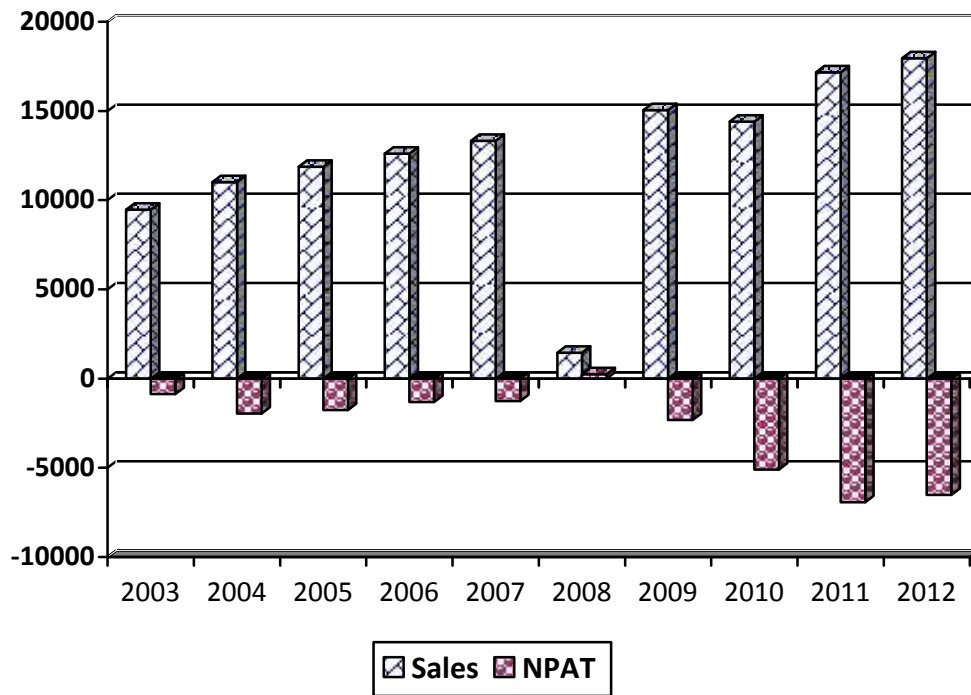
The above diagram gives the clear picture of Sales and NPAT during the study period of F/Y 2002/2003 to F/Y 2011/12. On the basis of diagram we can say that Sales is in increasing trend but NPAT is fluctuating and decreasing too.

4.2.3 Calculation of Mean, Standard Deviation (SD), Co-efficient of Variation(CV), Probable Error(PE) , Correlation and Regression between Sales and Total Asset of NEA

<div align="center">

Table No. 4.6

Calculation of Statistical tools

</div>

Year	Sales	Total Assets
2003	9476.20	63793.71
2004	11012.60	67053.72
2005	11874.70	70631.11
2006	12605.20	77871.56
2007	13331.90	83550.08
2008	14449.73	92131.97
2009	15041.49	100528.26
2010	14405.93	108161.91
2011	17164.59	117628.14
2012	17946.82	125272.34
Total	**137309**	**906622.8**
Mean	**13730.9**	**90662.28**
Standard Deviation	**2502.35**	**21667.86**
Coefficient of Variation	**0.18**	**0.24**
Correlation Coefficient between Sales and Total Assets		**0.97**
Probable Error		**0.0126**
6PE		**0.076**
Regression		**0.97**

Source : Balance Sheet and Computed

Calculation of above table shows the Mean, Standard Deviation and Coefficient of Variation of sales (X) and total asset (Y). Mean Sales and Total Asset (TA) is Rs. 137309 million and Rs. 906622.8 million respectively. SD of Sales and Total Assets is Rs. 2502.35 million and Rs. 21667.86. Similarly CV of sales is 0.18 and CV of Total asset is 0.24.

A distribution with greater CV is said to be more heterogeneous or more variable than other. Here, CV of Sales is less than the CV of Total Assets. It shows sales is less variable than the Total Assets.

Correlation between Sales and Total Assets is 0.97 implies that there is highly positive correlation. We also have that 6 PE = 0.076 which is less than 'r' and it proves the significance of 'r'

### 4.2.4 Regression analysis between Sales and Total Asset

A regression line can be fitted to show the relationship between sales and Total Asset. In this analysis, Sales is taken as basic variable (X) and Total Asset is taken as depended variable (Y)

The line of best fit is,

$$X=-25953.95+8.334Y$$

The regression line shows the relation between Sales and Total Asset. It reflects that the change of Sales by one unit cause the change in Total Asset by 8.334 unit.

Figure-4.6

Figure of Sales & Total Assets
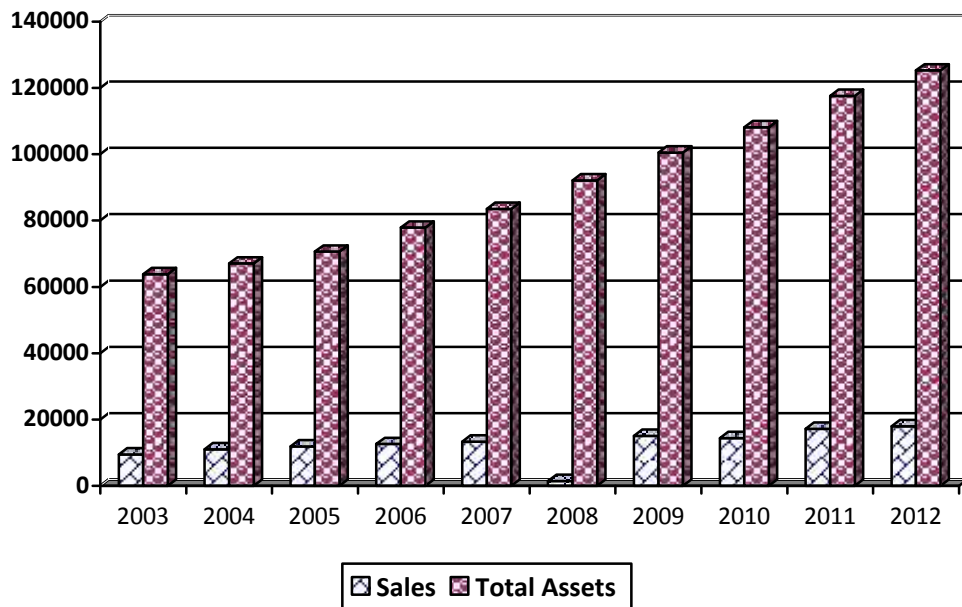
The above figure gives the position of Sales and Total Assets of NEA during ten years of study period. Sales seems very lower in comparison of Total Assets but it verifies the calculation of co-relation that both are increasing in same direction.

