CHAPTER: - I
INTRODUCTION

1.1 Background of the Study

Geographically, Nepal is a landlocked country sandwiched between two Asian huge countries, India in the East, South & west and China in the North. It is, located between the latitude of 26°22’ to 27° North and longitude of 80° 4’ to 88° 12’ East and elevation range from 90 to 8848 meters. The average length being 885 km. East to West, average breadth is about 193 km. North to South. The country is divided in three Regions Mountain, Hills, and Terai accommodating 7%, 44% and 49% of the population respectively. Based on area of districts these regions constitute 15%, 68% and 17% total land area. The majestic Himalayas, diverse flora and fauna, lakes and glaciers and natural things which makes it beautiful and attractive, but still is backward in term of socio-economic development because of the inability in exploiting the resources .Nepal is abundant with thousand of rivers and rivulets and hence has an enormous hydropower potential. It has a theoretical hydropower potential of 83,000 MW, out of which 43,000 MW is technically and economically exploitable and viable.

Establishment of new enterprises and their role in other developing countries encouraged Government of Nepal to adopt the path of development through the public enterprises. Especially after the down of democracy in 2007 B.C the Government of Nepal has put emphasis on the growth and development of national economy. For this Nepal adopted the ‘Mixed economy model’ where both public and the private sectors were expected to work harmoniously.

Profits are the primary measure of success of a firm. Objective of an organization could be maximizing its profit as well as to render service. Both objectives have a link with the efficient management of budgetary system of the organization. Moreover revenue planning and budgetary practices play a key role for achieving these objectives. Although the profit is the yardstick of organization and organization should generate profit but profit do not generate

automatically. It should be planned. Therefore every organization should plan their profit through the help of revenue planning and modern budgetary system.

In any organization, irrespective of the type, size and function, budgeting is inevitable. Budgets are so pervasive, that they apply to all kinds of organization. Budgeting process may vary firm to firms, according to its nature of service. Budgets cover major functions of management process including planning, communication, coordination, and controls. An effective budgeting system is vital to the success and survival of an organization. Without a fully coordinate budgeting system, management cannot know the direction the business is taking out.

Budget is not only a financial statement of actual and anticipated revenues and expenditure of the organization but also policies of action which they desire to pursue in coming years for raising the economic activities. Budget is considered as the fiscal plan of action, which shows how the revenues are collected and how it is utilized. Budgeting is not only related to revenue and expenditure of the organization but also to the efficient and effective utilization of funds to accomplish the firm's planned objectives.

In the context of Nepal, the history of comprehensive budgeting is not so long. The government budget system was introduced in B.S 2008. Business budgeting in the complete and systematic manner was the rare case for Nepalese commercial and industrial sector. Even application of comprehensive budgeting is still rarely being found. In developing countries like Nepal the discipline of profit planning and budgetary system is not so much familiar and practiced due to the backward position of public enterprises (PEs). Many of the Nepalese PEs has been suffering from the poor performance to apply PPC and budgetary system.

Budgetary practices are tools, techniques, schedules, respective computations and clerical activities used in revenue planning and control programme in the organization. Public enterprises develop budgets for proper planning of economic activities to meet resource constraints. Budgetary system includes all types of budget, which helps the management in the smooth

operation of an organization. It helps to reduce the costs and expenses through comparison of actual performance with standard. Thus development and implementation of modern budgetary system is a necessary condition to take financial as well as managerial decisions in the organization.

To ensure success, before any system of budget control is put into operation, there should be clarity as to how the system is to operate and what objects are in view. Budgeting, if followed properly, can increase the chance of making profits within the given environment. A systematic budget should encompass the procedures of evaluating the business environment, setting objectives, setting specific goals, identify potential strategies, communicating the planning guidelines, developing the long- term and short- term plans, implementation of budgets and periodic performance reporting and follow- up.

1.2 Public Enterprises in Nepal

Public enterprises have been constituted in different forms in both developed as well as underdeveloped countries to achieve different goals**.** Public enterprises are autonomous bodies which are owned and managed by the government and which provide goods and services for a price. The ownership with the government should be 51% or more to make an entity public enterprise. (Narayan, Laxmi; 1994:7).

Public enterprises in Nepal constitute a vital instrument for the socio-economic development of the country. It enjoys a strategic and crucial position in our mixed economy. They have been established in many sectors for the overall development of the country with different goals and objectives. In a developing country like ours public enterprises occupy a distinct position. However, their performance has been a challenge both to the planners and the PEs managers. (Shrestha, Purneshwor; 1990: 1).

Nepal started its planned economic development in 1956 with the launching of the first Five–year plan. Since then the number of PE has increased substantially in the various fields of national economy. The first–year plan (1956-61) adopted the principal of ‘Mixed economy’ and seven PE’s were

established during the plan period. The second three-year plan (1962-65) demarcated the areas of Public as basic utilities and infrastructures like electricity, transportation, communication, etc. Eleven PE's were established during this period including establishment of Nepal Electricity Corporation. During the course of time several Development Boards were also functioning in this Major infrastructure sector. Public enterprises play the major role in pursuing the industrialization activities in the country. But the important condition in today's age of science and technology for industrialization is the availability of infrastructure. Such infrastructures mainly consist of communication, transportation and power facilities. In a developing country like Nepal, Government has to play a paramount role for building these infrastructures by the help of public enterprises.

In general PEs can be classified as follows:-

- Manufacturing PEs.
- Commercial PEs.
- Financial PEs.
- PEs engaged in social services.

In Nepalese context PEs play vital role in economic and social development role and the main objectives of PEs in Nepalese economic can be summarized as below:-

- Accelerate the rate of economic growth
- Development of infrastructure
- Success of economic planning.
- Regional and balanced development
- Supply of essential commodity
- Contribute to national fund.
- Generate employment opportunities.
- Attaining social justice and social welfare.
- Strengthening and maintaining economic stability.
- Initiate research and development activities.

- Provision of public utilities.

Therefore it is clear that the main objective of establishment of PEs is to develop of social and economic health of nation. It has to fulfill its objectives by balancing profits and service motives of business.

1.2.1 Revenue Planning and Management in Public Enterprises

Revenue planning is vital and important tool in the field of management decision-making. So it is called the heart to management. It also acts as major instrument for minimizing future risk, maximizing the output from the scarce resources and predict the future and tells us profit are the most important indicators for judging managerial efficiency and they do not come automatically. For this, every organization should manage and plan their profit. Various financial budgets are the basic tool for proper planning of revenue. Most of Nepalese PEs has been suffering regular operating loss by observing the past annual budgets, economic survey of the running project. Therefore, they are obligated to depend on the government for their budget. They are unable to obtain substantial return from their investment and make contribution to the nation by providing expected return as dividend or as tax. They are creating a huge amount of liabilities to the government and considered the public revenue is missing in unproductive sectors. This is happened by the lack of he better revenue planning and management in Nepalese PEs.

1.3 A Brief Overview of Nepal Electricity Authority (NEA)

Nepal is one of the richest countries in natural resources of the world. It has various natural resources. Hydroelectricity potential is one of them. Nepal is abundant with thousand of rivers and rivulets and hence it has an enormous hydropower potential. It is the richest country after Brazil in hydroelectricity potential in the world. It has a theoretical hydropower potential of 83,000 MW, out of which 43,000 MW is technically and economically exploitable and viable.

Despite the existence of such huge hydropower resources potential development of hydropower has not taken place satisfactorily. The total hydropower generated capacity of Nepal is only 614 MW till date 2065 BS. Which is only 1.4% of technically and economically exploitable and viable hydropower potential. During the year 2006/07, "the number of NEA's customers reached to 1.39 million, which is an increase of 8.97% over the previous year". And "despite the various obstacles posed by the transitional phase of the country , total revenue increased by 12.20% to a figure of NRs 15677.00 million"("Nepal Electricity Authority", Fiscal Year 2006/07-A Year in Review: page 11).

Nepal Electricity Authority, a full Government undertaken public utility enterprises, was formed on 1st Bhadra 2042 BS(1985) amalgamating the department of electricity, Nepal Electricity Corporation and number of other related departments according to NEA Act 2041 BS. The central office of NEA is in Kathmandu. On the basis of organization expansion, number of its staffs, its assets and investment and areas of its power supply works, NEA is the largest public utility enterprises in Nepal. The main purpose of NEA is to provide electricity service to customers at an affordable price. Nepal Electricity Authority is responsible for making generation, transmission and distribution of electricity in Nepal. Nepal started its power generation since the year 1911 with construction of Pharping Hydropower Station, generating about 500KW of power. After 23 years of established first project, Sundarijal hydropower center was established with the capacity of 1350 KW in 1935.

Presently, under construction, planned and existing major hydropower projects are as follows:-

Existing Major Hydropower Projects:

- KaliGandaki "A" 144 MW
- Maarsyangdi 69 MW
- Kulekhani No. 1 60 MW
- Kulekhani No. 2 32 MW
- Trisuli 24 MW
- Gandak 15 MW

- Modi Khola 14.8 MW
- Devighat 14.1 MW
- Sunkosi 10.5 MW
- Puwakhola 6.2 MW

Under Construction

- Upper Tamakoshi 309MW
- Middle Marsyangdi 70MW
- Chamelia 30 MW
- Khulekhani No. 3 14 MW
- Gamgdhi 400 KW

Planned and proposed

- Upper Trishuli – 3 'A' 60MW
- Upper Trishuli – 3 'B' 37 MW
- Budhi Gandaki 600 MW
- Rahughat 27MW
- Upper Seti (Storage) 128MW
- Seti Trishuli (Storage) 128MW
- Upper Modi 'A' 42MW

Source: "VIDYUT" Half Yearly Magazine 2063/064

1.4 A Brief Overview of Nepal Telecom

History of telecommunication service in Nepal is not so long .First telecommunication service in the country was introduced in 1974 BS. Which was called Magneto Telephone Since then and up to the lunching of first five year plan of 2013 BS, the development of telecommunication was in slow pace. With the formal inception of Nepal Telecommunications Corporation in 2032 BS, a systematic development of telecommunications service has been stared. It was established under the Telecommunication Corporation Act 2028 BS. Nepal Telecommunications Corporation has been changed to Nepal Doorsanchar Company limited in 2061 BS under the Company act. It's popularly known viable name "Nepal Telecom".

The prime objective incorporated by Nepal Telecom is to provide reliable and affordable Telecommunication Service all over the country. At present Nepal Telecom has provided national and international trunk services in all the 75 districts of the nation.

Service provided by Nepal Telecom:-

1. Basic Telephone Service
2. Pay phone Service
3. National and International Trunk call Service
4. Rural Telecom Service
5. Email and Internet Service
6. International Telegraph Service
7. Telex Service
8. V-sat Service
9. CDMA phone Service

Nepal Telecom as a progressive, public spirited and consumer responsive entity, is committed to provide nationwide reliable telecommunication services to serve as an impetus to the social, political and economic development of the country. Goal of Nepal Telecom is provide cost effective telecommunication services to the country. Vision of Nepal Telecom is to remain a leding player in telecommunication sector in the country while also extending reliable and cost effective services to all. (Nepal Telecom ,Annual Report 2007, page 3)

Nepal Telecom plans to distribute Notice Board service in the near future for the following services:

- Foreign Exchnge Rates updates
- Daily gold/ silver price updates
- Daily weather updates
- Flight schedules/updates for airlines
- Daily Stock exchnge price of vegetables and fruits
- Recorded programs of FM, TV stations

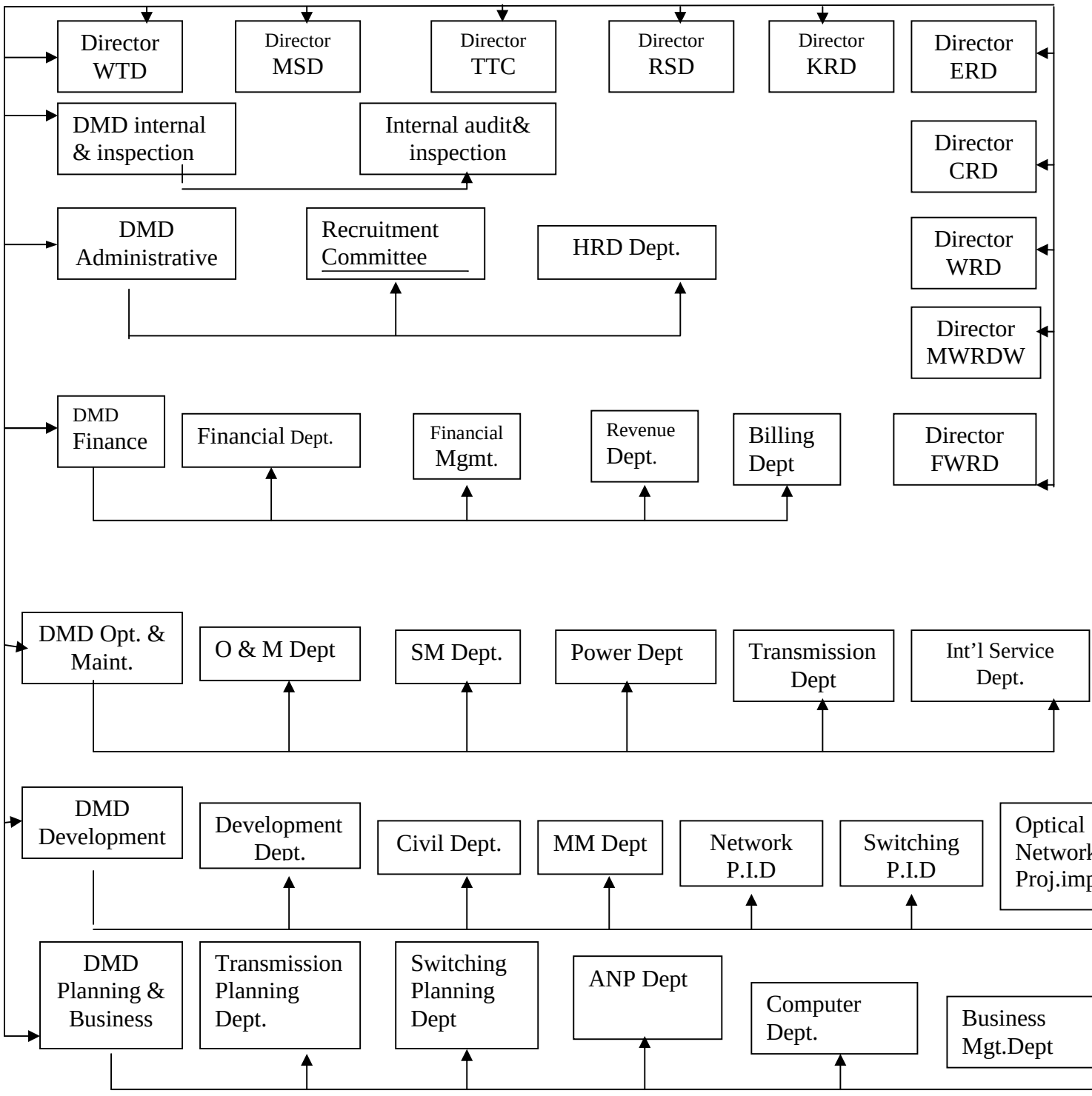
In different time frame,NTC operates various system and facilities in the field of communication .A glimpse of development of NTC can be listed below:-

Year (A.D)	
1913	Establishment of first telephone lines in Kathmandu.
1914	Establishment of open Wire Trunk line from Kathmandu to Raxaul. (India).
1935	Installation of 25 lines automatic exchange in palace.
1936	Installation of open Wire Trunk line from Kathmandu to Dhankuta.
1950	Establishment of Telegram service.
1950	Introduction to High Frequency Radio System (AM).
1950	Establishment of CB telephone exchange (100 lines) in Kathmandu
1951	Installation of Open Wire Trunk line from Kathmandu to Palpa
1955	Distribution of telephone line to general public
1957	Registered as an ITU State member on 5th December 1957
1962	First public Telephone Exchange in Kathmandu(300 lines CB)
1964	Begging of International Telecommunications Service using HF radio to India and Pakistan
1965	First Automatic exchange In Nepal (1000 lines in Kathmandu)
1974	Microwave transmission links establishment for internal trunk
1982	Establishment of Standard "B" Type Earth Station for international circuits
1982	Establishment of SPC telex exchange
1983	Establishment of Digital Telephone Exchange
1984	Commencement of STD service
1987	Commencement of ISD service
1995	Installation of Optical Fiber Network
1996	Conversion of all Transmission link to Digital transmission link
1996	Automation of the entire Telephone Network
1996	Independent Int. Gateway Exchange established
1996	Introduction of VSAT services
1997	Digital Link with D.O.T.India through Optical fiber in Birgunj-Raxual
1999	GSM NTC Mobile services
2000	Implementation of SDH Microwave Radio