4.2.5 Calculation of Mean, Standard Deviation (SD), Co-efficient of Variation(CV), Probable Error(PE) , Correlation and Regression between Total Debt and Shareholders Equity of NEA

Table No.4.7

Calculation of Statistical tools

Year	Total Debt	Shareholder Equity
2003	37325.61	17297.81
2004	39637.11	15707
2005	41103.14	15218.16
2006	44537.51	15867.66
2007	46487.91	17567.78
2008	47616.15	20731.06
2009	51368.84	21032.19
2010	53788.45	21058.48
2011	58231.66	19260.71
2012	62631.85	27372.36
Total	**482728.2**	**191113.20**
Mean	**48272.82**	**19111.32**
Standard Deviation	**8224.35**	**3671.37**
Coefficient of Variation	**0.17**	**0.19**
Correlation Coefficient between Total Debt and Shareholder Equity		**0.84**
Probable Error		**0.063**
6PE		**0.378**
Regression		**0.84**

The above table gives the various statistical data. The table gives Mean, Standard Deviation and Coefficient of Variation of Total Debt and Shareholder's Equity. Mean of total debt (X) is Rs. 48272.82 million and mean of Shareholder's Equity (y) is Rs. 19111.32 million. Standard Deviation (SD) of Total Debt is Rs.8224.35 million and SD of Shareholders Equity is Rs. 3671.37 million. Similarly, CV of Total Debt is 0.17 and CV of Shareholder's Equity is 0.19.

To analyze relationship between these two variables, correlation of coefficient is calculated which is 0.84 It implies that there is highly positive correlation between Total Debt and Share holder's Equity.

To test the significance of 'r' we have to compute PE and if r>6PE value of 'r' is significant.

We have PE = 0.063 and 6 PE = 0.378. Since r>6PE (i.e. 0.84 > 0.378) the value of r is significant. So, we can say that trend of Shareholders Equity goes in the same direction to Total Debt.

4.2.6 Regression analysis between Total Debt and Shareholders' Equity

This following result has been obtained by using regression analysis between Total Debt (X) and Shareholder's Equity(Y).

$$X= -6597.6+0.533Y$$

The above regression line shows that the change of Total Debt of one unit brings the change in Total Shareholder equity by 0.533 units.

Figure-4.7

Figures of Total Debt & Shareholder Equity
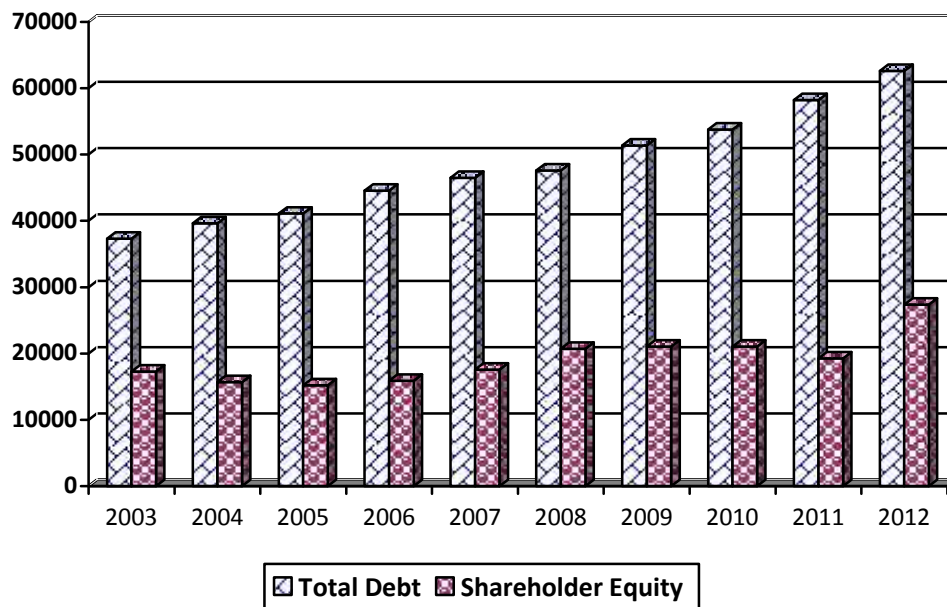
Condition of Total Debt and Shareholders Equity can be seen from above figure where Total Debt is very high and Shareholder Equity is low.

Regular increment of Total Debt can be seen but position of Shareholder Equity is with nominal increment. It reduced the profitability due to high interest expenses. Anyway the figure proves the calculation of co-relation is significant because both variables are going in same direction.

4.2.7 Calculation of Mean, Standard Deviation (SD), Co-efficient of Variation (CV), Probable Error(PE) , Correlation and Regression between Current Assets and Current Liability of NEA

Table No.4.8

Calculation of Statistical tools

Year	Current Assets	Current Liabilities
2003	7322	10096.99
2004	7690.48	12347
2005	7883.41	14538.09
2006	8491.6	17466.39
2007	8995.3	19854.19
2008	10322.97	22812.13
2009	11178.08	27567.39
2010	11233.03	32552.13
2011	12508.07	39228.16
2012	13901.32	46063.2
Total	**99526.26**	**242525.67**
Mean	**9952.626**	**24252.567**
Standard Deviation	**2230.37**	**11943.43**
Coefficient of Variation	**0.22**	**0.493**
Correlation Coefficient between Current Assets and Current Liabilities		**0.985**
Probable Error		**0.006**
6PE		**0.037**
Regression		**0.985**

Source: Financial Statements of NEA

NEA's Mean, Current Asset (CA) is Rs. 9952.626 million and mean Current Liability (CL) is Rs. 24252.567 million. Similarly, above table shows the Standard Deviation of CA and CL which is Rs. 2230.37 million and Rs. 11943.43 million respectively. Coefficient of Variation (CV) of CA is 0.22 and CV of CL is 0.493 shows that CL of NEA is more variable than CA because a distribution with greater CV is said to be more heterogeneous than other. To analyze relationship between these two variables correlation of coefficient is also calculated which 0.985 is. It shows that there is highly positive correlation between CA and CL.

Since, r > 6PE (i.e. 0.98>0.037) it implies that the value of r is significant. In other words, current liability goes in the same direction as the current assets go.

4.2.8 Regression analysis between Current Asset and Current Liability

The following result of the line of best fit is obtained from the regression between CA and CL assuming CA as basic variable (X) and CL as depended variable (Y).

The line of best fit is

$$X = -29602.5 + 5.41Y$$

This lines shows that change in current asset by one unit brings the change in current liability by 5.41 units.