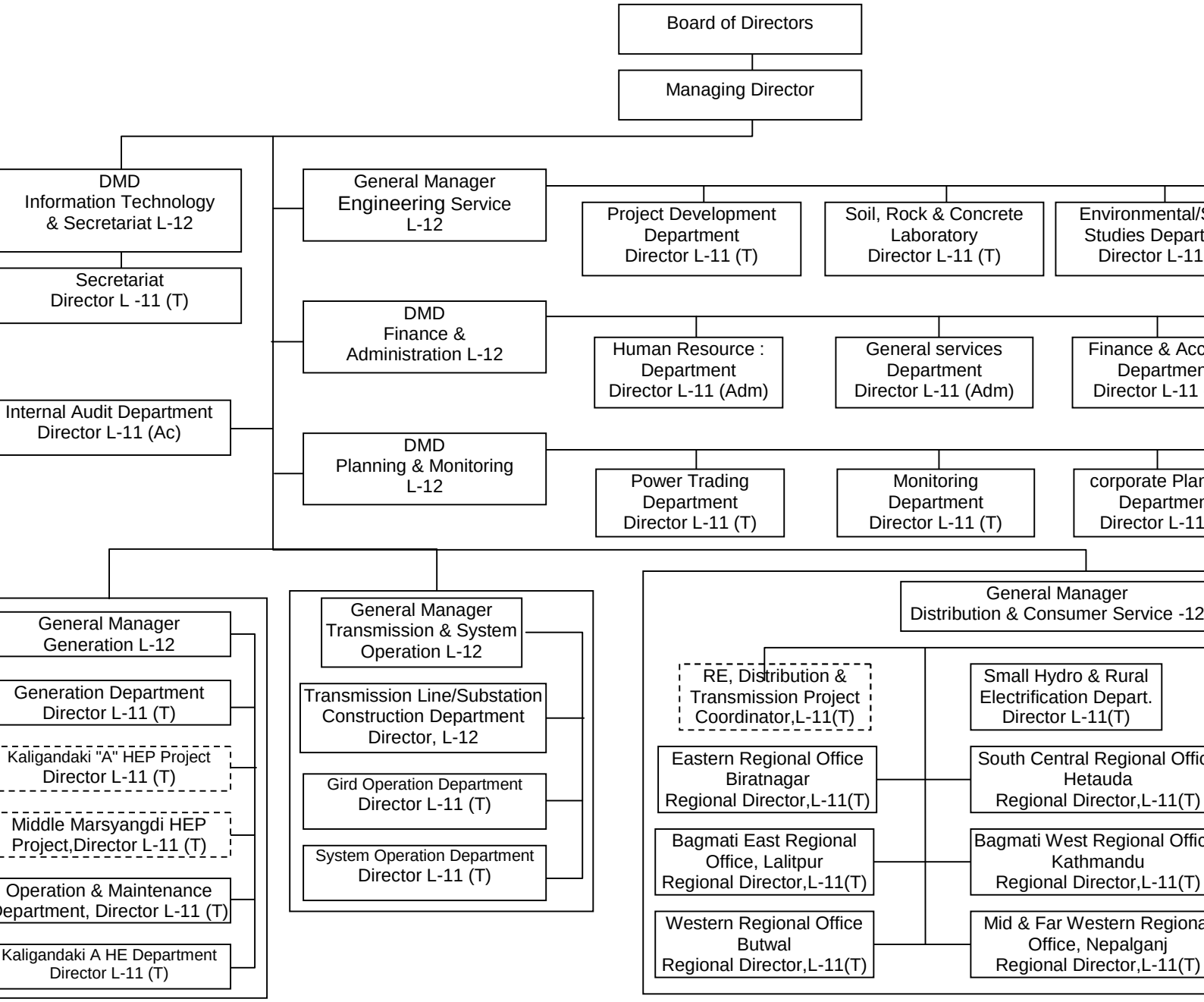
2000	Internet Service
2001	Payphone Service
2002	East West Highway Optical Fiber project
2003	GSM Namaste Pre-paid Service
2004	Transformation to NEPAL TELECOM (Nepal Doorsanchar Company Limited) from NTC corporation
2004	Prepaid Calling Card (PCC) Service (Intelligent Network Services)
2005	Advanced Free phone (AFS) Service (Intelligent Network Service)
2005	Soft launch of CDMA
2005	Access Network Services (197)
2005	Outsourcing of Enquiry Service(197)
2006	PSTN Credit Limit Service –PCL Service(Intelligent Network Services)
2006	MCC (198) Complain Registration via IVR in Kathmandu Valley
2006	CDMA Limited Mobility Service in Kathmandu Valley
2007	CDMA Full Mobility Service
2007	Cheap calls @NRS 8.00/min to USA &Canada using PCC Service
2007	188 IVR Service

By the end of the year 2006/07, Nepal Telecom had 5, 20,000 PSTN subscribers, 12, 19,000 mobile subscribers, 3,11,000 CDMA subscribers and 25,000 Internet subscribers. Presently, out of total 75 districts, 71 districts are being served with CDMA system and 55 districts with GSM mobile. Nepal Telecom introduced 3G Mobile (WCDMA) in the first quarter of the year 2007, which made Nepal the first country in South Asia to introduce 3G mobile (WCDMA) service. The operating revenue of the company increased from about Rs 720 crores in the fiscal year 2002/03 to Rs 1300 crores in the fiscal year 2006/07. Financial and economic sustainability of the company could be easily judge as “comfortable” due to the fact that net profit available for appropriation has increased from Rs 300 crores in the fiscal year 2002/03 to about Rs 600 crores in the year 2006/07.(Nepal Telecom, Annul Report 2007)

NEPAL TELECOM: Organization Chart



The organization Structure of NEA



1.5 Statement of the problem

The development of a nation depends upon the proper exploitation of the resources available in the country. Many public enterprises have been found preparing long range and short range plans on the adhoc basis. Many of the public enterprises are suffering losses. The main causes of bearing loss are poor performance, inactive management system and low utilization of resources. The major problem may arise in planning and implementation of budgetary system. For effective implementation of budgetary program polling Individual and organizational goal in a single bowl in necessary so that individual works can be coordinated for the achievement of organization goal to fulfill theirs own goals. Organization success is depended for proper budgetary system and revenue planning.

The main problems of public utility concern are lack of measuring economic activities through various functional budget and corrective action for improving the operating and managing system. The other problems are given below:

1. High gap between demand and supply on service sectors.
2. Inactive management system for utilizing the available resources.
3. Lack of long range and short range plans to tackle the uncertain environment.
4. Increasing corruption and inefficient management system.

The success of an organization largely depends on suitable planning, effective strategy and measuring performance. The success or failure of any enterprise is measured on the basis of profitability or surplus. The profit depends on the systematic budgetary system and financial performance. Different functional budget are used to evaluate the actual performance and are compared with standard and guide the future action. The present study will try to answer whether the NTC and NEA followed budgetary system properly or not.

1.6 Objective of the Study

The general objective of this study is to examine the budgetary system or practices applied by NTC and NEA for revenue planning, with the following specific objectives:-

- To analyze various functional budgets which are prepared by NTC and NEA.
- To evaluate the variation between actual and budgetary achievement of NTC and NEA.
- To examine the present budgetary system and revenue planning process adopted by NTC and NEA.
- To point out major shortcomings and to recommend suggestion for effective and efficient budgetary system and revenue planning to Nepalese public enterprises.

1.7 Significance of the Study

Revenue planning is an important instrument which is helpful in minimizing the risk, maximizing the output from the available resources. The main objective of an organization is to make an excess of revenue over expenses so as to maximize profit. There is no magic formula of boosting the figure of profit overnight. Profit is the outcomes of various tools and technique applied for effective performance. Budgeting is one of the key tools for operational and financial planning and control. Budgetary practice includes various functional budgets which are major weapons in profit planning and control. It analyses and predicts the outcomes of financial activities and also guides to the management for better future planning and control. The main aim of the profit planning and systematic budgetary system is to forecast about the future events and avoid the risk of uncertainties. This study analyzes the effectiveness, problems and prospects on the ground of revenue planning and budgetary system in both enterprises. Mainly this study will be useful and beneficial for following group and individuals:

- Major stakeholders who are interested to the budgetary system of NTC and NEA.
- NTC and NEA itself to improve or restructure the entire system or practice of budgeting & revenue plan.

1.8 Limitation of the Study

This study tries to explore the budgetary system and revenue planning of the NTC & NEA. This study suffers from the following limitations.

- To scope of the study is limited to the randomly selected service oriented public enterprises namely Nepal Telecom and Nepal Electricity Authority.
- It is only based on annual report published by NTC and NEA and data collected by researcher.
- Only selected statistical & financial tools & technique are used.
- The constraint of various references and resources with computer programs are also main limitation.
- The study has covered the analysis of 6 year data covering the FY 2058/2059 to 2063/2064
- This study concentrates only on financial and accounting aspect.

1.9 Organization of the Study

The entire study has been designed in to five main chapters. They are:-

Chapter I:- Introduction

It is an initial phase of the thesis that includes general introduction ,a brief review of NEA and NTC, focus of the study, statement of the problem, significance, objectives and limitations of the study.

Chapter II: - Review of Literature

This chapter includes two main aspects; conceptual framework and review of related study. The conceptual framework includes fundamental concepts and components of managerial budgeting. It mainly deals with theoretical analysis and

briefly reviews of previous research work done in budgetary practices & revenue planning of NTC and NEA.

Chapter III: - Research Methodology

This chapter reveals the methodology adopted in carrying out the research work. It includes research design; sources and nature of data, period covered, research variables and research tools used and research questions for the study.

Chapter IV: - Presentation and Analysis of Data

It is concerned with the presentation and analysis of data that has been collected through various sources. It mainly consists of interpretation and analysis of data with the help of various analytical tools and techniques and major findings regarding the study.

Chapter V: - Summary, Conclusion and Recommendation

This chapter includes summary and conclusion of the study and also recommends some suggestions and measures to solve the present shortcomings regarding budgetary system & revenue planning of NTC and NEA. Besides these, bibliography, appendices and other related items or figures has been included at the end of the study report.

CHAPTER: - II
REVIEW OF LITERATURE

2.1 Introduction

Review of literature is one of the most significant parts of research. It will be better to review some fundamental aspects of relevant literature before doing analysis. It refers to the reviewing of the past studies in the concerned field such studies could be theses that are written earlier, books, articles, and or any sort of other publications concerning the subject matter, which were written prior by a person or an organization. The purpose of literature review is thus; to find out what research studies have been conducted in one's chosen field of study, and what remains to be done .This chapter has been divided into the following two parts:

1) Conceptual Framework
2) Review of earlier studies regarding NTC and NEA.

2.2 Conceptual Framework

2.2.1 Origin and Meaning of Budget

The word 'budget' is said to have its origin from the French word boguette which means small leather bag. In 1773, when Walpole was the chancellor of exchequer, he used to keep his document in leather bag. Today, bag itself is not of vital importance but people are anxious to see what the bag contains. Therefore, the bag contains economic bill presented by the Finance Minister in the parliament house annually. In the modern times, governments are welfare oriented. They have made some vigorous efforts to maximize the welfare of society. In order to achieve it, government has to perform various socio-economic activities. This requires proper manipulation of budgetary policy of the government. A budget is a comprehensive and coordinated plan expressed in financial terms for the operation of resources of an enterprise for specific period in future. (Ghimire, Ramesh; 2004:275)

Budget is considered as the fiscal plan of action, which shows how the revenues are collected and how it is utilized. Budgeting is not only related to revenue expenditure of the organization but also to the efficient and effective utilization of funds to accomplish the firm planned objectives. Budget is written plans which force the managers to operate their activities for attaining the organizational expectations and objectives. A budget helps a firm to control its cost by setting guidelines to spend money for required items because they know all cost are compared to the budget. A budget is a plan of firm's expectation in the future. Planning involves controllable and non controllable expenditures and reduces the impact of uncertainty. It makes management active to influence the environment in the interest of the enterprises.

Budget is a plan relating to a period of time, expressed in quantitative terms. The institute of Cost and Works Accountants, London defined budget as "A financial or quantitative statement, prepared and approved prior to a defined period of time, of the policy to be pursued during that period for the purpose of attaining a given objective. It may include income, expenditure, and the employment of capital."

Managerial budgeting is viewed as a systematic and formal approach or process designed to help management for preparing significant phases of the management and control functions, specially it involves:-

1) The development and application of broad and long range objective for the enterprises.
2) The specification of enterprises goals.
3) The development of profits plan with assigning responsibilities.
4) A system of periodic performance reports detailed by assigned responsibilities and,
5) Follow up procedure.

The primary aim of managerial budgeting is to assess in assuring the procurement of the profit planned and to provide a guide for assisting in establishing the financial control policies including fixed assets additions,

inventories and the cash position. The adoption of correctly constructed profit plan provision provide opportunity for a regular and systematic analysis of incurred or anticipated expenses, organize future planning, fixing of responsibilities and simulation of efforts. In short, it provides tool for more effective supervision of individual operations and practical administration of the business as a whole.

2.2.2 Characteristics of Good Budgeting

The characteristics of good budgeting are as follows:-

- A good budgeting is a quantitative expression of plan of action and aid co-ordination and implementation.
- A good budgeting system should involve persons at different levels while preparing the budget; the subordination should not feel only imposition on them.
- A good system of accounting is also essential to make the budgeting useful.

2.2.3 Budgetary Control

Budgetary control is a systematic controlling of costs which includes the preparation of budgets. Budgeting is thus only a part of budgetary control. In the terminology of C.I.M.A., London, Budgetary Control "The establishment of budgets relating to the responsibilities, execution of the policy and the continuous comparison of the actual with the budgeted results ,either to secure by individual action the objective of the policy or to provide a basis for its revision."

The following characteristics of budgetary control are to be noted:-

- Establish a budget or target of performance.
- Compare the actual performance with that budget.
- Calculate the differences and analyze the reasons for them.
- Act immediately, if necessary, for corrective actions to be taken.

2.2.4 Objectives of Budgets and Budgetary Control

The objectives of budgets and budgetary control are as follows:-

- To maintain the balance of mutual relationship among the various departments of the organization such as production, marketing, financial and administrative.
- To increase efficiency among the various departments of the organization.
- To make responsible and accountable to each departments and cost centers.
- To forecast the various activities of the organization.
- To prevent wastes, reduce expenses and to obtain desired income.
- To help in inventory and cash control.
- To assure of earning the proper return of capital invested.
- To provide a method of measurement for operating activities and financial position
- To make management alert to take necessary actions for remedial measures.
- To ensure that adequate working capital is available for the smooth and efficient operation of the business.

The efficiency of budgetary control mainly depends upon the following factors:-

1) Whether budgets are applied to all or only parts of a business.
2) The degree of control exercised by the management and
3) The care taken by the management.

2.2.5 Advantage of Budgets and Budgetary Control

According to M.N Arora, budgets and budgetary control provides the following advantages:-

- Budgetary control aims at maximization of profit through careful planning and control.
- A Budgetary control system assists in delegation of authority and assignment of responsibility.
- Budgetary control system creates necessary conditions for the introduction of standard costing techniques.

- It helps to reduce the seasonal variations in production and sales volume.
- It is the tool of sound management that increases the efficiency as well as profit volume of the business.
- Proper co-ordination can be maintained by it which helps in the achievement of budgeted goals.
- Budget specifies and set the objectives so that they can be achieved as a common goal of the employees.
- Budgets stimulate to meet the predetermined goal which serves to achieve desired profits or reducing losses.
- The forecast of sales enables the management to work out economic balance between plant and machinery, storage, warehouse and inventories.
- It shows management where action is needed to remedy a situation.
- It provides yardstick against which actual results can be compared.

2.2.6 Preliminaries in the Installation of Budgetary System

Pre-requisites for the successful implementation of a budgetary control system are as follows:-

- Preparation of budget manual
- Creation of budget center
- Preparation of organization chart
- Introduction of adequate accounting records
- Establishment of budget committee
- Budget period

2.2.7 Purpose of Budgeting Systems

a) Planning:

The most obvious purpose of budget is to quantify plan of action. The budgeting process forces the individuals who comprise an organization to plan ahead. These firms tend to do well because they anticipate problems before they occur.

b) Facilitating communication and coordination:

For any organization to be effective, each manger throughout the organization must be aware of the plans made by other mangers. The budgeting process pulls together the plans of each manger in an organization. Budgets place manger in the spotlight.

c) Allocating resources:

Generally, an organization's resources are limited, and budgets provide one means of allocating resources among competing users.

d) Controlling profit and operations:

A budget is a plan, and plans are subject to change. Nevertheless, a budget serves as a useful yardstick with which actual results can be compared.

e) Evaluating performance and providing incentives:

Comparing actual results with budgeted results also helps manger to evaluate the performance of individual, departments, division or entire companies. Since, budgets are used to evaluate performance; they can also be used to provide incentives for people to perform well. (Wagle,Keshab. N. & Dahal, Rewan,K.; 2006:6.1).

2.2.8 Planning the Foundation of Profit Plans

Planning involves the specification of the basic objectives that the organization will pursue and the fundamental policies that will guide it. In operational terms, it involves the steps of setting objectives, specifying goals, formulating strategies, and expressing budgets. Planning is the first essence of management and all other functions are performed within the framework of planning. Planning means decision making about in advance what is to be done in future. Planning is deciding in advance about what to do, when to do and how to do something in future.

Planning should include qualitative narratives of goals, objectives and means of accomplishments. However, if plans were limited to qualitative narratives, the process of comparing actual results to expectations would only allow generalizations, and trying to measure how well the organization met its

specified objectives would be impossible. Therefore, management translates qualitative narratives in to quantitative formats, or budget. (Raiborn, Brfield & Kinney;1993:265)

The major functions of business management are planning, execution and control which constitute the key element of the management process. The fundamental purpose of management planning provides way and guideline for forward process and it consists of the following phases.

- Establishing enterprise objectives and goals.
- Developing premises about the environment of the entity.
- Making decisions about the course of action.
- Initiating actions to activate the plans and
- Evaluating performance and feedback for preplanning.

2.2.9 Meaning and Definition of Profit Planning and Control

The term comprehensive profit planning and control is defined as a systematic and a formalized approach for performing significant phase of the management planning and control functions.

The successes of each enterprise in realizing its optimum profit in each year will be determined by the extent to which it establishes objectives, develops coordinated plans to meet those objectives and exercises control that results to reach or exceed those planned. This entire process constitutes the budgetary planning and control program. It includes revenues, costs, profits, cash, working capitals, fixed assets, financing and dividends distribution. Profit planning and control has the ultimate objectives of attaining the optimum profit. As indicated by many successful applications, the most reasonable approach to attaining optimum profits is to plan them as a percentage of capital employed to produce them and to manage the enterprise with the objective of achieving the planned percentage. (Keller, Issac Wayne & Ferrara, William L;1966:388)

Profit Planning and control can be viewed as one of the major important approach that has been developed to facilitate effective performance of the management process. It is directed towards attainment of the final objectives of the

organization and generally includes all its important elements. Its main objective is the attainment of optimum profit.

2.2.10 Advntages Of Profit Planning

The following main arguments are usually given for profit planning and control.