Figure-4.8

Figures of Current Assets &Current Liabilities

Current Assets   Current Liabilities
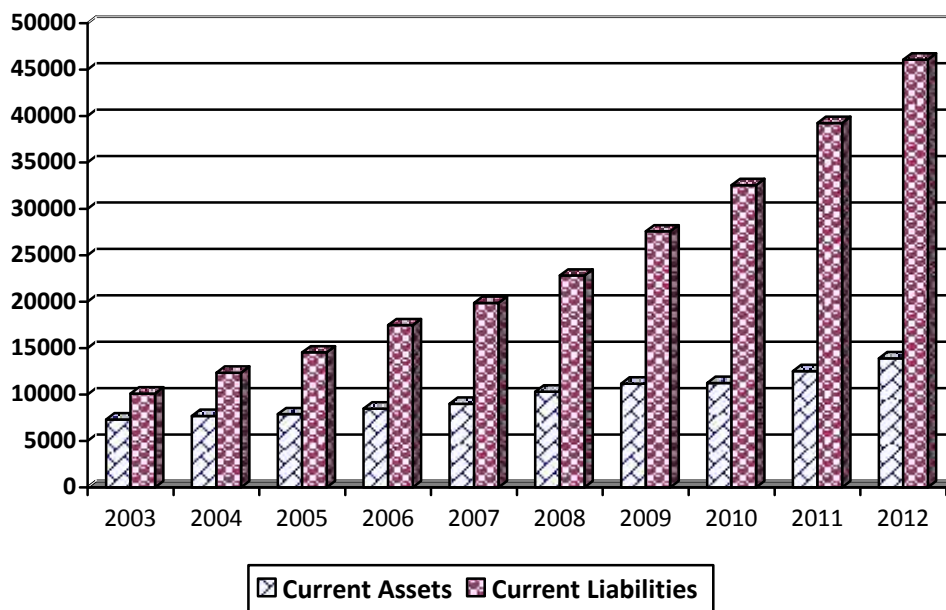
Current Assets and Current Liability both are in increasing trend according to figure presented above. Position of Current Assets is increasing in very low speed than the Current Liabilities. This proves that liquidity position of NEA is decreasing continuously.

4.3 Analysis of Primary Data

The oral interview was conducted with five directors, ten account officers and ten assistant staffs of Nepal Electricity Authority. Based on the conclusion drown from the interview, the following issues are found about Nepal Electricity Authority. The respondents are not satisfied with the present financial position of NEA. The most of the respondent are agree that the main causes for declining financial position of NEA is the unclear in its objective whether it should run on commercial or business lines or as government 's service provider unit. There is lack of freedom of operation of the management that is quit often curtailed or interfered with by formal or informal political intervention. There is no stability in the policy related to appointment and tenure of chief executives and other functional directors. There is no strong balance between autonomy and accountability .The requirement of government permission to raise fund from capital market is the barrier to make strong financial position of NEA. There is lack of frequent programs to enhancement on capabilities and efficiency in financial management and accounting practices.

The review of customer tariff, gradual recovery of accumulated losses, loss reduction, creation of fund for hydropower development are found the major issues to improve the financial position of Nepal Electricity Authority.

4.4 Major Findings of the Study

The major findings of the study are summarized here under:

1) The current ratio of NEA is not satisfactory through out the study period. It is found within the range of 073 to 0.30.The current ratio is in decreasing trend. Likewise the quick ratio of NEA also has similar condition as current ration. This shows that NEA doesn't have enough cash, other liquid assets, or credit to pay its obligations promptly. Hence we can say that the degree of liquidity is not in good position.

2) The inventory turnover ratio of NEA is 8.90 times on average. It varied from 8.96 times to 7.17 times from the FY 2003 to the Year 2012 but variable. It shows that the inventory turnover ratio of NEA is satisfactory and it indicates that stock management in NEA is good. However it needs to remember that NEA is not an organization that needs large amount of mercantile inventory. The requirement of inventory in NEA is spare parts of power station, substation, transmission line and distribution lines.

3) DT Ratio of NEA during the beginning year of study period was satisfactory its DT Ratio in 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011 and 2012 were 4.15, 3.26, 3.18, 3.41, 3.26, 2.81, 2.63, 2.97, 2.81 and 2.46 respectively. This indicates that NEA is loosing its receivables management quality in recent years.

4) Average collection period of NEA for the year 2002 was 154.54 days. This decreased and increased in the following year and reached to 132.89 in 2010 and again increased to 172.54 in the year 2012. The ACP is worst in year 2004 and 2012 which is 179.96 and 172.54 days. Lower ACP is good for any organization. NEA does not have good ACP because its lowest ACP is 132.89 days during year 2010 which indicates that debtors are paying the due only after 132.89 days which is very long period. Long ACP effects profitability of the organization adversely.

5) Total assets turnover ratio indicates the organizations work efficiency during the study period. Sales revenue is increased each year. This shows NEA has used its fixed assets in generation of sales in a constant proportion. However NEA is not efficient in generating proper sales by the total assets. The total assets turnover ratios of NEA are increasing gradually from 0.15 in 2003 to till 0.17 in 2005 and decrease to 0.016 in FY 2006. The position of TATOR indicates very poor status of NEA's assets utilization. Similarly Fixed assets turnover ratio of NEA is 0.17 times on an average. The ratio is in increasing trend, but not satisfactory. NEA has lack of efficiency in utilizing of fixed assets in generating sales.

6) NEA's average debt equity ratio is 2.54. The ratio of debt equity is in increasing trend till FY 2006. In that period D/E ratio increased from 2.16 to 2.81. In year 2007 and 2008 the ratio is in decreasing trend. In that period the ratio is 2.65 and 2.30 respectively. Again the D/E ratio increased from 2009 to 2011 is 2.44, 2.55 and 3.02 continuously and 2012 D/E ratio is 2.29 . This shows that the increasing tendency of debt is very high than equity .This indicates that there is no any

constant policy and the profitability and financial position of NEA is not in good position. The large amount of debt in capital structure says that NEA should pay huge amount of revenue for hiring long term loan. In this situation, NEA cannot save the income thus NEA should review the hiring policy of long term loan.

7) NEA's debt to total capital ratio has been increasing gradually. In 2003 it was 0.68 and continuously increased to 0.74 in 2006. It decreased to 0.69 in 2008 and again increased to 0.70 in 2009, 0.71 in 2010, 0.75 in 2011, 0.798 in 2012. Average value of DTTCR for the study period is 0.72 which shows management of debt and total capital is not satisfactory in NEA. The heavy and increasing debt burden may invite insolvency and force reorganization to NEA.