- It compels management to plan for the most economical use of labor, material, and capital.
- It forces management to give adequate attention to the effect of general business conditions.
- It rewards high performance and seeks to correct unfavorable performance.
- It forces management to consider expected future trends and conditions.
- It requires adequate and sound organization structure that is there must be definite assignment of responsibility for each function of the enterprises.
- It compels all members of management from the top down, to participate in the establishment of goals and plans.
- It compels departmental managers to make plans in harmony with the plans of other departments and of the entire enterprise.
- It reduces cost by increasing the span of control because fewer supervisors are needed.
- It trends to remove the cloud of uncertainty that exists in many organizations, especially among lower levels of management, relative to basic policies and enterprise objectives.
- It pinpoints efficiency and inefficiency
- It forces a periodic self analysis of the company.
- It aids in obtaining bank credit, banks commonly require a projection of future operations and cash flows to support large loans.
- It forces recognition and corrective action.(Welsch, Hilton, & Gordon;1990: 60)

2.2.11 Assumption and limitations of profit plan

Profit planning and control is an important tool for management.But, there are so many assumptions of using profit planning programs. Firstly, the basic plans of a business must be measured in terms of money, if there is to be any assurance that money will be available for the needs of the business. Secondly, it is possible to plan for the future of a business in a comprehensive way, coordinating every aspects of the business with every other aspects to establish optimum profit goals. Thirdly, profit planning is pre-planning not merely what to do if things workout as forecasted, but also what to do if things work out differently form the forecast.

In developing and using a profit planning and control program, the following limitations should be considered:-.

- The profit plan is based on estimates.
- It is application for long period.
- Profit planning and control is costly affairs.
- A profit planning and control program must be continually adopted to fit changing circumstances.
- Execution of a profit plan will not occur automatically.
- The profit plan will not take the place of management and administration.

The profit plan should be regarded, not as a master, but as a servant. It is one of the best tools yet devised for advancing.

2.2.12 Revenue Planning.

Revenue results from the sale of goods and the rendering of services and is measured by the charge made to customers, Client or tenants for goods and services furnished to them. It also includes gains from the sales or exchange of assets other than stock in trade, interest and dividend earned on investment and other increase in the owner's equity except those arising from capital contributions and capital adjustments. Revenue from ordinary sales or from other transaction in the ordinary course of business is sometimes described as operating revenue. **(**Bhattacharaya,1980:137)

The revenue plan is the foundation for periodic planning in the firm because practically all other enterprises planning are built on it. In harmony with managerial budgeting both strategic long term and tactical short term sales plan must be developed. The sales planning process is a necessary part of managerial budgeting or profit planning and control because it provides for the basic management decision about marketing. If the sales plan is not realistic, all of the other parts of the overall profit plan also are not realistic. **(**Welsch, Hilton and Gordon; 2001:172)

Revenue planning provides as estimate of good to be sold and revenue to be derived from sales. It is a starting point in the budgeting procedure. Sales plan or budget is one of the function budgets and is essentially a forecast of sales to be effected in a budget period. It defines the quantities and values of expected sales in total as well as product wise and area wise during definite future period.

2.2.13 Components of a Comprehensive Profit Planning and Control Program

A comprehensive profit planning and control program encompasses much more than the traditional idea of periodic budget. Moreover, it encompasses the application of a number of management's concepts through a variety of approaches, techniques and sequential steps. Basic components of comprehensive profit planning and control program are below:-

1) Evaluation of the potential effect of all relevant variables on the enterprise.
2) Specification of broad objective of the enterprise by executive management.
3) Establishment of specific goals for the enterprise.
4) Development and Evaluation of enterprise strategies.
5) Preparation of planning premises.
6) Preparation and evaluation of project plans.
7) Development and approval of strategic and tactical profit plans.
8) Development of supplementary analyses.

9) Implementation of profit plans.

10) Development, dissemination and utilization of performance reports.

11) Implementation of follow –up actions.

Some of them are described below:-

1) Evaluation of relevant variables affecting the Enterprise

Variable, which have a direct and significant impact on the enterprise, are relevant variables. Variables may be their different relevancy according to the nature of the market. For a large firm with a national market, the relevant variables obviously would be broad in scope, whereas a small firm would be concerned primarily with regional and local variables operating within the narrow environment of the enterprise. An evaluation of relevant variables should involve all the members of executive management who in turn should expect various staff groups to provide analytical data and recommendations.

2) Specification of the Broad Objectives of the Enterprises.

The statement of broad objectives is viewed as a pervasive and general expression of the philosophical objectives of the enterprises. The statement of broad objectives should express the mission, vision, and ethical tone of the enterprise. It tends to provide enterprise identity, continuity of purpose and definition. The purpose to specification of broad objectives is as follow:-

- To define the purpose of the company.
- To clarify the philosophy character of the company.
- To create particular "climate" within the business.
- To set down a guide for managers so that the decisions they make will reflect the best interests of the business with fairness and justness to those concerned.

Thus, the objectives should be specified. So, as to serve as the foundation of the company and they should be ‘believable’ to be grasped easily by every part concerned to the enterprise i.e. shareholders, customers, government, employees and so on.

3) **Development and Approval of Strategic and Tactical Profit Plans**

The Strategic long-range and tactical short-range profit plans normally should be developed concurrently for the all particular purpose and that the executives in charge of each of the responsibility centers through out the firm should participate in their development in harmony with the planning premises. Meaningful participation in the planning process generates positive behavioural effects. Each manager in charge of major responsibility center will immediately initiate activities within his own functional spheres to develop a strategic long range profit plan and harmony with the tactical short range profit plan depending upon the receipt of the planning premises and procedural instructions.

4**) Development of Supplemental Analysis**

A number of important analyses may be developed supplementary to the short and ling-range profit plans. These analysis apply many useful managerial techniques in the decision making process, specific important analysis are planning model, simulation, cost-volume-profit ,marginal cost, return on investment ,linear programming models(LPP),variables expenses budget, and necessary statistics.

5) **Implementation of plans**

Implementation of management plans that have been developed and approved in the planning process involves the management function of directing subordinates in the accomplishment of enterprise objective and goals. Especially, communication is an important aspect of direction. Meaningful participation and control programmes are bases for the implementation of profit plans.

6) **Implementation of follow-up**

Follow up action is an important facet of effective control and preplanning. Performance reports indicate the status of performance by responsibility which is the basis for follow up action. It is also important to distinguish cause and effect. Analysis should be done to determine the favorable and unfavorable performance. Identifying the unfavorable causes that opposed to the results should be corrected. In addition, special type of follow-up procedure should be designed implemented continuously, it should be designed:

- To determine the effectiveness to corrective actions and
- To provide a basis to improve future planning and control producers.

2.2.14 Ratio Analysis in managerial Budgeting

2.2.14.1 Meaning

Ratio refers to the numerical or quantitative relationship between two items or variables. It is one number expressed by dividing one items of the relationship with the other. Ratio analysis of business enterprises centers on efforts to drive quantitative measure or guides concerning the expected capacity of the firm to meet its future financial obligations or expectation. It is a very powerful tool of company's strength, weakness, opportunity and threat analysis. Hence, ratio analyses are the process of identifying the financial strengths and weakness of the firm by properly establishing relationship between the items of financial statement.

2.2.14.2 Ratio Analysis; Relation with Managerial Budgeting

The ratio analysis can be of invaluable aid to management in the discharge of its basic functions of forecasting, planning, co-ordination, communication and control. By an analytical study of the past performance of the business, it helps in predicting and projecting the future. It assists in communication by conveying information, which is pertinent and purposeful to those for whom it is meant. It promotes co –ordination by a study of the efficiency of the business. Hence, ratio analysis becomes an integral par of targets. It becomes an integral part of managerial budgeting system. (Goyal, and M.M; 1997:496).

2.2.14.3 Categories of Accounting Ratios:

Ratios, in general, involve a process of standardization. They can be used to standardize reporting methods, financial statements, and other relevant variable, allowing for comparisons over time and cross- sectional between firms.

The second purpose of ratios, however, is the more important and meaningful one. Ratios measures a firms crucial relationships by relating its input(cost) with outputs(benefits) and facilitate comparisons of these relationships over time and across firms.(White, Sondhi and Fried, 1994:345). Some major ratios are given below:

1. Liquidity ratio
2. Leverage or Capital structure ratio
3 Activity or Velocity or Turnover Ratios
4. Profitability ratio

(1) Liquidity Ratios:

Liquidity ratios are the ratios that provide the quick measure of the positions or the ability of the firms to meet its current obligation. In other words, liquidity ratios are the indicators of short term solvency or financial strength of the firms. The most common ratios under this group comprise: (a) current ratio and (b) Quick or Acid test ratio

(a) Current ratio:

Current ratio establishes the relationship between current assets and current liabilities. It is computed by dividing current assets by current liabilities.

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

(b) **Quick / Acid Test Ratio**

This ratio establishes a relationship between quick or the liquid assets and current liabilities. It is also called acid test ratio. This ratio is a more accurate guide to measure the liquidity position of any firm. An asset is liquid, if it can be converted in to the cash immediately or reasonably soon without the loss of any value. The calculation of quick ratio includes only those assets that are most liquid in nature i.e. Cash, marketable securities etc. quick assets are calculated by deducting inventories and prepaid expenses from total current assets because these are not highly liquid.

$$\text{Quick ratio} = \frac{\text{Quick assets}}{\text{Current liabilities}}$$

(2) Leverage or Capital Structure Ratios:

Leverage or Capital structure or Solvency (long- term) ratios shows the degree or extent of debt availed by the organizations and its capacity to serve such debt. In other words, creditworthiness and the financial risk of the organization can be judged with the help of these ratios. The usual ratios computed in this group are (a) Debt equity ratio, (b) Debt to total capital ratio, (c) Interest coverage ratio, (d) Fixed charge coverage ratio.

(**3) Activity or Velocity or Turnover Ratios**

Resources of an enterprise are invested in assets with a view to generate income mainly through sales. Activity ratios reflect the efficiency with which an organization manages and uses assets in generating sales. These ratios indicate the degree of conversions of assets into sales. The usual ratios computed under this group comprises (a) Inventory Turnover ratio (b) Debtors or accounts receivable turnover ratio (c) Average collection period or age of receivables (d) Fixed assets turnover ratio (e) Total assets turnover ratio (f) Capital employed turnover ratio.

(4) Profitability Ratios:

An organization should earn profits to survive and grow over the long period of times but not at the cost of employees, customers and society. Obviously, organizations will have no future if it is unable to make reasonable profit from its operations. The profitability ratios are used as a measure to judge the operating efficiency (success or failure) of an organization. Profitability ratios are usually computed by relating it either with sales or investment as listed below. (Wagle,Keshab. N. & Dahal, Rewan,K.; 2006:6.1).

(1) **Profitability ratios related with sales**.

(a) Gross profit margin

(b) Net profit margin

(c) Operating expenses ratio

(2) Profitability ratios related with investment

(a) Return on total assets

(b) Return on net assets or capital employed

(c) Return on shareholders fund

(d) Return on equity / ordinary/ common shareholders fund/ investment/ equity

(e) Earnings per share

(f) Dividend per share

(g) Earning yield or earning price ratio

(h) Dividend yield ratio

(i) Price earning ratio

(j) Market value or book value ratio

2.2.15 Classification of Budgets

The classifications of budges are as follows:-

A) On the basis of time

- Long term Budget
- Short term Budget
- Current Budget\

B) On the basis of function

- Sales Budget
- Production Budget
- Direct material Budget
- Direct labor cost Budget
- Direct material purchase Budget
- Cost of production Budget
- Selling and distribution expenses Budget
- Cash Budget
- Capital Budget

C) On the basis of flexibility

- Static Budget
- Flexible Budget

D) On the basis of nature of business activities

- Capital expenditure Budget
- Operating expenditure Budget

2.2.16 Master Budget

A complete set of financial plan for a business firm is often called the maser budget. The master budget consists of many functional budgets including a sales budget, a production budget, a purchase budget, an expenses budget, an equipment purchase budget and a cash budget. Once all of these budgets are completed, the master budget for entire firm is prepared. When all budgets have been prepared, the budgeted profit and loss account and balance sheet provide the overall picture of the planned performance for the budget period.

The Institute of Cost and Work Accountant, England defines it is "The summary budget, incorporating its component functional budgets, which is finally approved, adopted and employed".

The master budget embraces both operating decisions and financial decision. The operating decisions are incorporated in operating of functional budgets. Functional budgets are basis for master budget. That is, preparation of master budget is not possible without preparing functional budgets. The preparation of master budget is complex process and it involves the effects of many people from all levels of management. There are following basic steps in preparing a master budget:-

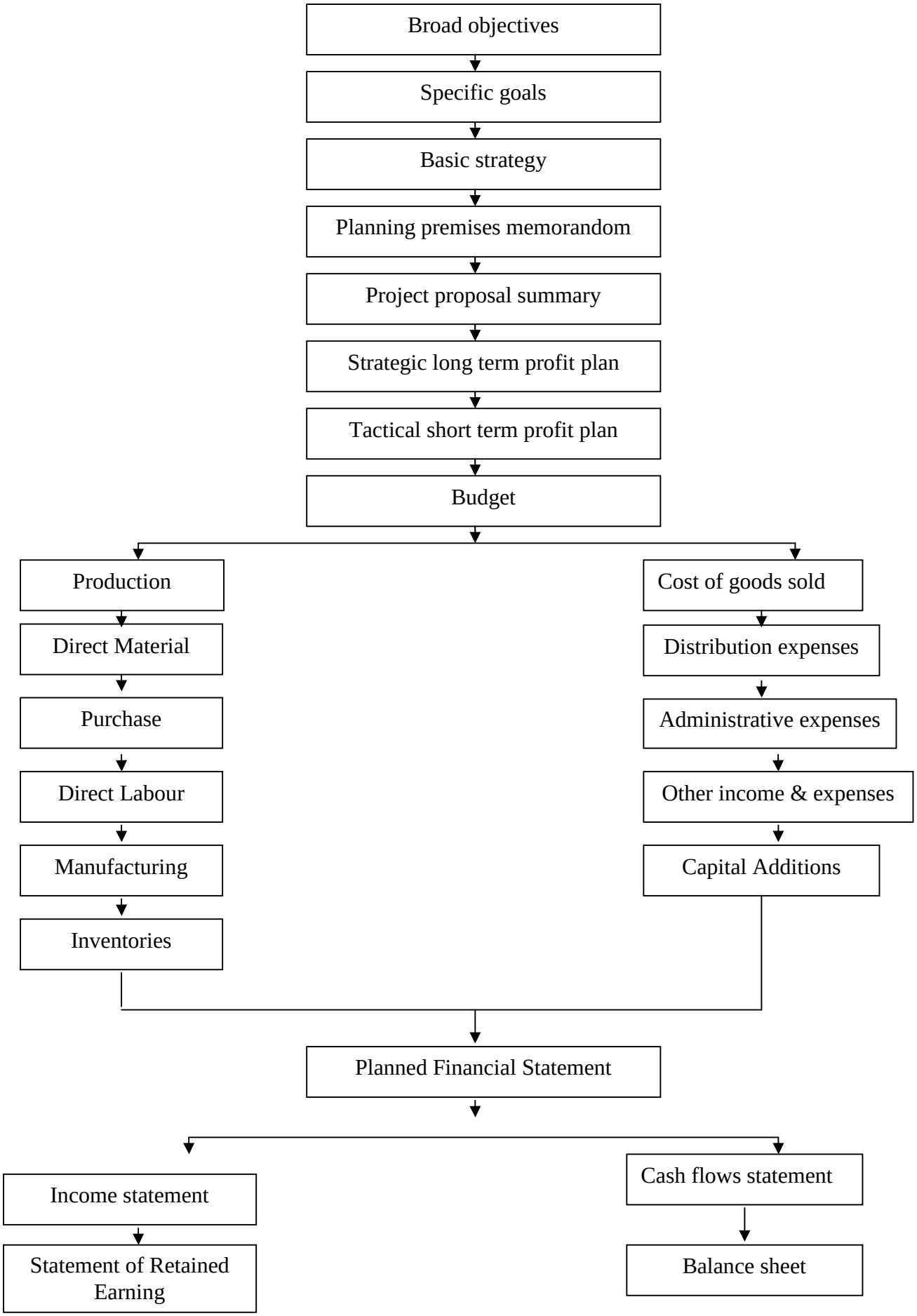
- Forecasting demand
- Identify cost for responsibility center
- Estimate production costs
- Specify operating objective
- Develop a sales budget

- Develop a production budget
- Develop a purchasing budget
- Develop budgets for responsibility centers
- Formulate a profit plan
- Compare profit plan with operating objectives
- Formulate a projected cash budget
- Prepare a projected statement of financial position

(Schermerhorn John R.JR, 1984:250)

Development of profit plans through functional budget.

Development of PPC plans (Welsch, Hilton and Gordon, 1990:156)


Broad objectives
Specific goals
Basic strategy
Planning premises memorandom
Project proposal summary
Strategic long term profit plan
Tactical short term profit plan
Budget
Production
Direct Material
Purchase
Direct Labour
Manufacturing
Inventories
Cost of goods sold
Distribution expenses
Administrative expenses
Other income & expenses
Capital Additions
Planned Financial Statement
Income statement
Statement of Retained Earning
Cash flows statement
Balance sheet

2.2.17 Sales plan or sales Budget

A sales budget is a detailed schedule of expected sales for the coming period. Sales budget is he starting point in the preparation of the comprehensive master budget. All the other plans and budgets are dependent upon the sales budget. The preparation of sales budget is based upon the sales forecast. A Variety of methods are used to forecast the sales for the planning period. The sales plan should be worked out on a sound and reasonably detailed basis. It should reflect seasonal influences and any anticipated irregularities in sales. It should be broken down not only into time periods but also into geographical or responsibility areas by the use of sales quotas. A well developed sales plan is generally built up on a quota basis in the first place. Adequate sales planning is basic fundamental to profit planning program because

- It provides the basic management decision about marketing.
- Based on those decisions that is an organizational approach for development a comprehensive sales plan.

Unless there is a realistic sales plan, practically all other elements of profit plan will be out of touch with reality. The sales plan is the foundation for periodic planning in the firm because practically all other enterprises planning is built on it. The primary sources of cash is sales; the capital additions needed, the amount of expenses to be planned, the manpower requirements, the production level, and other important operational aspects depend on the volume of sales. (Garrison, 2000:165)

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2.2.17.1 Sales planning and Forecasting

Although sales planning and forecasting are related, they have distinctly different purposes. A forecasting is not a plan; rather it is a statement and/or a quantified assessment of future conditions about a particular subject based on one or more explicit assumptions. A forecast should always state the assumptions upon which it is based. A forecast should be viewed as only one input the development of a sales plan. The management of a company may accept, modify or reject the forecast. In contrast, a sales plan incorporates

management decisions that are based on the forecast, other inputs, and management judgments about such related items as sales volume, prices, sales efforts, production, and financing.

A sales forecast is converted to a sales plan when management has bought to bear management judgment, planned strategies, commitments of resources and managerial commitment to aggressive actions to attain the sales goals.

2.2.17.2 Components of comprehensive sales plan

A comprehensive sales plan should satisfy the requirement of the overall comprehensive PPC program. The components of comprehensives sales plan are as:-

Components	**Strategic plan**	**Tactical plan**
Management policies and assumptions	Broad and General	Detailed and specific for the year
Marketing plan (Sales and Service revenue)	Annual amounts major groups	Detailed by product and responsibility
Advertising and promotion plan	General by year	Detailed and specific for the years
Selling and Distribution expenses plan	Total foxed and total variable expenses by year	Fixed and variable expenses by month and responsibility

(Gahendra Fago; 2004:8)

2.2.17.3 Development of comprehensive sales plan

Welsch, Hilton and Gordon suggest the following steps in developing a comprehensive sales plan:-

Step (1) Develop management guidelines for sales planning.

Step (2) Prepare sales forecast

Step (3) Assemble other relevant data:

- Manufacturing capacity
- Source of raw materials and supplies
- Availability of key people and labor force
- Capital availability
- Availability of alternatives distribution channels.

Step (4) Develop Strategies and tactical sales plans. There are four different participative approach widely used in the process of developing sales plan.

- Sales force composite
- Sales division managers composite
- Executive decision
- Statistical approaches

Step (5) Secure managerial commitments to attain the goals in the comprehensive sales plan.

2.2.18 Production Budget Plan

After the sales budget has been prepared, the production requirements for the forth-coming budget period can be determined and organized in the forms of a production budge. This entails the developments of policies about efficient production levels using of productive facilities and inventory levels. The quantities specified in the marketing plan adjusted to confirm to production and inventory policies, give the volume of goods that must be manufactured by product and by interim time period.(Welsch,Glenn A;1992: 210).

The Production budget is a quantity budget which lays down the quantity of units to be produced during the budgeted period. For developing a production budget, the following steps should be followed:-

- To establish policies for inventory levels.
- To determine the total quantity of each product that is to be manufactured during the budget period.
- To schedule this production to interim periods.

Production budget is the initial step in budgeting manufacturing operations. To plan production effectively, the manufacturing executive must have information relative to the manufacturing operations necessary for each product.

2.2.18.1 Steps in Developing the Production Plan

Following steps are involved in developing the production plan.

- Recasting of sales budget
- Production analysis.
- Scheduling.
- Dispatching.
- Inspection.

The following formula is generally used to determine the planned production

Requirement for sales (Units	xxx
Add: desired final Inventory levels of finished goods	xxx
Total required production	xxx
Less: Beginning Inventory of finished goods	xxx
Planned production for the year	xxx

Or, planned production = Sales volume + closing inventory – opening inventory

2.2.19 Material Budget

After production needs have been computed, a direct materials budget should be prepared to show the materials that will be required in the production process. The production budget gives information about the units to be produced and on this basis that the need of the raw material is estimated. Based on the production budget, the quantities of each material to be used is

determined and this determination of material usage leads to the solution of the problem of when and how much to purchase of each material.

The objectives of material budget are as follows:-

- To provide quantity data to compute material cost per unit.
- To establish effective inventory policy.
- To prepare effectives cash budget.
- To introduce effective control system on material use.

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2.2.20 Direct Labour Budget

Effective plan of labour cost are essential ingredients in an overall programme of PPC. Labor cost includes all expenditure for employees. These employees are top executives, middle management personnel, staff officers, supervisors and skilled and unskilled workers. Direct labour cost plan should be developed by responsibility center, by interim period and by products. Planning and controlling labour costs involve major and complex areas such as (a) Man power needs (b) Recruitment (c) Training (d) Job evaluation and specification (e) Performance evaluation (f) Union negotiations and (g) Wage and Salary administration. (Singh, Ojha and Acharaya; 2004:373)

The main objectives of direct labour budgets are as follows:-

- To prepare manpower planning
- To assess labour requirement
- To estimate per unit labour cost
- To control the labour budget.(Gahendra Fago, 2nd edition 2004:102)

2.2.21 Manufacturing Overhead Budget

Manufacturing overhead is that part of total production cost not directly identifiable with specific products or jobs. Manufacturing overhead includes many dissimilar expenses, therefore, it causes problems in the allocation of these cost to products. This is the total of indirect materials cost,

indirect wages and indirect expenses of the factory. There are two distinct types of responsibility centers in most manufacturing companies, producing and service. Responsibility for the operation of each department should be classified separately in the chart of accounting department. Finally, the expense of each department should be planned and controlled separately. (Sharma, Ojha, Bajrcharya and Goet;2005:374)

2.2.22 Administrative Expenses Budget

Administrative expenses include those expenses other than manufacturing and distribution. They are incurred in the responsibility centers that provide supervision of and service to all function of the enterprise, rather than in the performance of anyone function. Because a large portion of administrative expenses are fixed rather than variable and they can not be controlled. Besides, certain top management salaries, most administrative expenses are determine by management decision.

It is advisable to base budgeted administrative expenses on specific plans and programs. Past experiences adjusted for anticipated changes in management policies and general economic conditions are helpful. Because most administrative expenses are fixed, and analysis of the historical record will often provide a sound basis for budgeting them. **(**Singh, Ojha and Acharya, 2004)

2.2.23 Capital Expenditure Budget

The investment decision of the firm is commonly known as the capital budgeting or capital expenditure. Capital budgeting decision may be defined as the firms decision to invest its current funds most efficiently in long term activities in anticipation of an expected flow of future benefits over a series of year. (Pandey, I.M.; 1991:484)

Capital expenditures are investment because they require the commitment of resources at present to receive higher economic benefits in the future. Capital expenditures become expenses as their related goods and service are being use to earn higher future revenues or to achieve future cost saving.

A capital expenditure is the use to funds to obtain operational assets that will help earn future revenues or reduce future cost. The capital expenditure budget is the firm's formal plan for the expenditure of money to purchase assets. In profit planning, capital budgeting is the process of planning and controlling the strategic and tactical expenditure for expansion and contraction of investments in operating assets. **(**Glenn, 1990:320)

2.2.23.1 Evaluation of Investment Decision

Mainly and widely used methods of evaluating alternative investment decision are as follows:-

1) **Simple Method/Traditional Method/Non-discounted Method**: - The method which does not consider the time value of money is denoted as simple method of measuring capital expenditure decisions. there are two major methods of simple method, which are as follows:

a) Pay-back period Method: - Payback period is the minimum time required to recover the initial cash outlay from the annual cash inflows. Payback period method emphasizes in the quick cash return. It ignores time value of money.

(i) Even earning case:

$$PBP = \frac{I}{EC}$$

Where,

PBP =payback period

I = Investment

EC = Economic cash flow / Annual cash inflow (CFAT)

(ii) Uneven earning case

$$PBP = N + \frac{I - cumulativeECatN}{ECof\ (N - 1)year}$$

Where, N =Minimum no. of year when cumulative EC is very near to investment.

b) Accounting Rate of Return /Average Rate of Return Method:

This accounting measure represents the ratio of the average annual profits to the investment in project. The formula is,

Average rate of return (ARR) =Average annual net cash inflow

Cash outflow of the investment

2) **Modern Method /Discounted cash flow Method**: - Two methods are used under discounted cash flow methods.

A) Net Present Value Method (NPV)

Net present value is the excess of present value of cash inflows over the present value of cash outlay. The formula to calculate net present value is given below.

$$NPV = \sum_{t=1}^{n} \frac{A_t}{(1+k)} - C$$

Where,

K = Cost of Capital

T = No. Of years

A = Expected cash inflows

C = Initial cash outlays.

B) Internal rate of return (IRR) Method:-

Internal rate of return for an investment proposal is the discount rate that equals the present value of expected cash outflows with the present value of the expected inflows. The formula is as follows

$$A_0 \; X \frac{A_1}{(1+r)^1} + \frac{A_2}{(1+r)^2} + \ldots\ldots + \frac{A_n}{(1+r)^n}$$

Where,

R = internal rate of return.

A_0= Initial Investment at time Zero

A1, A2,…… .A_n= Cash inflows at future.

C) Profitability Index (PI)

Profitability index is the benefit cost ratio of a project, which is determined by dividing the present value of future net cash inflows by the initial cash outlays. The formula is,

$$PI \; X \frac{\sum_{t=1}^{n} \frac{A_t}{(1+k)^t}}{A_0}$$

Or $PI = \frac{TPV}{Io}$ Where, TPV=Total present value

Decision Criteria

The decision criteria can be summarized as follows

Methods	**Criteria**	**Result**
ARR	Higher the ARR	Accepted
PBP	Lower the PBP	Accepted
IRR	Higher the IRR (or IRR >K)	Accepted
PI	PI>1	Accepted
NPV	Higher the NPV	Accepted

2.2.24 Flexible Expenses Budget

A flexible budget estimates expenses at different possible levels of future operations .A flexible budget is not based only one level of activity. A

flexible budget is useful for the control aspect of budgeting but as it is an important part of the planning process to consider what control procedures will be necessary. It is usual to carry out the required cost analyses and breakdowns at the planning stage so that the budget may be flexed in due course if this is necessary. (T.Lucey; 1992:96)

The following are the main features of flexible budgeting. (Ghanendra Fago; 2004:176)

- Expenses or costs must be identified into fixed and variable expenses or costs.
- Output or activity must be measurable.
- Expenses must be related to output or activity.
- Flexible expenses budget for each expenses must be for specified time period and relevant range of output.
- For planning and controlling purpose, flexible budget formula must be developed for each expense in each responsibility.

2.2.25 Cash Budget

The cash budget shows the firm's projected cash inflows and outflows over some specified period. It is the most significant device to plan for and control cash receipt and payment. It provides much more detailed information concerning a firm' future cash flows. It is useful in determining when cash surpluses or shortages will occur. Plans can then, be made to borrow to cover shortages or to invest surpluses. Most companies should develop both long term and short term plans about their cash flows. The short-term cash budget is included in the annual profit plan. The cash budget is a projection or forecast of future cash receipts and cash disbursements over some time interval. It provides the financial executive with an overview of probable pattern of cash flows in the future. The cash budget enables the financial executive to determine whether and when additional financing will be required and provide

lead time for taking the actions necessary to provides for future financing. **(**J.Fred Weston and Thomas E Copeland, 9th edition, page 762).

We can present the cash position of business enterprises in the table as follows:

Items	Jan.	Feb.	March.	Total
A. Beginning cash balance				
Add: Cash receipts from sales and from collection -Borrowing-Issue of debentures -Loans -Issue of share -Sale of Investment -Receipts of investment and Fixed assets -Receipt of interest and dividend -Royalty and commission received -Other sources				
B. Total receipt				
Total cash available (A+B)				
Less: Cash disbursements: -Cash purchase -Payments of creditors -Payments of wages and salaries -Repayment of loan -Payment of selling and administrative exp -Redemption of debenture -Purchase of fixed assets -Other payment				
C. Total disbursements				
D. Surplus/Deficit (A+B-C)				
E. Desired closing cash balance				
F. Surplus Fund Available for investment				

2.2.26 Income Statement

The budgeted income statement is one of the key schedules in the master budget. It is to be prepared under accrual basis rather than cash basis on the basis of other preceding budgets. The specimen of planned income statement is as follows:

Budgeted Income Statement

Particular	Amounts
Sales Revenue	XXX
Less: Cost of good Sold	XXX
Gross income	XXX
Add: Non-Operating incomes	XXX
	XXX
Less: Operating expenses	XXX
Non-operating expenses	XXX
Net income before tax	XXX
Less: Tax (a)…….	XXX
Net income after tax	XXX

2.2.27 Balance Sheet

Balance sheet is detailed picture of a firm. It represents the firm's economic resources and obligations. The balance sheet is the final document in the master budget and even in financial record keeping. The balance sheet shows the final or ending balance of all the account titles. So it can be said a list of the remainder balances of all assets, liabilities and equities. It is prepared at the end of the accounting period. Balance sheet can be prepared as follows:

Balance Sheet

As on 31st Dec…….

Liabilities and capital	RS.	Assets	RS.
Share Capital	XXX	Fixed assets	XXX
Profit and Loss A/C	XXX	Current assets:	XXX
Debenture	XXX	-Cash in hand	XXX
Long term loan	XXX	- Inventory	
Accounts payable	XXX	-Account Receivable	XXX
Bank loan	XXX	Preliminary exp	XXX
Provision for taxation	XXX	Discount on share	XXX
Outstanding expenses	XXX		XXX
Interest outstanding	XXX		
Total	XXX	Total	XXX

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2.2.28 Cost Volume Profit Analysis

CVP analysis examines the behavior of total revenues, total cost, and operating income as change occur in the output level, the selling price , the variable cost per unit, and / or the fixed costs of a product. (Hongren, Datar and Foster, 2003:367).

The objectives of CVP analysis is to establish what will happen to the financial results if specified level of activity or volume fluctuates. This information is vital to management, since one of the most important variable influencing total sales revenue, total costs and profits is output or volume. For this reason output is given special attention, since knowledge of this relations will enable management to identify the critical output levels, such as the level at which neither a profit nor a loss will occur (i.e. the break –even point). (Drury, 2000: 267)

CVP analysis is based on the relationship between volume and sales revenue, cost and profit in the short run, the short run normally being a period

of one year, or less , in which the output of a firm is restricted to that available from the current operating capacity. In short run, some inputs can be increased, but others cannot. For examples, additional supplies of materials and unskilled labor may be obtained at short notices, but it takes time to expand the capacity of plant and machinery. Thus, output is limited in the short run because plant facilities cannot be expanded. It also takes time to reduce capacity, and therefore in the short run a firm must operate on a relatively constant stock of production resources. Answer the questions listed below can be obtained from CVP analysis:-

- How much sales should be made to avoid loss?
- What should be the sales volumes to earn a desired or target profit?
- What will be the profit or loss at the specified level of sales?
- What will be the effect of change in price, cost and volume on profits?
- How will profits be affected when sales mix is changed?
- What will be the effect of planned expansion on cost- volume – profit relationship?
- Which product is the most profitable and which one is the least profitable?
- Should the sales of product or operations of a plant be dropped?
- Should the firm be shut down temporarily or not? (Wagle,Keshab. N. & Dahal, Rewan,K.; 2006:4.1).

2.2.29 Performance Reporting

To indicate the extensive reporting requirements, a business must fulfill and to focus on performance reporting. Performance reporting is an important part for internal management of a comprehensive profit planning and control system. Performance reports are usually prepared on a monthly basis and follow a standardization format from period to period. It provides necessary information related to each responsibility center. Performance reports are meant to report the comparison between actual results and budgeted targets.

The main objectives of the performance reports are the communication of performance measurements, actual results and the related variances.

It should be kept in mind that the user generally is not an accountant and that the report is to secure a user other than the report maker. Careful attention should be given on format. Performance reports should be standardized and relevant. The time gap between the decision point and performance reporting must be minimized to give equal importance to both new and past events as well as to increase efficiency.

Another important aspect of performance report is to implement follow up procedures. Follows up procedures should analyze both favorable and correction should be done. The main purpose of performance report is to show variances. Such variances should be expressed in amounts as well as in percentage of planned amount. Statistical control units should be developed to determine the significance of variances.

2.2.32 Analysis of Budget Variances

The difference between planned goals and actual results is called variance. Variance can be either positive or negative. Comparison of actual results with planned or budget goals has been emphasized as an integral part of the control process. A basic feature of performance report is the reporting of variances between actual results and planned goals. If variance is significant a careful management study should be made to determine the underlying causes. Variance analysis involves a mathematical analysis of two sets of data in order to gain insight into the underlying causes of variance.

There are numerous ways to study variances to determine the underlying causes. Some of the primary approaches are as follows:-

- Conferences with responsibility center managers, supervisors and others employees in the particular responsibility center involved.
- Analysis of the work situation including the flow of work, co-ordination of activities, effectiveness of supervision, and other prevailing circumstances.

- Direct observation
- Investigation by line manager on the spot.
- Internal audit
- Special studies
- Investigation by staff groups
- Variance analysis

Variance analysis involves a mathematical analysis of two sets of data in order to gain insight into the underlying causes of variance.

Following are the basic steps in analyzing variances

a. Setting standards.
b. Measurement of performance
c. Analyzing variances
d. Taking corrective action.

If actual performance meets the standards, the achievement is considered good. If there is big gap between the actual results and the standards, the performance is considered poor. The expression of this relationship can be seen in the simple formula:-

Actual cost = Standard cost + variance

By rearranging the term in the formula, we can determine the variance if we know standard and actual costs:

Variance = Actual costs – Standard costs

One should be careful that a favorable variance in the paper report does not always mean the operating efficiency. It might happen due to the overstatement of standard costs. The Manipulation of standard with the intention of showing favorable variance in performance reports is a big psychological problem, known as the padding problem, in organizations.

2.3 Review of Previous studies

1 Mr.Share Sing Bhat (March, 2008)

Mr.Bhat has presented an important report in titled "Confusions and problems in Development of Hydropower in Nepal", The main conclusion and recommendation of his report as follows:-

- NEA is neither responsible for managing transmission for all generation developers nor it is transmission planner. In fact Electricity Act 2049 has no insight of power.

- Government should not keep confusion about priority of conservation and hydropower. Well, if hydropower happened to be declared as priority then create mechanism for single door clearance of relevant issues. Government has no commitment on the tax issue and every thing is kept in dilemma.

- For the use of resources government has levied royalty which the developer must pay. IF government has issued the license, it means go and develop. Where is the commitment and its implementation against the levied royalty? No power plant can be developed without using single piece of private land. There is legal provisions and mechanism for acquiring private lands. But do the legal provisions work? If developer is left to mange everything by his own, then sorry hydropower will not develop.