8) The Interest Coverage Ratio (IC Ratio) of NEA is not satisfactory and also in fluctuating order. It was mostly less than 1. It shows that NEA is has very critical position to pay interest on its borrowing. The average IC ratio of 0.13 shows to pay the interest of Rs 1, NEA has only Rs less than 1. This is critical condition for shareholder in one hand and no security of the investment of creditor. One significant factor that adversely affected NEA's financial position was the upward fluctuation of foreign currency in which NEA have to pay interest.

9) The operating profit of NEA is not satisfactory. Operating profit at least should be more than 40% (i.e. 0.4) but all ratios in year is below the standard, which 0.26 in 2003, 0.39 in 2004, 0.33 in 2005, 0.29 in 2006, 0.26 in 2007, 0.28 in 2008, 0.24 in 2009, 0.20 in 2010, 0.12 in 2011, and 0.13 in 2012 continuously decreasing. There is continuous fluctuation in operating profit ratio and in decreasing condition too.

10) The NP margin as calculated in chapter four presents the very poor condition of net profit of NEA. There is negative NP ratio (i.e. loss) in every year except FY 2007. The ratio of NP in 2007 is only 0.02 which is not satisfactory because NP ratio should be at least 7% (i.e. 0.07) to the sales. Here NP ratio NEA are (0.09) (0.18), (0.15), (0.10), (0.10), 0.02, (0.15), (0.35), (0.40) in 2003 to 2012 respectively. This shows that NEA is facing heavy losses. The expenses in NEA does not seem to be in due control.

11) The OE Ratio of NEA during 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011 and 2012 is 0.62, 0.49, 0.57, 0.59, 0.63, 0.63, 0.634, 0.69, 0.73 and 0.74 respectively. The average operating expenses ratio during the study period is 0.63

shows that NEA has very high operating expenses which adversely affect the profitability.

12) The ROA of NEA in 2003 to 2012 is (0.013), (0.029), (0.025), (0.017), (0.043), 0.003, (0.023), (0.047), (0.059) and (0.052) respectively. The average ROA for the study period is 0.03 shows the very poor performance. The reason behind the low return on assets of NEA was mainly the huge investment made on assets then actually required and inefficient utilization of these assets.

13) Return on Shareholders' Equity of NEA is in very worse condition. Due to the loss it is always negative. ROSE is positive only during the year of 2007 but it is also very poor. High loss during the year result high negative ROSE. This position of the organization reveals that price of shareholders is insecure. This position is very critical for any organization. NEA being the government's undertaking, the government and management is responsible for this situation which is needed to be reformed.

14) The correlation between Sales and NPAT of NEA is negative .Coefficient of Variation (CV) of sales is more consistent than NPAT. Correlation coefficient between sales and total assets seems highly positive, which implies that sales and total assets change in same direction but on the basis of CV sales is less variable than total assets. Correlation between current asset and current liability is also highly positive which implies that the changing trend of current asset and current liability is same. On the basis of CV current asset is less variable than current liability.

CHAPTER - FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

In developing countries like Nepal, lack of sufficient electricity is the main constraint for national economic development. Sufficient electricity is required to expedite the all development activities. Nepal Electricity Authority has a dominating role in managing hydroelectricity services in Nepal but Nepal Electricity Authority has been suffering from the weak financial position. An attempt to study on financial position of Nepal Electricity Authority through this research is made to find out the actual financial condition of Nepal Electricity Authority.

The first chapter of this study covered the background of the study, development of hydroelectricity in Nepal, private sector participation in hydropower management, Nepal Electricity Authority in hydropower management, introduction, mission, objectives and present performance of Nepal Electricity Authority. Similarly statement of problem, objectives of the study, need and importance of the study, limitations of the study and organization of the study has also covered in this chapter.

In second chapter, the literature review has made through the study of various books, articles, Dissertations and other reference materials. Various concepts about financial position, financial statements, and analysis of financial position and tools that can be used to accessing financial position have been discussed in this study.

In chapter three, the researcher has discussed about various aspect of research methodology. Such as research design used for this study, data collection procedure, nature and source of data, procedure of processing and analysis of data.

In chapter four, the researcher has presented the primary as well as secondary data and analyzed them to get the meaningful result. Financial Statements of Nepal Electricity Authority is the major source of secondary data. To collect primary data, interview was conducted in this study. Primary data were collected from twenty five

respondents from the three group directors, officers and assistants of Nepal Electricity Authority. A set of questionnaire was developed and distributed to the directors, officers and assistants. Secondary analysis was done by presenting the relevant data into tables and figures consisting ten years period i.e. from fiscal year 2002/03 to 2011/012. The comparative analysis for different years with the help of financial and statistical tools was done in the analysis part of the study. Major findings of secondary and primary data analysis have been presented at the end of this chapter.

Conclusions of the study are given in the last chapter and some recommendations are also given at the end of the study to improve the financial position of Nepal Electricity Authority.

In this way, the study was completed with the achievement of the study objectives.

5.2 Conclusion

Nepal Electricity Authority is a major public enterprise that provides electricity services all most all over the Nepal. At the end of FY2010/011 the number of customers availing electricity service of NEA reached around 25 lakh. The average growth of electricity demand is around 10 percent per year. So to cash the opportunity of power demand and to provide better service, NEA should strengthen its financial position.

On the basis of the research, the researcher comes to the conclusion that the financial position of the NEA is very weak in the study period. There is no effective utilization of assets whether that is current or fixed. NEA has been seriously facing the problem of reveneu collection. Therefore account receivable has become burden meaning that average collection periods is increasing each fiscal year. NEA has generated negative profitability throughout the study period expect one year. The capacity of assets in the generation of revenue is not satisfactory and the revenue is very low in comparison to the investments made. Increasing cost in each fiscal year is an important issue. It has not adopted the cost control tools and techniques effectively. Electricity leakage, theft and wastage have been the major reasons reducing the profit earning capacity. Higher

maintenance expenditures are being one of the vital factors to resulting less profitability or negative profitability.

It may be appropriate to note down the basic issues and constraints that are found from this study. Based on the conclusion drown from findings described above, the more important and basic issues are found in the following ground:

）The clarity in the objectives of NEA whether it should be run on commercial and business lines or as governments service provider unit.

）The freedom of operation of the management that is quite often curtailed or interfered with by formal or informal political intervention.

）The stability in the policy related to appointment and the tenure of chief executives and other functional directors.

）The balance between the autonomy and accountability.

）Enhancement on capabilities and efficiency in financial management and accounting practices

）Autonomy in raising fund from capital market.

）The review of customer tariff should be adjusted in each year on the basis of inflation,

） Accumulated loss should be return off by government,

）Effective utilization of assets and controlling the growing burden of the expenses.

5.3 Recommendations

Based on the major findings of the study on financial position of Nepal Electricity Authority, some suggestions have been recommended in this part. It is hoped that these recommendations will prove to be useful to management of the corporation and concerned offices, institutions and individuals.

）Most of the Nepalese PES including NEA is running from service motive. Only service without making profit reduces the sustainability of the organization. NEA should run in business or commercial line so that it can run in long term and able to secure its sustainability. For example the average revenue rate of electricity was NRs.6.58 per kwh and other income is 0.43 per unit in FY 2011/12.While the cost of service for providing electricity to consumer was NRs 9.40 per kwh in FY 2011/12. But, the tariff rate is adjusted only 20 percent. The adjusted tariff will

increase its revenue by 1.40 per unit where as its loss is 2.39 per unit. Such losses are bound to increase and the sustainability of this organization will not secure.

- The formal and informal intervention from political side from settings of strategic plan to day to day operation should be controlled. The board of directors should be free in setting the strategic as well as formulating policies and the autonomy should be given in the day to day operation.

- There should be continuous flow of information among various level of management and various groups of employee. The goal, objectives, strategies should be carefully communicated to lower level management. For this use of management information system may be the effective tool.

- NEA should adopt participatory management policy so that employees can feel that they are the valuable assets of their organization.

- NEA should have frequently in depth analysis of its strength and weakness. Only then it can overcome the weakness by using the strengths.

- The financial position of the corporation should be timely evaluated through ratio analysis and other relevant tools

- Some of the main reasons behind continuous declining financial position of NEA are unfavorable policies of GoN regarding re-lending interest rate, royalty calculation procedures and so on. So NEA should request GoN to revise its re-lending interest rate, royalty calculation procedures, capitalization of projects constructed under foreign grants and formation of separate Rural Electrification Company to undertake all rural electrification works as per GoN policies. NEA can do alternative financing arrangement by using following strategy:

Figure-5.1

Alternative Financing Strategy

```
┌─────────────────────┐                    ┌─────────────────────┐
│ Analysis of present │                    │ Refund of old debt. │
│ financing strategy  │                    │                     │
└─────────────────────┘                    └─────────────────────┘
           │                                          ▲
           ▼                                          │
┌─────────────────────┐              ┌─────────────────────────┐
│ Search and evaluate │              │ Select the best         │
│ available fund from │─────────────▶│ alternative fund.       │
│ capital market.     │              │                         │
└─────────────────────┘              └─────────────────────────┘
```
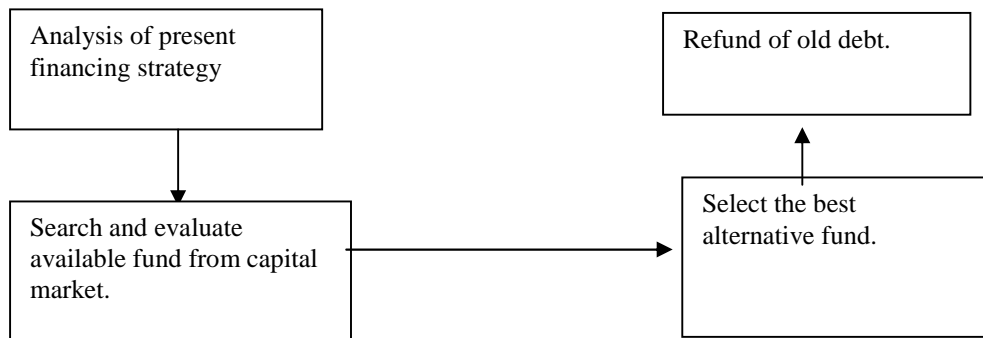
⌡ To increase the net profit the organization NEA should control the operating as well as non-operating expenses. There is in some unnecessary and wasteful expenses. There is possibility to bring down those unproductive expenses if the management and staffs of NEA is to be more careful in cost factor. These unproductive expenses which should be controlled by management of NEA, are bad debts written off repair and maintenance expenses, management and committee fees etc. The organization is not seriously following any cost control measure. Thus, the organization should launch a long term programmed to cut down excessive cost and reduce wastage. Hence the measures and technique, such as performance standards, budgetary cost controlling, standard costing etc. are suggested to be followed which will perhaps improve the cost efficiency.

⌡ Collection of bills receivable is another serious problem to NEA. Government offices and local bodies are the main defaulters for increasing the receivables therefore government should issue circular for all offices to pay their outstanding bill at a time. The finance ministry should provide adequate budget for its offices to pay the outstanding electricity bill as soon as possible.

⌡ Transformers should have better quality so that it controls the losses of electricity. The last hour, it is proved and highlighted by media that the transformers taken from China and Thiland since 5 years are unqualified. Such transformers will increase the losses of electricity. So The involved person in purchasing such transformers should punish according to NEA rules and regulation. Not only this, it should be secured that the imported transformers have high quality in future and procurement procedure should be transparent.

) Electricity billing should be made realistic through various measures such as using time of day (TOD) meter system, encouragement of lump sum payment through attractive discount, use of mobile collection center to the long distance customer, blacklisting of longer non-paying Customers, immediate action likes disconnection to customer not paying in time, etc. In addition the collection of outstanding bill can be increased by indirect measures like sufficient counter facilities, payment through bank and regular monitoring. Following chart shows the strategy of the collection procedure of outstanding of the Electricity bills.