2 Mr.Chhatra Bahadur Bajracharya(March,2008)

Mr. Bajracharya has presented on important report in titled "A Revolution In Hydropower Development ….A Must" on March 2008. The main conclusions and suggestion of his report are as follows:-

- Electricity generation is an important part of the infrastructure development of any country. A conducive national strategy must be launched to enhance and accelerate the electricity generation so as to meet the yearly demand and then after export the surplus energy to neighboring countries, which would uplift the economy of the country in the long run. Bhutan exports 1500 MW to India which has led to a faster growth of economy of that country. Similarly Laos exports electricity to Thailand which is also contributing a lot to

the economy of that country. In this way many countries are exploiting their water resources and exporting electricity to another country. This has certainly boosted their economy. Nepal also must follow this path.

- We must be dictated by the sole fact that hydropower development is a priority sector and it contributes directly or indirectly in the social, political, industrial and economical development of our country. Hence, Nepal must come out of this power scarcity as soon as possible and then after must export the surplus power continuously which would certainly uplift our country's economy also. Therefore some drastic measures must be taken to exploit this enormous hydropower potential of our country. For this, a revolution in hydropower development is must for the economic, social and political development of our country and accordingly conducive national strategy must be set up in our country

- People of Nepal are fed up with the slow pace of the hydropower development in Nepal. Prevalent laws, rules and regulations must be altered, relaxed and simplified wherever and whenever it is necessary .Government of Nepal must have a liberal and conducive policy for this sector. A strong message and a commitment must be provided by the Government of Nepal to the concern investors that, developing a hydropower project in Nepal is a very lucrative job. The commitments must be translated in to reality by altering the prevalent clumsy laws, rules and regulations or by imposing new conducive laws, rules and regulations so as to accelerate this development process.

2.4 Review of Unpublished Thesis

There are numerous thesis reports for the partial fulfillment of Master of Business Administration and Master of Business Studies in Tribuvan University. Among those thesis reports some are related to the profit planning and vary few are related to the Comparative study of budgetary system and revenue planning of public utility concern. Some of those thesis reports are viewed here:

1. Mr.Hari Prasad Panta(2004)

Mr.Hari Prasad Panta submitted his research in "Budgetary Practice in Nepal Telecom and Nepal Electricity Authority" by covering the six year plan from fiscal year 2054/055 to 2059/060.After his research work Mr. Pant reach the following conclusion:

- NTC and NEA cannot provide sufficient services to their customers. So customers are not satisfied.
- NTC and NEA have no any clear cut rules and regulation for separation the fixed and variable cost.
- Electricity leakages, theft and wastage is one of the important problems of NEA which reduce the profit earning of the corporation.
- They are not prepared all budgets to reduce and utilize the cost and expenses.
- NTC and NEA have not adopted suitable techniques to control the cost. So the cost is increasing rend in each fiscal year.
- Fixed cost of NTC and NEA is very high which reduces the earning of each organization.
- NTC and NEA have not proper account receivable policy to collect their account receivable in time.
- NTC and NEA have totally neglected the concept of variance analysis.

2. Mr. Ashok Shrestha (2004)

Mr. Ashok Shrestha has pointed out some features and problems of profit planning in the context of Nepalese enterprises in his research work "A study of profit planning in public Utilities of Nepal: A comparative study of NTC and NEA" .After his research work Mr. Shrestha reach on following conclusion:

- NEA is suffering from high rate of power loss as sales are below than the production while NTC fails to produce according to demand.
- Lack of co-ordination among various responsible departments.

- ❖ Failure in achieving objectives and goals due to inadequate evaluation of internal and external variables.
- ❖ Overheads are not classified systematically and it creates problems to analyze its expenses properly.
- ❖ Lack of dynamic and effective cost control programs as well as there is no separate costing department and responsible accounting system.
- ❖ The NTC and NEA fail to maintain its periodic performance report systematically.
- ❖ There exists unnecessary centralized decision making and planning system. Lower level participation is not encouraged. It denotes the absence of MBO principle of management in the organization.

Major Suggestions (Recommendations) by Mr. Ashok Kumar Shrestha

- ❖ Trained and qualified manpower for budgeting and planning should be hired and present manpower should be trained to develop and implementation the profit plans effectively.
- ❖ NTC and NEA should decide and make policy about research and development, productivity, capacity utilization and cost control.
- ❖ Cost reduction program should be formulated and applied.
- ❖ Capital expenditure should be planned in advance and discounted cash flow techniques should be applied to evaluate the proposals.
- ❖ NTC and NEA should decide to develop effectively program to expand growth rate. Both NTC and NEA should adopt participatory management policy (MBO).

3. Mr.Bindeshwar Prasad Singh(2007)

Mr.Bindeshwar Prasad Singh submitted his research in "Comparative Study on Budgetary Practices in Nepalese Public Utility Concern (NTC,NEA & NWSE)" by covering the six year plan from fiscal year 2056/057 to 2061/062.After his research work Mr.Bindeshwar Prasad Singh reach the following conclusion:

- Lack of co-ordination between various departments, lack of proper management and managerial capability and also lack of professionalism among employees are common in all enterprises.
- Objectives of these enterprises are not clear. There is always conflict between social objectives and profit objectives.
- There is lack of skilled planners and budgeting experts. Budgets are prepared on traditional and adhoc basis.
- Financial Department and few higher level officials only formulate plans and policies of NTC, NEA & NWSC.
- NTC, NEA and NWSC have no practice of systematic forecasting. Sales forecasts are made based on previous sales figure and production capacity.
- High cash and bank balance laying idle in each organization reflects inefficiency in the utilization of liquid assets.
- NTC, NEA and NWSC have not practice of analyzing the variances. Management of these companies are not conscious to rethink about the causes of variances.
- Cost-volume profit analysis has not been considered while developing the sales plan, fixed assets purchase plan etc. Increase in BEP each year is not good symptom for the corporation and authority.

After his detail analysis of Comparative Study on Budgetary Practices in Nepalese Public Utility Concern (NTC, NEA and NWSC) Mr.Bindeshwar Prasad Singh point out the following major recommendation to improve the formulation and implementation of budgetary practices

- NTC,NEA and NWSC should formulate clear-cut goals, objectives, policies ,long term plan and strategies to create and maintain an optimum enterprises environment that maximize the interest of the organization and motivation among all employees.

- ❖ Trained and qualified manpower for budgeting and planning should be hired and existing human resources should be trained to implement budgeting effectively.
- ❖ All these enterprises should adopt participatory management as well as management by objectives (MBO) which create motivation and easiness in working activities of all the employees.
- ❖ Sales forecasting should be made on the realistic ground. Forecasts should include strategic and tactical forecast that are consistent with the time dimension used in budgeting.
- ❖ NTC, NEA and NWSC should develop their overhead expenses budget in a well classified and scientific way so as to reduce overhead expenses and increase profit.
- ❖ NEA should give emphasis to private and foreign investors for the development of power production of all scales.
- ❖ Capital expenditure should be planned in advance and discounted cash flow techniques should be applied to evaluate the proposal in NEA.
- ❖ NEA and NWSC should stress on an efficient utilization of fixed assets. NEA & NWSC should develop the capital budgeting techniques more scientifically

4. Khagendra Prasad Ojha(2000)

Ojha (2000) has conducted a research "Profit planning in manufacturing PEs, A case study of royal Drugs Ltd and Herbal Production and processing Co. Ltd." This research was mainly focused with the practice of profit planning and its effectiveness in RDL and HPP Co.Ltd. This research covers six years data from 1991/92 to 2000/01.Researcher has pointed out various finding and recommendations. Some remarkable finding and recommendations are follows:-

- ❖ Inadequate planning of profit due to lack of skilled planner.
- ❖ Inadequate authority and responsibility to planning department
- ❖ Failure to establish adequate forecasting system.

- ❖ Lack of entrepreneurship and commercial concept in overall operation of the enterprise.
- ❖ Failure in achievement due to in adequate evaluation of internal and external variables.
- ❖ Researcher has summarized finding by starting plans are formulated on traditional adhoc basis due to lack of budgeting expert and skilled planners.

He has recommended followed a system of periodical performance reports. He has recommended various recommendations to improve the profit planning system of this PEs. Among them the major recommendations are as follows:-

- ❖ A systematic approach to comprehensive profit planning should be adopted.
- ❖ System of periodic performance reports should be strictly followed.
- ❖ Cost –volume profit relationship should be taken into consideration while developing sales plan and pricing strategies.
- ❖ The enterprises should be necessary to develop the alternative for the earning of profit.
- ❖ There should be annual evaluation of the statement of the board objectives of these enterprises by the executive committee.

5. Mr. Bhushan Shakya (2004)

Mr. Bhushan Shakya has made research on "Profit Planning and Control in public utility enterprises in Nepal with reference to NTC". The major findings of the study on the basis of different analysis, observations and informal discussions are as follows.

- ❖ The sales achievement in terms of sales revenue of NTC is appreciable however it is not satisfactory in term of sales unit.
- ❖ NTC prepares short –range sales budget classifying the service type (Consumer type) but it does not prepares long term sales budget in details

- There is very little positive correlation between budgeted and actual production.
- There is no systematic classification of overhead into manufacturing overhead, selling and distribution overhead etc.
- NTC is not able to meet the demand. However the gap between demand and distribution is narrowing.
- Cost are not properly segregated as fixed and variable.
- There isn't any practice of preparing flexible budget.

Major Suggestion (Recommendations) by Mr. Bhushan Shakya

On the basis of the major findings of the study following recommendation are made to improve the formulation and implementation of profit plans.

- For the purpose of effective control over the costs, overhead expenses should be allocated under appropriate headings.
- In order to maintain the production cost, cost segregation should be clearly made and must do systematically in scientific manner.
- There should be proper communication of plan from top level to the lower level management.
- NTC should conduct training on professional development of every level of staff.
- NTC should re-structure its administrative hierarchy and chain of command to make it more efficient focused and goal oriented.
- There should not be unnecessary intervention from the government. The management should be gives full authority responsibility and accountability.

6. Mr. Ghana Shyam Thapa(2004)

Mr. Ghana Shyam Thapa has made research on "Profit planning in Nepalese Public enterprises:- a case study of Nepal Electricity Authority", submitted to facility of management Shanker DEV Campus for the partial

fulfillment of M.B.S on 2004 , august . In this study Mr. Thapa has pointed out following major finding and recommendations, which are as follows:-

- NEA prepares both tactical and strategic profit plan but strategic plan is confined only to the top level executives.
- Achievement of capital expenditure budget is satisfactory.
- NEA has not maintained sound liquidity during the study period.
- NEA has not prepared plan and program for agriculture sector's consumption of electricity.
- NEA has not considered demand determinates such as family income, price of electricity, connection charge, cost of alternatives available, cost of auto generation of electricity and reliability of NEA service while forecasting demand.
- Operating costs have not been controlled effective during the study period.

After his detail analysis of Profit Planning in Nepalese Public enterprises a case study of NEA Mr. Ghana Shyam Thapa point out the following major recommendation to improve the Profit planning and control.

- Make investment in small projects and avoid big projects without prior feasibility analysis in term of finance and cost benefits.
- Improvement's in the present accounting systems.
- A systematic approach to comprehensive profit planning and control is essential. To adopt these approaches existing planners should be trained and new should be hired. This contributes to increase the profitability of NEA.
- NEA should reduce the long term loans to reduce the high interest amount. At a result of which the amount of overhead will be reduce. Similarly, NEA should gives emphasis in internal financing to reduce excess internal economic burden. NEA should complete its projects timely so that they will return to repay long term loan in time.
- NEA should adopt discounted cash flow techniques to evaluate the large projects.

- ❖ Cost volume profit relation should be considered while developing the sales plan and pricing strategy .To maintain the breakeven point; NEA should control fixed and variable cost and should increase sales volume.

2.5 Research Gap

Most of the research studies above are basically related to profit planning and control system in NTC and NEA separately but have not explained about the budgetary system. These researches are lacking to explain in details about the statistical tool like mean $f\bar{x}$Ä,S.d (∃), coefficient of variation (C.V), probability error(P.Er) ,Coefficient of correlation(r) and t-test (t).

This study is different than other previous studies. It is based on recent data and focus on the comparative study of the budgetary system and revenue planning of NTC& NEA. It is one of the few research studies in the field of budgetary system taking the case study of public utility undertaking as NTC and NEA. This study also works to identify the various causes of loss, as suffered and analyses then recommended practical suggestions for both enterprises.

CHAPTER: - III
RESEARCH METHODILOGY

3.1 Introduction

Research methodology is a way to systematically solve the research problem. It refers to the various sequential steps that are to be adopted by a researcher during the course of studying the problem with certain objectives. This chapter refers to the overall research method from the theoretical aspects to the collection and analysis of data. This study covers quantitative methodology in a greater extent and uses the descriptive part based on both technical aspects and logical aspect. Detail research methods are described in the following headings:

3.2 Research Design

Generally, research design means definite procedure and techniques which guides to study and provide ways for research viability. It is an arrangement for collection and analysis of data. This study is an examination and evaluation of budgetary system followed by public utility concern like NTC and NEA. The study is closely related with the various functional budgets and other accounting statements as well as the actual result of the budgets. The available information form primary and secondary sources are used to examine, explain and evaluate revenue planning and budgetary system of NTC and NEA.

To achieve the objective of this study, descriptive and analytical research designs have been used. Some statistical tools have been applied to examine facts and descriptive techniques have been adopted to analyze present budgetary system and revenue planning of NTC and NEA.

3.3 Population and Sample

The population of this study comprises three public utilities currently operating in the country. The sample consists of two judgmentally selected

public utility concerns NTC and NEA; these units are comparable to each other in various aspects.

3.4 Research Variables

The research variables of this study are related basically with financial statement of NTC and NEA. Budgeted and actual sales achievement both in unit & Rs and total cost, profit &loss, balance sheet, total assets, total capital employed, capital expenditures and various ratios of NEA and NTC are the research variables of presents study.

3.5 Sources of Data

Information is life blood of any research work. Data collection is the major task to gather information. Basic sources of data for the present research are both primary and secondary. The main sources of primary and secondary data are listed below:

1. **Primary sources**
   - Direct interview with financial managers, accountant and other related staffs.
   - Observation of various departments of NTC and NEA
2. **Secondary sources**
   - "VIDYUT" published by NEA, half yearly
   - Official records and publications of NTC and NEA
   - Different magazines and publications
   - Publication of Ministry of finance: Economic survey Unpublished thesis reports, newspapers, journals, and internet.

3.6 Data Collection Techniques

The research consists of both primary and secondary data. Since the nature of these two types of data is different, the data collection procedure also varies. To collect the secondary data, published materials are viewed in various spots. Books by different authors, unpublished thesis reports, journals,

magazines, and internet are used. Further more to collect secondary data, the researches visited SDC library, NCC library, Central library, NTC library and library of NEA. On the other hand, the primary data collected through interviews with AGM and other related staffs of NTC and NEA.

3.7 Period Covered

The study covers a time period of 6 years from F.Y. 058/059 to F.Y. 063/064., and the analysis is done on the basis of the available six years data.

3.8 Data analysis Tools.

The primary and secondary data collected from various sources leads to the logical conclusion, only if the appropriate tools and techniques are adapted to analyze such data. The collected data has been no meaning, if such data are not analyzed. Various financial and statistical tools have been used to analyses and interpret the data. These tools are CVP analysis, BEP analysis, Ratio analysis, mean, standard deviation, correlation coefficient, coefficient of variation, regression analysis, t-test, diagrams and graphs etc. Brief descriptions of statistical tools are given below:

3.8.1 Statistical Tools

Statistical tools are the measures or the instruments to analyze the collected data from different sources. In statistics, there are numerous statistical tools to analyze data of various natures. In this study, the researcher has used the following statistical tools to analyze the data:

3.8.1.1 Average/Mean

An average is a single value related from a group of values to represent them in someway, a value, which is supposed to stand for whole group of which it is a part, as typical of all the values in the group. (Gupta, 1992:238). There are various types of averages. Arithmetic mean (AM, Simple & Weighted), median, mode, geometric mean, harmonic mean are the major

types of averages. The most popular and widely used measure representing the entire data by one value is the AM. The value of the AM is obtained by adding together all the items and by dividing this total by the number of items.

Mathematically:

Arithmetic Mean (AM) is given by,

$$\bar{X} \text{ X} \frac{X}{n}$$

Where, $\bar{X}$ = Arithmetic mean

$\sum x$ = Sum of all the values of the variable X

n = Number of observations

3.8.1.2 Standard Deviation(±)

The standard deviation $(\pm)$ measures the absolute dispersion. The greater the standard deviation, the greater will be the magnitude of the deviations of the values from their mean. A small standard deviation means a high degree of uniformity of the observations as well as homogeneity of a series and vice versa.

Mathematically:

$$\pm \text{ X} \sqrt{\frac{1}{n} \quad (X \text{ Z} \bar{X})2}$$

3.8.1.3 Coefficient of Variance(C-V)

The standard deviation is absolute measures of dispersion; where as the coefficient of variation (CV) is a relative measure. To compare the variability between two or more series, CV is more appropriate statistical tool.

Mathematically,

$$CV \quad \text{X} \frac{\pm}{\bar{X}} \varepsilon \ 100$$

3.8.1.4 Correlation Coefficient (C.C)

When the relationship is of quantitative nature, the appropriate statistical tool for discovering and measuring the relationship and expressing it in a brief formula is known as correlation. If the values of the variables are directly proportional then the correlation is said to be positive. On the other hand, if the values of the variables are inversely proportional, the correlation is said to be negative, but the correlation is said to be negative, but the correlation coefficient always remains within the limit of + 1 to – 1. By Karl person, the simple correlation coefficient (between tow variables, say X and Y) is given by:

Correlation coefficient r_{xy} $\mathrm{X}\dfrac{(X\ \mathrm{Z}\bar{X}).(Y\ \mathrm{Z}\bar{Y})}{\sqrt{\ (X\ \mathrm{Z}\bar{X})^2}.\sqrt{\ (Y\ \mathrm{Z}\bar{Y})^2}}$

Where,

r_{xy} = is the correlation coefficient between two variables x & y

'r' lies between +1 to -1

When r = +1, there is perfect positive correlation

When r= -1, there is perfect negative correlation

When r = 0, there is no correlation

When r lies between 0.7 to 0.999 9 (or -0.7 to -0.999), there is high degree of positive or negative correlation

When r lies between 0.5 and 0.699, there is moderate degree of correlation

When r is less than 0.5, there is low degree of correlation.