Figure-5.2

Strategy for collection of outstanding bill
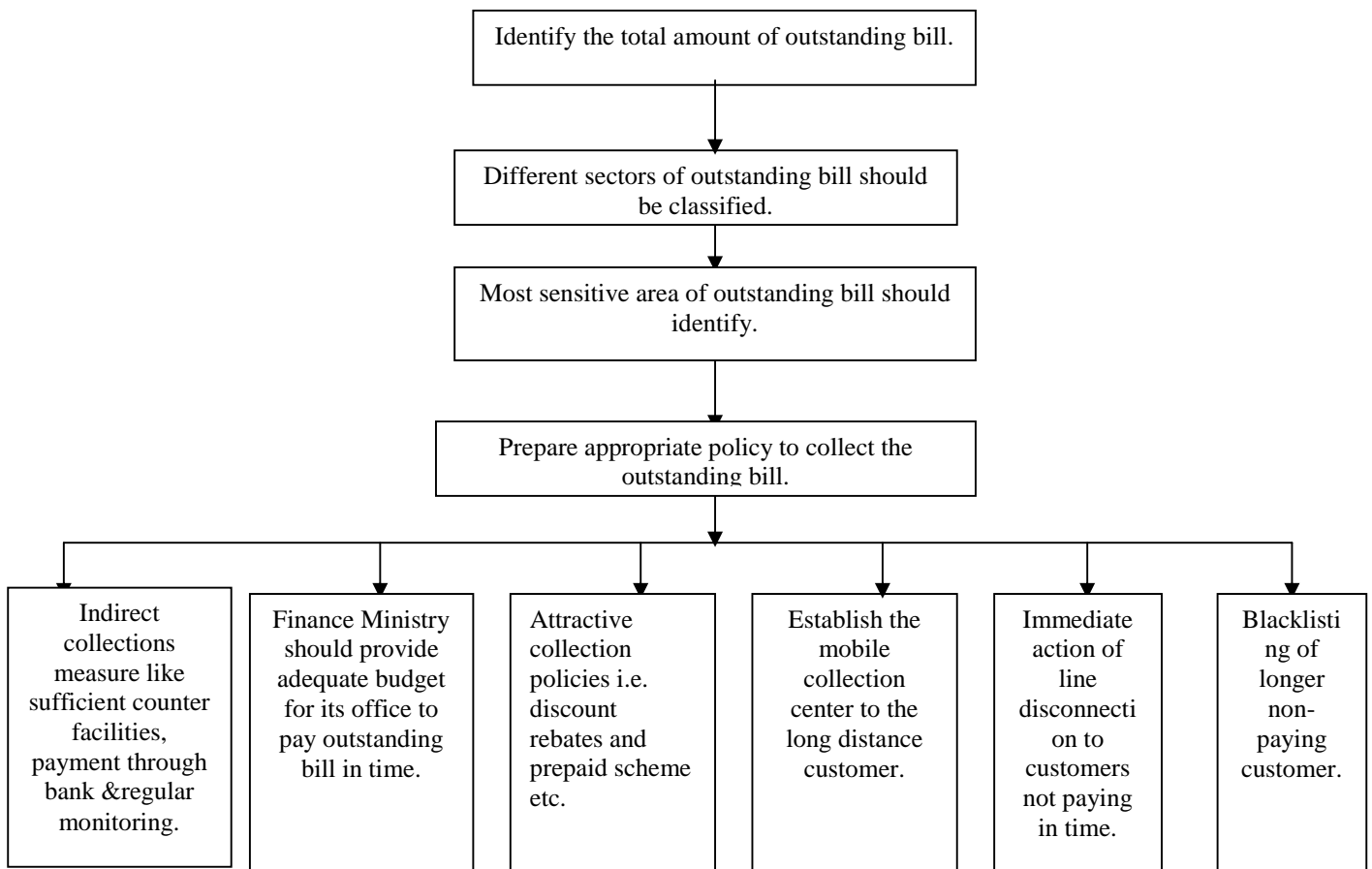
5.4 The Future Course

Nepal Electricity Authority has long way to go. The road ahead is obviously difficult and rocky. It has several challenges within it and outside. Everyone agrees that NEA needs reform but there is hardly consensus views over what kind of reforms is needed and for what purpose? Views differ from government to government, expert to expert and even person to person. Nevertheless, reform is needed, especially in the areas of financing, coordination, management and most importantly in structural aspect. In one hand it needs to ensure the cooperation of government towards its role and financial position and on the other hand it should acquire faith of consumer to run in business or commercial line. Only the revitalized and reformed NEA could cope with the mounting pressure exerted by present power crisis and its weak financial position.

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QUESTIONNAIRE

Dear Respondent,

I have been conducting a research on "A Study on Financial Position of Nepal Electricity Authority" as a requirement for the partial fulfillment of the degree of Master of Business Studies (M.B.S). In this regard, with a view to seek the views of your, the list of questions has been prepared by consulting experts of this sectors.

I humbly request you to fill up the attached questionnaire. Your cooperation in this regard will be of immense value for me.

I assure that the information collected from you will be exclusively used for the research purpose and will not be published in any media.

I shall be highly obliged for your response.

Thank you,

Yadab Bhattarai

 (Researcher)

Bhairahawa Multiple Campus

(Rupandehi)

1 Interview Questions

1. How do you describe the present financial position of NEA?
2. What are the causes for continuous declining financial position of NEA?
3. What are the barriers and risks of NEA at present?
4. How has the ongoing political crisis in the country affected NEA?
5. What is your major recommendation to improve financial health of NEA?
6. Do you agree that NEA has maintained relevant policy regarding to receivables management?
7. How NEA can collect its outstanding bill effectively?
8. What will be the alternative financing strategy for NEA?
9. How NEA can utilize its human resource more productively?
10. What is your view regarding restructuring of NEA?

Annex-1

Calculation of Current Ratio, Mean, Standard Deviation and Coefficient of Variation of Current Ratio.

Year	Current Assets	Current Liabilities	Current Ratios	x^2
2003	7322	10096.99	0.73	0.525866611
2004	7690.48	12347	0.62	0.387957362
2005	7883.41	14538.09	0.54	0.294044812
2006	8491.6	17466.39	0.49	0.23635933
2007	8995.3	19854.19	0.45	0.205270697
2008	10322.97	22812.13	0.45	0.20477534
2009	11178.08	27567.39	0.41	0.16441564
2010	11233.03	32552.13	0.35	0.119078955
2011	12508.07	39228.16	0.32	0.101668105
2012	13901.32	46063.2	0.30	0.091075984
Mean			**0.47**	2.330512836
Standard Deviation			**0.13**	0.016524157
coefficient of variation			**0.28**	

Annex-2

Calculation of Quick Ratio, Mean, Standard Deviation and Coefficient of Variation of Quick Ratio.

Year	Current Assets	Stock	Advance	Quick Assets	Current Liabilities	Quick Ratio	x^2
2003	7322	1058.1	3314.4	2949.5	10096.99	0.29	0.08533
2004	7690.48	1017.22	2216.91	4456.35	12347	0.36	0.13027
2005	7883.41	1048.01	2063.27	4772.13	14538.09	0.33	0.10775
2006	8491.6	1372.7	2098.6	5020.3	17466.39	0.29	0.08261
2007	8995.3	1354.8	2293.9	5346.6	19854.19	0.27	0.07252
2008	10322.97	1498.45	2225.53	6598.99	22812.13	0.29	0.08368
2009	11178.08	1800.13	2319.72	7058.23	27567.39	0.26	0.06555
2010	11233.03	2159.12	2495.13	6578.78	32552.13	0.20	0.04084
2011	12508.07	2431.99	4585.6	5490.48	39228.16	0.14	0.01959
2012	13901.32	2502.93	2976.82	8421.57	46063.2	0.18	0.03343
Mean						**0.26**	0.72157
Standard Deviation						**0.067**	0.00413
Coefficient of Variation						**0.257**	

ANNEX-3

Calculation of Debt equity Ratio, Mean, Standard Deviation and Coefficient of Variation of debt equity ratio

Year	Total Debt	Share Capital	Reserve & accum. profit.	Shareholder Equity	D\E Ratio	x^2
2003	37325.61	16601.3	696.51	17297.81	2.16	4.65619953
2004	39637.11	16976.87	-1269.87	15707	2.52	6.36821147
2005	41103.14	18215.85	-2997.69	15218.16	2.70	7.29500693
2006	44537.51	20161.8	-4294.14	15867.66	2.81	7.87818352
2007	46487.91	23113.1	-5545.32	17567.78	2.65	7.00238967
2008	47616.15	26382.18	-5651.12	20731.06	2.30	5.27552321
2009	51368.84	28609.97	-7577.78	21032.19	2.44	5.96527576
2010	53788.45	33659.46	-12600.98	21058.48	2.55	6.52415121
2011	58231.66	38651.77	-19391.05	19260.71	3.02	9.14058006
2012	62631.85	25694.81	-25902.7	27372.36	2.29	5.23559439
Mean					**2.54**	65.3411157
Standard Deviation					**0.25**	0.06204338
Coefficient of Variation					**0.10**	

Annex-4

Calculation of Debt to Total Capital Ratio, Mean, Standard Deviation and Coefficient of Variation of Debt to Total Capital Ratio

Year	Total Debt	Share Capital	Reserve & accum. profit.	Share holder Equity	Total Capital	DTTCR	x^2
2003	37325.61	16601.3	696.51	17297.81	54623.42	0.68332613	0.46693
2004	39637.11	16976.87	-1269.87	15707	55344.11	0.71619383	0.51293
2005	41103.14	18215.85	-2997.69	15218.16	56321.3	0.72979743	0.5326
2006	44537.51	20161.8	-4294.14	15867.66	60405.17	0.73731288	0.54363
2007	46487.91	23113.1	-5545.32	17567.78	64055.69	0.72574208	0.5267
2008	47616.15	26382.18	-5651.12	20731.06	69195.61	0.68813831	0.47353
2009	51368.84	28609.97	-7577.78	21032.19	73192.04	0.70183643	0.49257
2010	53788.45	33659.46	-12600.98	21058.48	75540.13	0.71205133	0.50702
2011	58231.66	38651.77	-19391.05	19260.71	78185.57	0.74478782	0.55471
2012	62631.85	25694.81	-25902.7	27372.36	79005.08	0.79275725	0.62846
Mean						**0.72**	5.2391
Standard Deviation						**0.7202**	0.0009
Coefficient of Variation						**0.99585955**	

Annex-5

Calculation of Interest Coverage Ratio, Mean, Standard Deviation and Coefficient of Variation of Interest Coverage Ratio

Year	Interest	NPBT	NPBIT	ICR	x^2
2003	1395.5	-717.4	678.1	0.49	0.236117
2004	2973.4	-455.9	2517.5	0.85	0.716857
2005	2991.5	-1486.1	1505.4	0.50	0.253236
2006	3079.8	-1312.8	1767	0.57	0.329176
2007	3050.9	-1267.8	1783.1	0.58	0.341582
2008	2385.41	314.02	2699.43	1.13	1.280613
2009	2274.37	-2372.86	-98.49	-0.04	0.001875
2010	2492.55	-5191.03	-2698.48	-1.08	1.172062
2011	3668.65	-6923.53	-3254.88	-0.89	0.78715
2012	3535.6	-6511.65	-2976.05	-0.84	0.708523
Mean				0.13	5.827193
Standard Deviation				**0.76**	0.566571
Coefficient of Variation				**5.980606181**	

Annex-6

Calculation of Fixed Assets Turnover Ratio, Mean, Standard Deviation and Coefficient of Variation of Fixed Assets Turnover Ratio

Year	Sales	Total Fixed Assets	FATOR	x^2
2003	9476.2	56471.71	0.17	0.028158308
2004	11012.6	59363.24	0.19	0.034414744
2005	11874.7	62747.7	0.19	0.035813739
2006	12605.2	69003.96	0.18	0.033369635
2007	13331.9	74554.78	0.18	0.031976661
2008	14449.73	81809	0.18	0.031197321
2009	15041.49	89350.18	0.17	0.028339413
2010	14405.93	96928.88	0.15	0.022089008
2011	17164.59	105120.07	0.16	0.026662176
2012	17946.82	111371.02	0.16	0.025967529
Mean			0.17	0.297988533
Standard Deviation			**0.012**	0.000143261
Coefficient of Variation			**0.069683177**	

Annex-7

Calculation of Total Assets Turnover Ratio, Mean, Standard Deviation and Coefficient of Variation of Total Assets Turnover Ratio

Year	Sales	Fixed Assets	Current Assets	Total Assets	TATOR	x^2
2003	9476.2	56471.71	7322	63793.71	0.148544	0.02206545
2004	11012.6	59363.24	7690.48	67053.72	0.164235	0.02697329
2005	11874.7	62747.7	7883.41	70631.11	0.168123	0.02826528
2006	12605.2	69003.96	8491.6	77495.56	0.162657	0.02645732
2007	13331.9	74554.78	8995.3	83550.08	0.159568	0.02546187
2008	14449.73	81809	10322.97	92131.97	0.156837	0.02459794
2009	15041.49	89350.18	11178.08	100528.26	0.149624	0.02238749
2010	14405.93	96928.88	11233.03	108161.91	0.133189	0.01773919
2011	17164.59	105120.07	12508.07	117628.14	0.145922	0.02129337
2012	17946.82	111371.02	13901.32	125272.34	0.143262	0.02052412
Mean					0.15	0.23576533
Standard Deviation					**0.047**	0.00010743
Coefficient of Variation					**0.306796**	

Annex-8

Calculation of Inventory turnover Ratio, Mean, Standard Deviation and Coefficient of variation of Inventory Turnover Ratio

Year	Sales	Inventories	Inventory Turnover Ratio	x^2
2003	9476.2	1058.1	8.96	80.20750509
2004	11012.6	1017.22	10.83	117.2060282
2005	11874.7	1048.01	11.33	128.3850456
2006	12605.2	1372.7	9.18	84.32342035
2007	13331.9	1354.8	9.84	96.8353037
2008	14449.73	1498.45	9.64	92.98972261
2009	15041.49	1800.13	8.36	69.81905707
2010	14405.93	2159.12	6.67	44.5173229
2011	17164.59	2431.99	7.06	49.81306889
2012	17946.82	2502.93	7.17	51.41355171
Mean			8.90	815.5100262
Standard Deviation			1.51	2.278313835
Coefficient of Variation			0.170	