3.8.1.5 Regression analysis

Regression and correlation analysis are the techniques of studying how the variations in one series are related to the variations in another series. Measurement of the degree of relationship between two or more variables is called correlation analysis and using the relationship between a known variable and an unknown variable to estimate the known one is termed as regression analysis. Thus, correlation measures the degree of relationship between the

variables while regression analysis shows how the variables are related. Thus, regression and correlation analysis determines the nature and the strength of relationship between variables (Sharma & Chaudhary, 2002:425).The equation of regression line where the dependant variables Y is determined by the independent variable X is given by:

Y = a + b X

Where

X=Value of the independent variable

a = Y – intercept

b = slope of the regression line (i.e. it measures the change in Y per unit change in X) or regression coefficient of Y on X.

Normal Equations on fitting y = a +bX are:-

$$Y = na + b \quad X ....(i)$$

$$XY = a \quad X + b \quad X^2 ....(ii)$$

3.8.1.6 Probable error of Correlation coefficient [(P.E(r)]

Probable error is an old measure of testing the reliability of the value of correlation coefficient. Probable Error is the calculated correlation coefficient in a sample of n pairs of observations. Probable error of correlation coefficient denoted by P.E(r) is obtained as:

$$\text{P.E(r)}\ 0.6745 \times \frac{1 - r^2}{\sqrt{n}}$$

Where,

$$\frac{1 - r^2}{\sqrt{n}} = \text{Standard Error (S.E)}$$

Reason for taking 0.6745 is that in a normal distribution 50% of observations lie in the range $\mu \pm 0.6745\sigma$ where μ and σ denote the population mean and standard deviation. The interpretations of the significance of correlation coefficient are as follows:

i) If r< P.E. (r), then the value of r is not at all significant.

ii) If r> 6 P.E. (r), then are is definitely significant.

iii) In other situation, nothing can be said with certainly.

3.9 Test of Hypothesis

A quantitative statement about population parameter is called a hypothesis. In other words, it is an assumption that is made about the population parameter and then its validity is tested. It may or may not be found valid in verification. The act of verification involves testing the validity of such assumptions which, when undertaken on the basis of sample evidence, is called statistical hypothesis or testing of hypothesis. The main goal of testing hypothesis is to test the characteristics of hypothesized population parameter based on sample information whether the difference between the population parameter and sample statistics is significant or not. The act of verification involves testing the validity of such assumption which, when undertaken on the basis of sample evidence, is called statistical hypothesis or the testing of hypothesis. For the test of hypothesis t-test is made in this study.

3.9.1 Student t-Test

Student t-test is useful statistical tool to see the significance of the difference between two sampled means, the population variance being equal but unknown **(**Gupta; 1991: 76). Student's-test is based on the assumption that the present population from which the sample is drawn in normal, the sample observation are independent and the population standard deviation is unknown. The test is applied for the sample less than 30.

If X1 ,X2 ,X3 ,……..Xn, and Y1 ,Y2 ,Y3 ,…….Yn be two independent random samples from the given normal population, null hypothesis is set as ,

Ho: $\mu_1 = \mu_2$ i.e. the sample means of X and Y do no differ significantly under the assumption that $\exists_1^2 = \exists_2^2$ i.e. population variances are equal

H1: $\mu_1 \neq \mu_2$ i.e. the sample means of X and Y differ significantly under the assumption that $\exists_1^2 \neq \exists_2^2$ i.e. population variances are not equal.

$$t = \frac{\bar{X} - \bar{Y}}{S\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

Where, $\bar{X} = \frac{X}{n_1}$, $\bar{Y} = \frac{Y}{n_2}$, $S = \sqrt{\frac{\sum (X - \bar{X})^2 + \sum (Y - \bar{Y})^2}{n_1 + n_2 - 2}}$

i.e. S^2 is and unbiased estimate of the common population Variance ∃ based on both samples. By comparing the value of /t/ with the tabulated value of t for n_1+n_2-2 degree of freedom and at 5% level of significance, null hypothesis is accepted or rejected. If the calculated value of t came to be less then the tabulated values, null hypothesis is accepted, otherwise rejected.

3.10 Methods of Data Presentation

The collected data (from both primary and secondary sources) are presented in simple and easily understandable tables. To make those data clearer and more informative such data have been presented in figures like bar diagram, trend line, and pie chart whichever is relevant to explain the data more effectively, based on the nature of data. After presenting such data in the tables and figures, are analyzed using various statistical, mathematical and financial tools and techniques.

CHAPTER: - IV
DATA PRESENTATION AND NALYSIS

4.1 INTRODUCTION

The main purpose of this study is to highlight the revenue planning and budgetary system in the context of public utility concern and NTC & NEA have been selected for this purpose. To accomplish this objective, this chapter of research paper will analyze the various aspects of budgetary practices and their achievement and their related variances. Revenue planning (sales planning) is an inherent part of the management process. Revenue planning helps the organization for development and acceptance of objectives and goals and moving an organization efficiently to achieve the objectives and goals. Revenue planning and budgetary system is an important technique of management.

Organization formulates effective profit plans to utilize resources optimally and to meet forecasted objectives. Management keeps records of all financial transaction to know financial position of the organization in present scenario and to take decision for future period. The base of profit plan is prepared to prepare functional and financial budgets .NTC and NEA have practice of preparing both strategic long-range and tactical short range budgets. Though it has prepare both long and short range profit plan, the present study does not deserve the quality to analyze it in detail, because of time and resources constraint. Therefore, the study is mainly focused on tactical short range budget. However, the sales, production and other related figures of long term are also presented and analyzed to know the overall economic and financial trend and to estimate the possible future trend of the companies. For this purpose, the study covers the period of six years from fiscal year 2058/059 to 2063/064.

The short-range profit plan is analyzed by taking relevant figures and previous functional budgets of one fiscal year as representative year. The techniques, process and other procedure of preparing budget, their use for the purpose of profit planning, comparison with actual achievement and analysis of variances for other years because such process are same for every year and repeated each year in the time of preparing and analyzing budgets. For this, fiscal

year 2063/2064 has been taken as representative year to analyze the short term plan.

4.2 Sales Budget

The sales budget is the foundation for planning in business organization. It is the primary step in developing the overall budget procedure and it is the primary source of cash and all other functional budgets are prepared on the basis of sales budget. The sales plan is the first step which opens the door of all financial plans. Public utility enterprises prepare sales budget which provides an estimate of goods to be sold and revenue to be derived from sales. The sales plan can be a good plan when an actual sale is not far from the planned sales. For this, sales budget preparation should be done in realistic ground. NTC prepares sales budget on the basis of different types of services and NEA on the basis of nature of consumers, services. Sales budget is prepared by NEA on the basis of the nature of consumer. Consumers are domestic, commercial, non-commercial, industrial, water supply and irrigation.

If sale budget is not realistic, all other budgets will not be realistic. Nepal Electricity authority (NEA) has a practice of formulation of sales budget for the coming fiscal year. It also forecasts demand for long term which is knows as long term load forecast. Load forecast of NEA are categorized into four types. They are very short term, medium term demand; short term demand forecast and long term demand projection. Very short term projection is made on daily or weekly basis for optimizing operation system and scheduling of hydro units. The short term forecast ranging between one to three years for reservoir management, planning of distribution system and so on. The medium term demand projection is about four to eight years which corresponds to the lead times required for major transmission and generation of projects. NTC and NEA apply following major methods for the future projections of demand of service and electricity.

i. Time trend Extrapolation
ii. Econometric multiple Regression
iii. Field Survey.

Now, the analysis begins to present the NEA's and NTC's previous sales performance and their achievement to know about the sales trend of past and to forecast the possible future trend of the company. The following table-1 presents the budgeted sales and the actual sales achievement in Rs. from fiscal year 2058/059 to 2063/064.

4.2.1 Sales Budget in Rupees **Table - 1**

Budgeted and Actual Sales Amount of NTC and NEA

(Rs.in million)

	NTC			NEA		
Fiscal Year	Budgeted	Actual	%ach	Budgeted	Actual	%ach
2058/059	5724.63	6159.52	107.6	11521.39	9476.2	82.25
2059/060	6184	7208.09	116.56	11498.06	11012.6	95.78
2060/061	7315	8312.24	113.63	12825.73	11874.7	92.58
2061/062	7979.79	8584.14	107.57	12998.72	12605.2	96.97
2062/063	9200.917	10413.65	113.1805	13940.84	13331.9	95.6319
2063/064	12909.46	13967.32	108.194	15315.62	14449.73	94.346
Total	49313.8	54644.96		78100.36	72750.33	
Average achievement			111.1224			92.92632
Mean $\frac{fX}{f}$	8218.967	9107.494		13016.73	12125.06	
S.D (∃)	2387.54	2534.053		1336.54	1602.487	
CV.	29.05%	27.82%		10.27%	13.22%	
CC.(r)		0.9955			0.945	
P-E (r)		0.00247			0.0294	
Y=a+bX	8408.528+1397.93X			11659.968+930.1728X		
Calculated value of t	2.25					

(Details calculations are in Appendix-1)

Source: Operation and Maintenance Budget book of NEA and NTC

The above table shows that the average sales achievement of NTC and NEA is 111.12% and 92.926% respectively. After analysis of budgeted and actual sales figure in each year of above two organizations, the targets set can be considered as realistic because actual sales do not vary, greatly than budgeted. It can be said that targets are based on historical data.

It is necessary to calculate the arithmetic mean, standard deviation and co-efficient of variation of the budgeted and actual sales figure of NTC & NEA in order to find out the nature of variability of sales budget and actual sales of different years.

The budgeted and actual mean, S.D. and C.V. of NTC are Rs. 8218.967 and 9107.495, 2387.54 and 2534.053, 29.05% and 27.82% respectively, which shows actual sales is less variable or more homogeneous or more consistent than budgeted because C.V. of actual sales is less than budgeted sales. Similarly, budgeted and actual mean, S.D. and C.V. of NEA are Rs. 13016.73 and 12125.06, 1336.54 and 1602.487, 10.27% and 13.22% respectively which shows that actual sales of NEA is more variable or more heterogeneous or less consistent than budgeted because C.V. of actual sales is more than budgeted sales.

Co-efficient of correlation is another statistical tool which is used to analyses the relationship between budgeted sales and actual sales. There should be positive correlation between budgeted sales and actual sales. In other words actual sales should increase as the budgeted sales increase or vise-versa. We can use Karl Pearson's coefficient of correlation which is denoted by (r) and it is used to find out the co-relation between budgeted and actual sales figures.

By calculating the (r), we can test whether there is positive co-relation between budgeted sales and actual sales or not. In other words whether or not the actual sales will be changed in the same direction of the changes in budgeted sales.

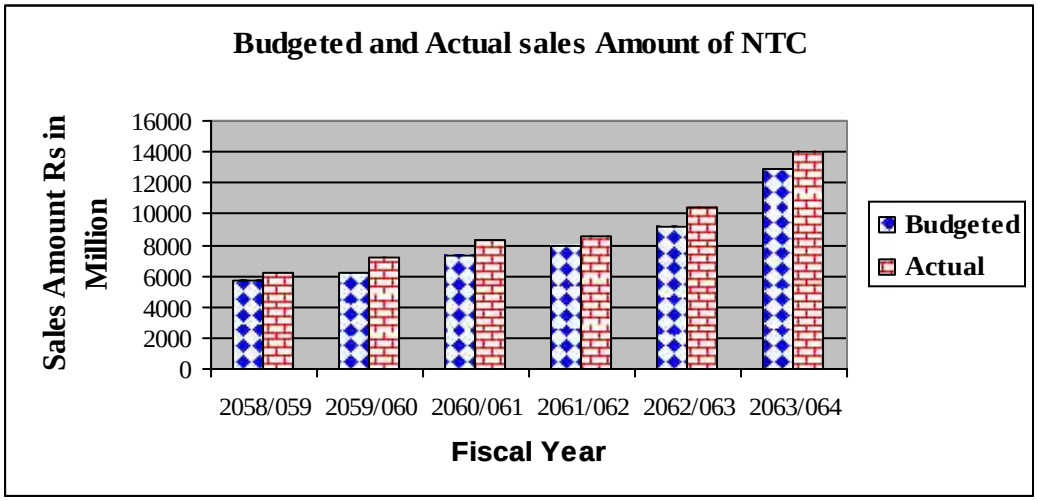
For the purpose of calculation of (r), budgeted sales figures and actual figures are denoted by ‘X’ and ‘Y’ which are assumed as independent and dependent variables respectively. The correlation coefficient of NTC and NEA are 0.9955 and 0.945 which shows high degree of positive correlation between budgeted sales and actual sales. The positive correlation between budgeted and actual sales means that the actual sales will change in the same direction as the budgeted sales changes.

The significance of 'r' is tested by the help of probable error of 'r'. We have probable error of NTC & NEA 0.00247 and 0.0294 respectively. Since the correlation co-efficient 'r' is greater than probable error, which verify the value or 'r' is definitely significant. Thus, it can be said that actual sales will go on same direction which that of budgeted sales.

A regression line can also be fitted to show the degree of relation between the targeted and actual sales and to forecast the possible actual sales with given planned sales for the year. To fit the straight –line trend, the time factor is considered as independent factor and sales as dependent variable. Then the straight- line trend of actual sales (Y) upon time is expressed by Y= a + bX, where 'X' is time representing different fiscal years. The trend line if NTC and NEA is Rs 8408.528+1397.93X and Rs 11659.968+930.1728X respectively. Future sales are calculated by putting value of X at future time period.

The calculated value of 't' test is 2.25 remains greater than the tabulated values 2.228 at 5% level of significance at 10 degree of freedom. Hence the alternative hypothesis is accepted which means that there is significant difference in the average sales of NTC and NEA.

Diagram - 1



Graph - 1

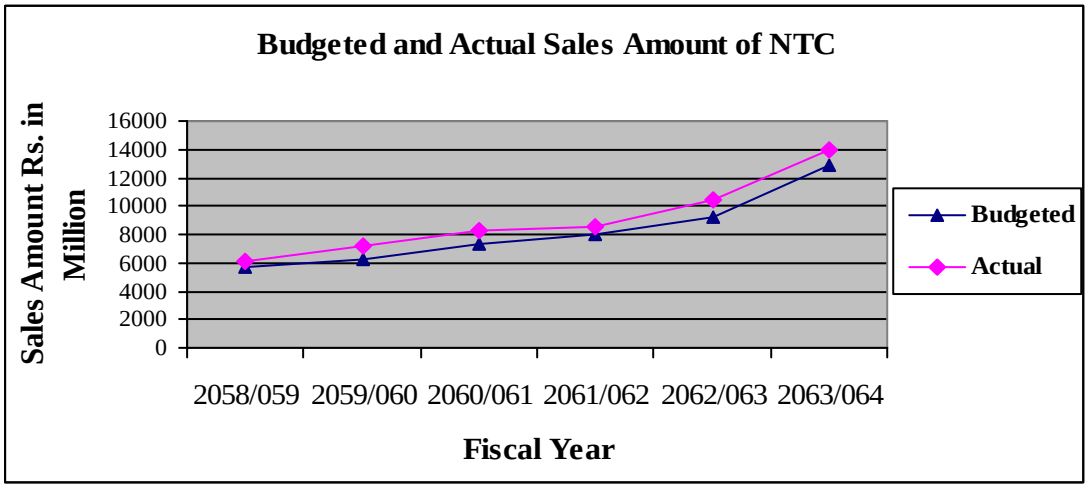
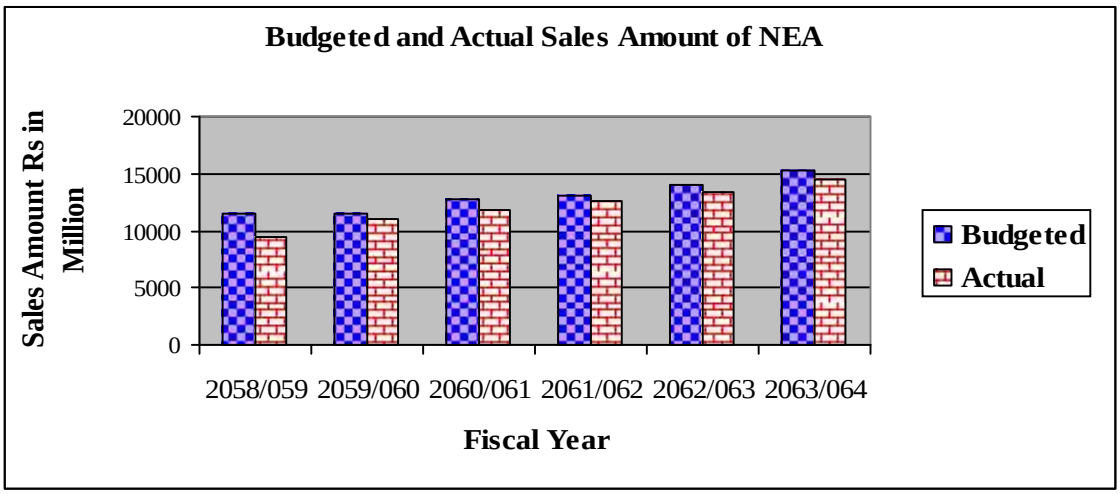