Annex-9

Calculation of Debtors turnover Ratio, Mean, Standard Deviation and Coefficient of Variation of Debtors Turnover Ratio

Year	Sales	Sundry Debtors	Debtors Turnover Ratios	x2
2003	9476.2	2284.9	4.15	17.20022155
2004	11012.6	3380.2	3.26	10.61438742
2005	11874.7	3735.71	3.18	10.10413135
2006	12605.2	3697.7	3.41	11.62080289
2007	13331.9	4088	3.26	10.63560797
2008	14449.73	5151.41	2.81	7.868052171
2009	15041.49	5721.08	2.63	6.912349317
2010	14405.93	4854.02	2.97	8.808044041
2011	17164.59	6097.74	2.81	7.923718951
2012	17946.82	7282	2.46	6.073984298
Mean			**3.09**	97.76129996
Standard Deviation			**0.23**	0.206031742
Coefficient of Variation			**0.07**	

Annex-10

Calculation of Average Collection Period, Mean, Standard Deviation and Coefficient of Variation of Average Collection Period

Year	Sales	DTR	ACP	x2
2003	9476.2	2.36	154.54	23881.60832
2004	11012.6	2.03	179.96	32383.88182
2005	11874.7	2.18	167.08	27916.86007
2006	12605.2	2.56	142.43	20285.26283
2007	13331.9	2.69	135.49	18358.10177
2008	14449.73	2.31	158.34	25072.21304
2009	15041.49	2.20	165.66	27443.67634
2010	14405.93	2.75	132.89	17660.57164
2011	17164.59	2.37	154.03	23724.981
2012	17946.82	2.12	172.54	29768.9607
Mean			156.30	246496.1175
Standard Deviation			**14.9**	221.2888124
Coefficient of Variation			**0.10**	

Annex-11

Calculation of Operating Profit Ratio, Mean, Standard Deviation and Coefficient of Variation of Operating Profit Ratio

Year	Sales	Operating Profit	Oprt Profit Ratio	x2
2003	9476.2	2427.3	0.26	0.065611275
2004	11012.6	4332.4	0.39	0.154766644
2005	11874.7	3915.5	0.33	0.108724937
2006	12605.2	3653.7	0.29	0.08401683
2007	13331.9	3515.9	0.26	0.069548687
2008	14449.73	4117.8	0.28	0.081210285
2009	15041.49	3651.33	0.24	0.05892783
2010	14405.93	2845.55	0.20	0.039016638
2011	17164.59	1976.78	0.12	0.013263246
2012	17946.82	2282.77	0.13	0.016178911
Mean			0.25	0.691265281
Standard Deviation			**0.08**	0.006602701
Coefficient of Variation			**0.32**	

Annex-12

Calculation of Net Profit Ratio, Mean, Standard Deviation and Coefficient of Variation of Net Profit Ratio

Year	Sales	NPAT	NPR	x2
2003	9476.2	-860.7	-0.09	0.008249643
2004	11012.6	-1953.7	-0.18	0.031472846
2005	11874.7	-1760.3	-0.15	0.02197496
2006	12605.2	-1312.8	-0.10	0.010846701
2007	13331.9	-1267.8	-0.10	0.009043101
2008	14449.73	240.6	0.02	0.00027725
2009	15041.49	-2315.47	-0.15	0.023697176
2010	14405.93	-5093.22	-0.35	0.124997772
2011	17164.59	-6923.53	-0.40	0.162700276
2012	17946.82	-6511.65	-0.36	0.131645823
Mean			-0.19	0.524905548
Standard Deviation			**0.132**	0.017418799
Coefficient of Variation			**-0.70**	

Annex-13

Calculation of Operating Expenses Ratio, Mean, Standard Deviation and Coefficient of Variation of Operating Expenses Ratio

Year	Sales	Operating Expenses	Operating Expenses Ratio	x2
2003	9476.2	5886.7	0.621	0.385900527
2004	11012.6	5348	0.486	0.235832181
2005	11874.7	6765.4	0.570	0.32459488
2006	12605.2	7462.4	0.592	0.350475422
2007	13331.9	8332.7	0.625	0.390649612
2008	14449.73	9034.56	0.625	0.390925994
2009	15041.49	9530.83	0.634	0.401494618
2010	14405.93	9935.27	0.690	0.475638223
2011	17164.59	12475.35	0.727	0.528248909
2012	17946.82	13239	0.738	0.544170946
Mean			0.63	4.027931311
Standard Deviation			**0.071**	0.005057948
Coefficient of Variation			**0.112580026**	

Annex-14

Calculation of Return on Assets, Mean, Standard Deviation and Coefficient of Variation of Operating Expenses Ratio

Year	Interest	NPAT	NPBIT	Total Assets	ROA	x2
2003	1395.5	-860.7	678.1	63793.71	-0.013492	0.00018203
2004	2973.4	-1953.7	2517.5	67053.72	-0.029136	0.00084893
2005	2991.5	-1760.3	1505.4	70631.11	-0.024922	0.00062113
2006	3079.8	-1312.8	1767	77871.56	-0.016859	0.00028421
2007	3050.9	-3583.27	1783.1	83550.08	-0.042888	0.00183935
2008	2385.41	240.6	2699.43	92131.97	0.002611	6.8198E-06
2009	2274.37	-2315.47	-98.49	100528.26	-0.023033	0.00053052
2010	2492.55	-5093.22	-2698.48	108161.91	-0.047089	0.00221736
2011	3668.65	-6923.53	-3254.88	117628.14	-0.058859	0.00346444
2012	3535.6	-6511.65	-2976.05	125272.34	-0.051980	0.00270192
Mean					-0.03	0.0126967
Standard Deviation					**0.020000**	0.00033547
Coefficient of Variation					**-0.6544**	

Annex-15

Calculation of Return on Shareholders Equity, Mean, Standard Deviation and Coefficient of Variation of Return on Shareholders Equity

Year	NPAT	Shareholders Equity	Return on Shareholder Equity	x2
2003	-860.7	17297.81	-0.050	0.002475833
2004	-1953.7	15707	-0.124	0.015471388
2005	-1760.3	15218.16	-0.116	0.013379784
2006	-1312.8	15867.66	-0.083	0.006844967
2007	-3583.27	17567.78	-0.204	0.041603062
2008	240.6	20731.06	0.012	0.000134694
2009	-2315.47	21032.19	-0.110	0.012120187
2010	-5093.22	21058.48	-0.242	0.058496628
2011	-6923.53	19260.71	-0.359	0.129214298
2012	-6511.65	27372.36	-0.238	0.056592335
Mean			-0.15	0.336333175
Standard Deviation			**0.1035**	0.010704773
Coefficient of Variation			**-0.683521383**	