Diagram - 2



Graph -2

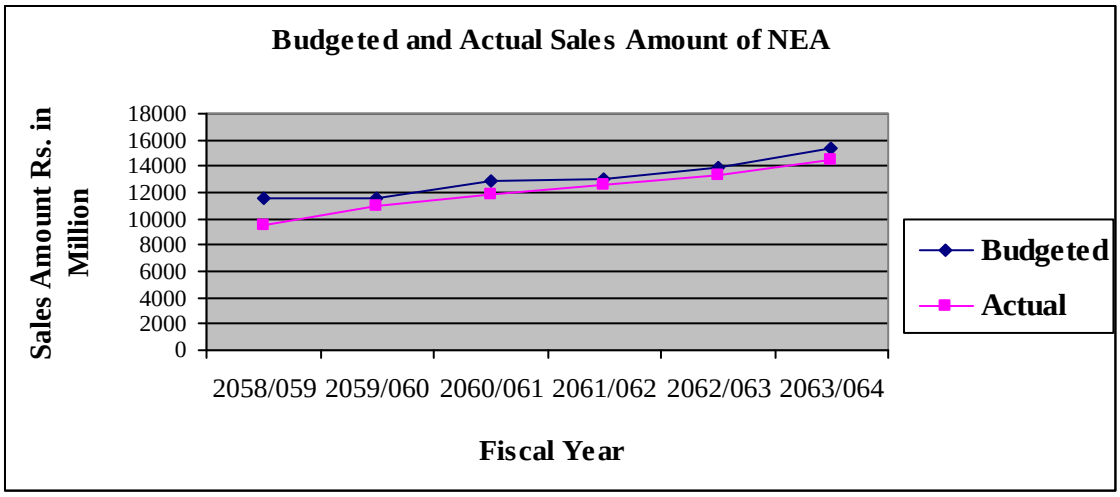


Table – 1.1

Summary of sales budget and Achievement of NEA for the Fiscal Year 2063/064

	Budgeted unit (in GWH) and sales rupees (**in million**)			Actual unit (in GWH) and sales rupees **(in million**)		
Category	**Rate**	**Unit**	**Amount**	**Rate**	**Unit**	**Amount**
Domestic	6.62	884.39	5854.675	6.74	893.27	6021.4
Non commercial	9.2	110.5	1016.6	9.35	100.52	940.2
Commercial	9.22	133.4	1229.948	9.09	141.69	1288.05
Industrial	6.27	925.6	5803.512	6.24	849.13	5300.91
Water supply &Irrigation	5.02	47	216.254	4.56	47.96	214.18
Street light	5.8	70.3	407.74	6.8	66.9	454.85
Temporary supply	13.5	0.8	10.8	13.77	1.26	17.36
Transport	5.1	6.6	33.66	5.01	6.31	31.65
Temple	5.1	5.4	27.54	5.44	4.78	26.03
Community sales	3.55	13.35	47.393	3.46	15.51	53.7
Total (internal sales)		**2197.3**	**14648.122**		**2127.33**	**14348.33**
Bulk supply (India)	6	165	990	5.58	76.87	428.93
Total sales		**2362.3**	**15638.122**		**2204.2**	**14777.26**
Less : rebate			322.5			327.53
Gross sales			**15315.622**		**2204.2**	**14449.73**

Sources: Annual Report and Budgeted Book of NEA, 2063/064

The table no 1.1 show the summary of sales budget and the actual achievement of NEA during fiscal year 2063/064. the budgeted or say targeted sales of the period was 884.39 million units at Rs.6.62 million per million unit, which is in total amounted to Rs.5854.675 million rupees for domestic sector. For non-commercial sector, the budgeted sales were 110.5 million units at Rs. 9.2 million per million- unit, which is in total amounted to Rs, 1016.6 million. On the other hand, the actual domestic sales were 893.27 million units at the rate of Rs.6.74 million per million units' and the total amount came to Rs.6021.4 million. Like wise for non –commercial sector actual achievement were 100.52 million units at the rate of Rs. 9.35 million per million units and in total amounted Rs. 940.2 million. NEA budgeted sales for industrial sector was 925.5 million units at the rate of RS. 6.27 Per million –amounted Rs. 5803.512 millions. But the actual sales units were 849.13 million at the rate of RS. 6.24 Per

million and amounted Rs. 5300.91 millions in total. For water supply and irrigation, budgeted sales of NEA was 47 million units at the rte of 5.02 but the actual sales was 47.96 at the rte of 4.56 and came to the amount of Rs. 214.18 millions in total and so on. In the same way, the budgeted and actual export especially to India was 165 and 76.87 million units respectively. The actual figure came to Rs. 428.93 million. The budgeted and actual sales condition for each sectors are related and forging together for each component. The collection was impeded by strikes and unrest in different parts of country. The public sectors and the street light dues still remain serious problems in revenue collection.

In conclusion from the above study we can say that NEA has followed tactical as well as strategic sales plan. The technique of Sales budget preparation is satisfactory in NEA. NEA fails to meet its target since actual sales is less than budgeted sales. Both domestic and export sales of electricity is not satisfactory in the fiscal year 2063/064. Similarly, export sales price is very low in comparison with domestic sales. The authority is unable to fulfill the consumer's demand.

Table – 1.2

Budgeted and Actual Revenue of NTC for Fiscal Year 2063/064

Rs. in million

Description	Budgeted	Contribution in %	Actual	Contribution in %
Operating Revenue				
Local calls	2608.29	23.04	3387.75	22.97
Domestic Trunk Calls (STD)	1876.58	16.57	1607.94	10.90
International Trunk Calls (ISD)	1503.99	13.28	1306.13	8.85
Leased circuit ,Internet and E-mail & other Services	138.61	1.22	379.35	2.57
CDMA	772.95	6.83	1027.36	6.96
GSM	2201.09	19.44	3843.31	26.05
Interadministration Sharing Revenue	1477.40	13.05	1971.83	13.37
Other Operating Income	294.23	2.60	442.95	3.00
Total operating Revenue	**10873.14**	96.03	**13966.62**	94.68
Total non- operating Revenue	450.00	3.97	784.31	5.32
Total Revenue	**11323.14**	100.00	**14750.93**	**100.00**

Sources: Budget Book of NTC 2063/064

Table 1.2 shows the actual and budgeted of revenue and each categories contribution. The revenue for 2063/064 is Rs 14750.93 million, which is about 30.27% more than budgeted. By the analysis , it is found that mean average of local telephone, STD,ISD, Leased circuit & others service, CDMA, GSM ,interadministration sharing revenue, are 22.97%, 10.90% ,8.85% ,2.57% ,6.96% ,26.05% ,13.37% of total revenue respectively . Local call, GSM and interadministration sharing sectors contributed more revenue. STD sectors give second highest contribution to sales revenue.

4.3 PRODUCTION BUDGET

Production budget is the second step for the development of profit plan. Without preparing the production budget, the overall profit plan will not assume to be completed. It is prepared on the basis of sales budge that mean the sales budget determine the volume of the production budget. In that respect, first, sales budget needs to be much more realistic. It specifies the planned quantity of goods to be manufactured during the budgeted period. The main purpose of this budget is to maintain an optimum balance between sales, production and inventory position of the firm. In case of NTC and NEA, there is no necessity, no possibility and no suitability for opening and closing stock of them because of high demand of telephone line and unsuccessful to store the hydropower Production budget of NTC is name given to telephone point generation. In case of NEA, it is the power generation and purchase of electricity budget.

Here, the previous trend of the production of NEA and NTC and their budget are going to be analyzed. Possible future trend of Authority can be forecasted by analyzing the previous trend of production. Therefore, the following table represents the production (budgeted) and actual production and their achievements in unit from fiscal year 2058/059 to 2063/064.

Table - 2

Budgeted and Actual Production units of NTC and NEA.

Units in million

	NTC			NEA		
Fiscal Year	Budgeted	Actual	%ach	Budgeted	Actual	%ach
2058/059	48.763	52.926	108.54	2372.9	2066.33	87.08
2059/060	72.049	75.031	104.14	2744.17	2261.13	82.4
2060/061	96.143	99.423	103.41	2986.39	2837.98	95.03
2061/062	123.625	125.755	101.72	3012.52	2894.17	96.07
2062/063	175.63	179.58	102.25	2784.8	2780.92	99.86
2063/064	268.54	273.57	101.8	3094.6	3051.82	98.62
Total	784.75	806.285		16995.38	15892.35	
Average achievement			103.6433			93.17667
Mean $\bar{X}$	130.7917	134.3808		2832.563	2648.725	
S.D (∃)	73.503	74.016		240.172	357.173	
CV.	56.20%	55.08%		8.48%	13.49%	
CC.(r)		0.9999			0.922	
P-E (r)		0.000055			0.04128	
Y=a+bX	113.7638+41.234X			40.909+186.943X		
Calculated value of t	15.4128					

(Details in Appendix-2)

Source: Operation and Maintenance Budget Book of NEA and NTC.

The above table shows that the average production achievement of NTC and NEA is 103.64% and 93.176% respectively. After analysis of budgeted and actual production figure in each year of above two organizations, NTC's production achievement is more satisfactory than that of NEA.

The budgeted and actual mean, S.D. and C.V. of NTC are 130.79 and 134.38 units, 73.503 and 74.016, and 56.20% and 55.08% respectively. Which shows actual production is less variable or more homogeneous or more consistent than budgeted because C.V. of actual production is less than budgeted production. Similarly, budgeted and actual mean, S.D. and C.V. of NEA are 2832.563 and 2648.725, 240.172 and 357.173, 8.48% and 13.49% respectively. which shows that actual production of NEA is more variable or more heterogeneous or less consistent than budgeted because C.V. of actual production is more than budgeted production.

By calculating the (r), we can test whether there is positive co-relation between budgeted sales and actual sales or not. In other words whether or not the actual sales will be changed in the same direction of the changes in budgeted sales.

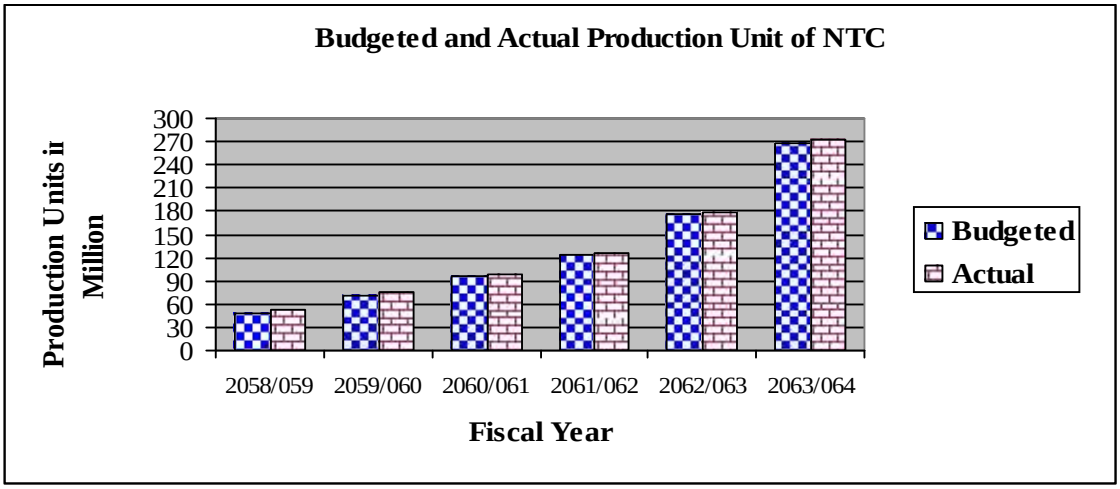
For the purpose of calculation of (r), budgeted production figures and actual figures are denoted by ‘X’ and ‘Y’ which are assumed as independent and dependent variables respectively. The correlation coefficient of NTC and NEA are 0.9999 and 0.922 which shows high degree of positive correlation between budgeted production and actual production. The positive correlation between budgeted and actual production means that the actual production will change in the same direction as the budgeted production changes.

The significance of 'r' is tested by the help of probable error of 'r'. We have probable error of NTC & NEA is 0.0005 and 0.04128 respectively. Since the correlation co-efficient 'r' is greater than probable error which verify the value or 'r' is definitely significant. Thus, it can be said that actual production will go on same direction with that of budgeted production.

A regression line can also be fitted to show the degree of relation between the targeted and actual production and to forecast the possible actual planned production for the year. To fit the straight –line trend, the time factor is considered as independent factors and sales as dependent variable. Then the straight- line trend of actual production (Y) upon time is expressed by Y= a + bX, where ‘X’ is time representing different fiscal years. The trend line if NTC and NEA are 113.76+41.234ε and 40.909+186.943ε respectively. Future sales are calculated by putting value of X at future time period.

The calculated value of ‘t’ test is 15.4128 and remains greater than the tabulated values 2.228 at 5% level of significance at 10 degree of freedom. Hence the alternative hypothesis is accepted which means that there is significant difference in the actual average production of NTC and NEA.

Diagram - 3



Graph - 3

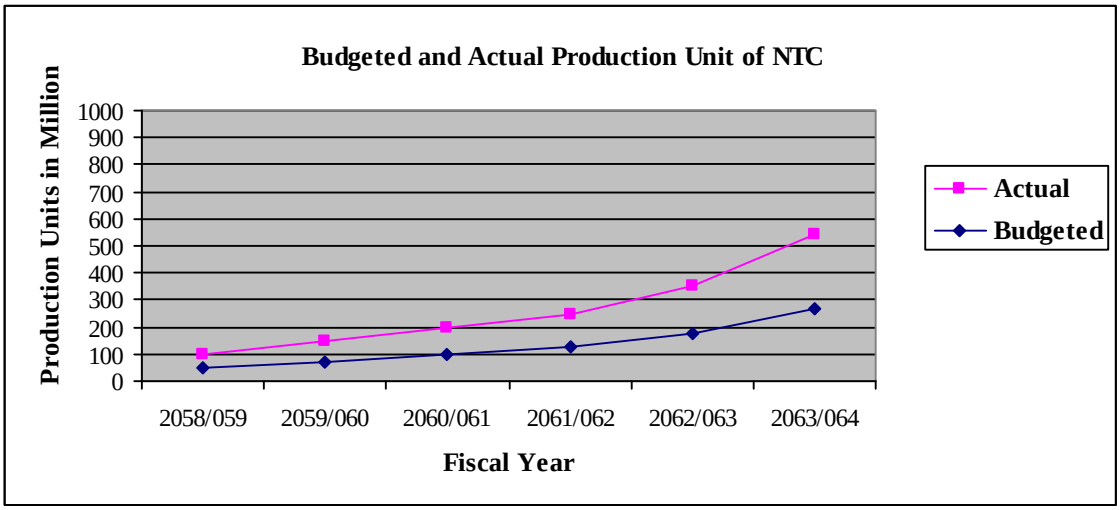
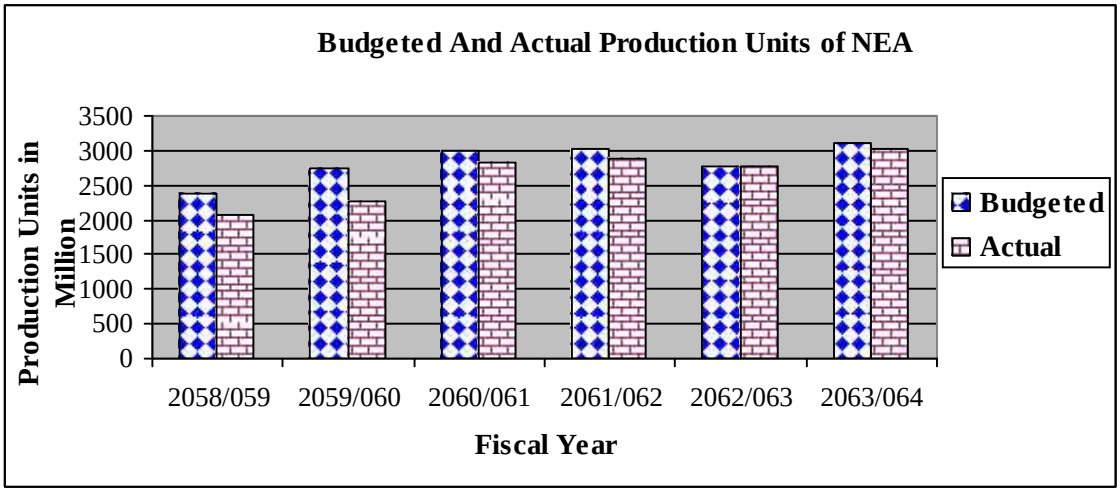
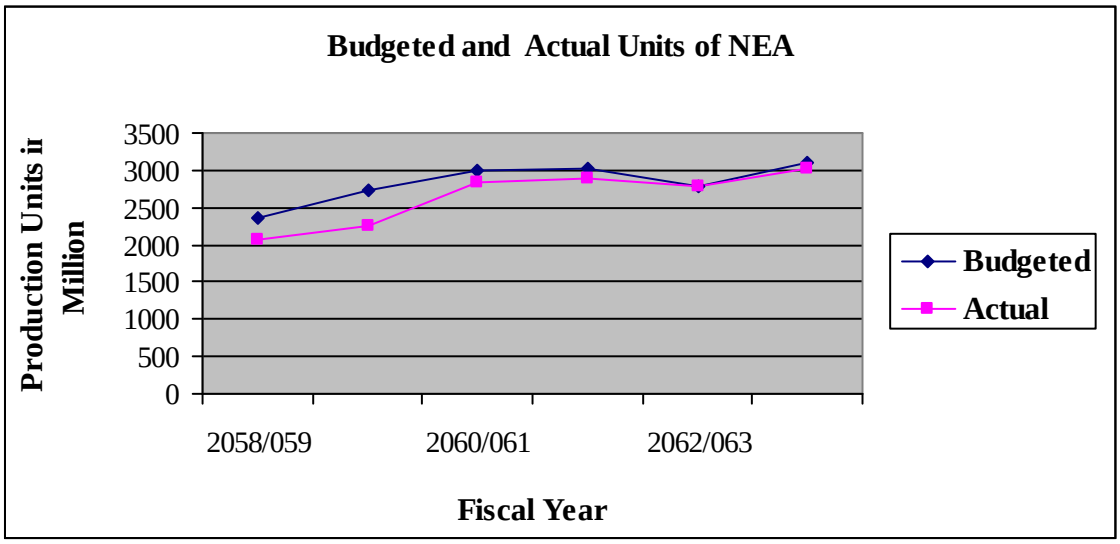


Diagram - 4



Graph – 4



4.4 OVERHEAD EXPENSES BUDGET

Overhead budget helps to allocate expenses in each responsibility centre which optimizes the limited resources. Expenses are directly or indirectly related with generation of revenue. Overhead budget is prepared after preparing sales and production budget. NTC and NEA also prepare expenses budget for optimum utilization of the limited resources and to maximize the revenue. NTC and NEA have the practice of preparing overhead budget in different names viz. distribution expenses , operation and maintenance cost, administrative cost, interest , depreciation and other costs which incurred by public enterprises on their operating activities. The following table shows actual expenses trend of NTC from fiscal year 2058/059 to 2063/064.

TABLE - 3

Expenses Trend of NTC

Rs. in million

cost	2058/059	2059/060	2060/061	2061/062	2062/063	2063/064	Mean
Employee cost	664.19	717.41	927.25	1,136.82	1,164.81	1,280.52	
% on total	22.60	21.01	21.70	28.29	26.02	22.39	**23.67**
Operation and Maintenance Cost	503.30	490.89	463.30	552.16	655.13	797.40	
% on total	17.13	14.38	10.84	13.74	14.63	13.94	**14.11**
Administrative Expenses	494.57	874.34	1,334.95	408.79	442.82	853.18	
% on total	16.83	25.61	31.24	10.17	9.89	14.92	**18.11**
Interest Expenses.	106.78	98.20	89.94	57.73	65.05	67.14	
% on total	3.63	2.88	2.10	1.44	1.45	1.17	**2.11**
Depreciation	863.86	931.69	1,016.31	1,048.44	1,195.08	1,366.50	
% on total	29.39	27.29	23.78	26.10	26.69	23.89	**26.16**
Bonus	174.98	180.67	183.76	188.00	195.35	240.54	
% on total	5.95	5.29	4.30	4.68	4.36	4.21	**4.80**
Royalty	-	-	126.57	491.30	591.81	811.46	
%on total			2.96	12.23	13.22	14.19	**7.10**
Incentive package	131.23	120.97	125.45	93.71	126.69	243.87	
% on total	4.47	3.54	2.94	2.33	2.83	4.26	**3.40**
Licence fee & Deffered Expenses		-	6.08	40.82	40.46	58.37	
% on total			0.14	1.02	0.90	1.02	**0.51**
Total Actual Expenses	**2,938.92**	**3,414.17**	**4,273.61**	**4,017.77**	**4,477.19**	**5,718.98**	

Sources: Annual Report of NTC 2058/059 to 2063/064

TABLE – 4

EXPENSES TREND OF NEA RS.IN MILLION

Cost	2058/059	2059/060	2060/061	2061/062	2062/063	2063/064	Mean
Transmission	158.00	178.60	199.50	215.90	232.10	240.88	
% on total	1.25	1.25	1.25	1.25	1.24	1.25	1.25
Employee cost	1,229.38	1,209.28	1,305.61	1,469.07	1,740.23	1,769.04	
% on total	9.70	8.47	8.21	8.48	9.28	9.17	10.30
Distribution Expn.	1,174.40	1,308.60	1,376.10	1,484.20	1,703.70	1,834.39	
% on total	9.27	9.16	8.66	8.57	9.08	9.51	9.04
Administrative Expn.	447.40	536.10	489.10	622.40	419.50	479.59	
% on total	3.53	3.75	3.08	3.59	2.24	2.49	3.08
Interest Expn.	1,395.50	2,973.40	2,991.50	3,079.80	3,050.90	2,385.41	
% on total	11.01	20.82	18.82	17.78	16.26	12.36	16.18
Deprecation	1,420.10	1,656.70	1,686.00	1,733.50	1,816.90	1,856.47	
% on total	11.20	11.60	10.60	10.00	9.68	9.62	10.45
Generation(Incl.Power Purchase)	5,728.70	5,169.40	6,565.90	7,246.50	8,100.60	8,793.68	
% on total	45.20	36.20	41.30	41.84	43.18	45.57	42.22
Royalty	591.05	660.22	606.09	709.12	897.50	970.46	
% on total	4.66	4.62	3.81	4.09	4.78	5.03	4.50
Repair and Maintenance Expn.	528.48	586.98	678.41	759.13	800.14	967.99	
% on total	4.17	4.11	4.27	4.38	4.26	5.02	4.37
Total actual expenses	12,673.01	14,279.27	15,898.20	17,319.62	18,761.57	19,297.92	

SOURCE: ANNUAL REPORT OF NEA, 2058/059 TO 2063/064

In the above table-3, actual expenses and its percentage on total are clearly shown from FY 2058/059 to 2063/064. Generally, operating & maintenance, administrative expenses and incentive package expenses are in fluctuating trend but interest is in decreasing and depreciation, employee cost, royalty and bonus are in increasing trend. Percentage of total expenses of interest is very low and depreciation is very high than other expense. The mean expense on total of depreciation is 26.16% which is highest among all. Total expense is in increasing trend except in FY 2061/062. During this year,

In the above table-4, actual expenses and its percentage on total are clearly shown from FY 2058/059 to 2063/064. Actual expense of NEA shows overall increasing trend over the study period. Power purchase is highest and second highest is interest expenditure. Administrative expenses are lowest. By observing individual means of expenses, power purchase (42.22%) and interest expenses (16.18%) remained dominant but the percentage reduction of interest over the year is good sign for profit increment. Generally, administrative expense is in fluctuating trend but depreciation, employee cost, royalty are in increasing trend. The mean expense on total of depreciation is 26.16% which is highest among all.

By the analysis of NEA's overhead budget, it is found that it has no practice of preparing in particular way. It has accumulated all its expenditure in operation and maintenance budget and it has crated difficulty to analyze its overhead budget. Expenditure has not been classified as manufacturing overhead, administrative overhead and selling and distribution overhead.

4.4.1 FUTURE EXPENSES TREND

The time and expenses relationship can be expressed in terms of regressions analysis by least square method. For least square method, 'X' and 'Y' be the Fiscal year and actual overhead expenses respectively.

TABLE – 5
TIME SERIES ANALYSIS OF EXPENDITURE OF NTC

Rs. in million

FY	X	X=X-3	X^2	Actual expenses (Y)	XY	FY	X	Forecasted overhead
2058/059	1	-2	4	2938.92	-5877.84	2064/065	4	5823.39
2059/060	2	-1	2	3414.17	-3414.17	2065/066	5	6304.33
2060/061	3	0	0	4273.61	0	2066/067	6	6785.27
2061/062	4	1	1	4017.77	4017.77	2067/068	7	7266.21
2062/063	5	2	4	4477.19	8954.38	2068/069	8	7747.15
2063/064	6	3	9	5718.98	17156.94	2069/070	9	8228.09
Total		**3**	**19**	**24840.64**	**20837.08**			

For forecasted overhead substituting the value of X=4, 5, 6, 7, 8, and 9 in equation (1) for Fiscal year 2064/065 to 2069/070 respectively.

Calculation:-

$Y = a + bX$

Then,

$Y = na + b\ X$…….(i)

$XY = a\ X + b\ X^2$ ……..(ii)

i:e. $24840.64 = 6a + 3b$

$20837.08 = 3a + 19b$

By solving these two equation we get value of $a = 3899.63$ and $b = 480.94$

Therefore,

$Y = 3899.63 + 480.94X$…….(1)

Thus forecasted value by putting $X = 4$

$Y = 3899.63 + 480.94 \times 4$

$= 5823.39$

Similarly for others.

Table - 6

Time series analysis of Expenditure of NEA

Rs. in million

FY	X	X=X-3	X^2	Actual exp(Y)	XY	FY	X	Forecasted overhead
2058/059	1	-2	4	12673.01	-25346	2064/065	4	21170.882
2059/060	2	-1	2	14279.27	-14279.3	2065/066	5	22542.106
2060/061	3	0	0	15898.2	0	2066/067	6	23913.33
2061/062	4	1	1	17319.62	17319.62	2067/068	7	25284.554
2062/063	5	2	4	18761.57	37523.14	2068/069	8	26655.778
2063/064	6	3	9	19297.92	57893.76	2069/070	9	28027.002
Total		**3**	**19**	**98229.59**	**73111.23**			

For forecasted overhead substituting the value of X=4, 5, 6, 7, 8, and 9 in equation (1) for Fiscal year 2064/065 to 2069/070 respectively.

Calculation:-

$Y = a + bX$

Then,

$Y = na + b\ X$…….(i)

$XY = a\ X + b\ X^2$ ……..(ii)

i.e. $98229.59 = 6a + 3b$

$73111.23 = 3a + 19b$

By solving these two equation we get value of a =15685.986 and b =1371.224

Therefore,

$Y = 15685.986 + 1371.224X$…….(1)

Thus forecasted value by putting X = 4

$Y = 15685.986 + 1371.224 \times 4$

$= 21170.882$

Similarly for others.

The actual overhead expenses from FY 2058/059 to 2063/064and future trend of expense for six years has been shown table 5 and 6 for NTC and NEA

respectively. Table 5 depicts that a i.e. Y- intercept and b i.e. slope of regressions line of actual overhead in NTC is Rs. 3899.63 million and 480.94 million respectively. Table 6 depicts that a i.e. Y- intercept and b i.e. slope of regression line of actual overhead in NEA is Rs. 15685.986 million and Rs. 1371.224 million respectively.

4.5 CAPITAL EXPENDITURE BUDGET

Capital expenditure budget is often called capital budgeting. It is the process of planning and controlling strategic and tactical expenditure for the expansion and contraction of investment in operating assets. A capital expenditure is the use of funds to obtain operational assets that will be the help to earn future revenues or to reduce future costs. Capital outlays are expenditure for land, building, and equipment, and for permanent additional to working capital associated with sales growth. A primary issue in controlling the actual expenditure is consistent with the plans and those funds are available when expenditure is incurred.

NTC prepare capital expenditure plan with the help of previous accounting data of account department. NEA prepares short range as well as long range capital expenditure budget. Short term capital budget is prepared for one year and published by NEA. Long term capital expenditure is prepared but it is not published. It includes purchase of land, hydroelectric plant, transformers, electric equipment, and construction of building and hydro-electric offices in capital expenditures budget. For evaluation purpose, traditional approaches are generally used. For instance payback period and average rate of return were being used in previous year to make major capital decision. The following table shows the capital expenditure budget of NTC and NEA for FY 2063/064.

Table -7

Budgeted and Actual Capital Expenditure Budget of NEA for FY 2063/064 and Budgeted for 2064/065

Rs. in thousand ('000')

S.N	**Components**	**Budgeted (2063/064)**	**Actual (2063 /064)**	**Budgeted (2064/065)**
1	Land	34,600.00	10,826.00	14,350.00
2	Building	56,461.00	38,506.00	69,969.00
3	Hydro Electric Function	28,300.00	4,002.00	35,800.00
4	Hydro Electric Machine	29,550.00	29,050.00	76,060.00
5	Heating Electric Machine	4,700.00	1,625.00	5,800.00
6	Transmission line over 33 KV	38,715.00	12,106.00	108,000.00
7	Transmission line under 33 KV	105,045.00	95,273.00	104,726.00
8	**Transmission sub station**	**360,532.00**	**63,484.00**	**455,433.00**
9	Distribution line	105,000.00	112,986.00	133,393.00
10	Distribution sub station	255,690.00	407,783.00	217,996.00
11	Meter and meter check equipment	37,947.00	14,414.00	42,094.00
12	Customer service	4,915.00	1,995.00	6,265.00
13	Public lights and traffic signal	38,600.00	19,988.00	39,035.00
14	Parts and equipment	17,114.00	15,483.00	17,989.00
15	Works shops equipment	11,593.00	3,154.00	11,328.00
16	Vehicles and mobiles plant	37,298.00	13,337.00	30,716.00
17	Furniture and Fixture	5,700.00	5,107.00	6,133.00
18	Office equipment	21,918.00	23,915.00	30,174.00
19	Miscellaneous / other assets	6,900.00	5,008.00	21,061.00
20	Solar energy equipment		1,665.00	
21	**Total**	**1,200,578.00**	**879,707.00**	**1,426,322.00**

SOURCES: - BUDGETED BOOKS OF NEA, 2063/064

TABLE - 8

ACTUAL CAPITAL EXPENDITURE BUDGET OF NTC FOR FY 2063/064

Rs. in million

Items	Actual	% on total
Land	203.94	0.84
Building	1005.76	4.15
Plant and Machinery	21760.69	89.79
Furniture and Fixture	86.13	0.36
Office Equipment	608.11	2.51
Vehicles	417.82	1.72
Heating and Lighting	151.73	0.63
Total	**24234.18**	**100.00**

Source: Annual report of NTC 2063/64

SOURCE: ANNUL REPORT OF NTC 2063/64

The table no - 7 shows that capital expenditure budget of NEA for fiscal year 2063/64 and 2065/065. in the fiscal year 2063/064 total budgeted and actual expenditure amount is Rs 1200578 and Rs 879707 in thousand respectively which is classified various capital expenditure budget heads of NEA.It shows that Rs 360532 and Rs 455433 in to thousand is budgeted for 2063/064 and 2064/065 respectively which is more than other budgeted expenditure heads. Like wise minimum amount is budgeted in customer services. It proved that NEA spends all most capital to increase its capacity than other services.

4.6 INCOME STATEMENT OR P/L ACCOUNT

Profit and loss account is the second component of final accounts. It is prepared to ascertain net profit or net loss at the end of the accounting periods. It contains all the items of revenue gain, losses and operating expenses of an accounting period. Therefore, it can be defined as an account which summarised the annual revenue and expenses. it is an account which collects all expenses , losses, incomes and gain for an accounting period In order to ascertain the net profit or net loss. NTC and NEA also preparing profit and loss account at the end of every fiscal year. It shows the final conclusion of the operation of fiscal year.

TABLE - 9

INCOME STATEMENT OF NTC FOR FY 2058/059 TO 2063/064

RS . IN MILLION

Particular	**2058/059**	**2059/060**	**2060/061**	**2061/062**	**2062/063**	**2063/064**
Income:						
Operating income	6159.52	7208.087	8312.244	8584.144	10413.66	13967.32
Non - operating income	396.472	461.197	542.79	610.153	645.26	784.305
(A) Total Income	**6555.992**	**7669.284**	**8855.034**	**9194.297**	**11058.92**	**14751.63**
Expenditure:						
Employees Cost	664.192	717.408	927.254	1136.819	1164.811	1280.523
Operation and maintenance cost	503.303	490.886	463.3	552.162	655.127	797.397
Administrative expenses.	949.569	874.343	1334.949	408.791	442.821	853.177
Royalty/Contribution on Rural Dev.Fund	0	0	126.574	491.302	591.807	811.46
Interest on Subscriber's Deposit	68.375	82.249	86.65	57.036	63.938	67.143
Interest on loan	38.407	15.955	3.292	0.696	1.108	0
Depreciation	863.863	931.685	1016.309	1048.436	1195.081	1366.504
Loss / (gain) on foreign currency	-157.993	162	28.443	251.124	-280.005	526.031
Licence fee & Deffered Expenses	0	0	6.076	40.818	40.455	58.374
Loss on sales of telephone & others goods	0	0	2.308	3.872	18.005	523.278
Bonus	174.982	180.67	183.763	187.999	195.349	240.544
Incentive Package	131.231	120.969	125.449	93.713	126.691	243.866
(B) Total Expenditure	**3235.929**	**3576.165**	**4304.367**	**4272.768**	**4215.188**	**6768.297**
Net operating profit(A-B)	**3320.063**	**4093.119**	**4550.667**	**4921.529**	**6843.732**	**7983.328**
Income tax Provision	-852.133	-1005.34	-1260.55	-1379.07	-1907.08	-2330.63
Net profit after tax	**2467.93**	**3087.779**	**3290.117**	**3542.459**	**4936.652**	**5652.688**
Income Tax adjustment	-161.964	-6.556	-256.108	0	-344.613	-14.602
Prior Year(s) adjustment Inc/ expn.	20.563	55.999	-509.568	158.09	1.269	-1029.53
Profit available for distribution	**2326.529**	**3137.225**	**2524.441**	**3700.551**	**4593.303**	**4608.556**
proposed Dividend	-348.979	-544.002	-471.062	-555.082	-688.996	-1500
Transfer to sinking Fund	-5	-5	-5	85	0	0
Net profit after Dividend & S. Fund	**1972.55**	**2588.223**	**2048.379**	**3230.469**	**3904.307**	**3108.556**
Opening Balance	12666.92	14639.47	35685.48	5334.938	5665.407	8602.369
Capitalization of reserve	0	0	-12941.1	0	0	0
Repayment of retained earning to Nepal Govt	0	0	-1000	-2900	-1611.65	0
advance income Tax adj. to retained earning	0	0	0		569.834	0
Capital reserve adjusted to retained earning	0	0	0	0	74.472	0
Retained Earning Trfd .to Balance Sheet	**14639.47**	**17227.69**	**23792.73**	**5665.405**	**8602.369**	**11710.93**

The table no. 13 shows the income statement of NTC.Net profit after dividend & sinking fund is in generally, increasing trend for FY 2058/059 to 2063/064. Increasing trend means company has achieved more profit in different fiscal year.

Table -10
Income statement of NEA for FY 2058/059 to 2063/064
Rs. in million

Particular	**2058/059**	**2059/060**	**2060/061**	**2061/062**	**2062/063**	**6063/064**
Sales	9476.2	11012.6	11874.7	12605.2	13331.9	14449.73
Less:- Cost of sales:						
Generation	5728.7	5169.4	6565.9	7246.5	8100.6	8793.68
Transmission	158	178.6	199.5	215.9	232.1	240.88
Gross Profit	**3589.5**	**5664.6**	**5109.3**	**5142.8**	**4999.2**	**5415.17**
Add: Other income	459.6	512.5	671.4	617.5	639.9	1016.61
Total Income	**4049.1**	**6177.1**	**5780.7**	**5760.3**	**5639.1**	**6431.78**
Less: Distribution Expenses	1174.4	1308.6	1376.1	1484.2	1703.7	1834.39
less Administrative Expenses	447.4	536.1	489.1	622.4	419.5	479.59
Profit From operation	**2427.3**	**4332.4**	**3915.5**	**3653.7**	**3515.9**	**4117.8**
Less : Other Expenses:						
Interest	1395.5	2973.4	2991.5	3079.8	3050.9	2385.41
Depreciation	1420.1	1656.7	1686	1733.5	1816.9	1856.47
(profit) / Loss on foreign Exchange	271.6	0	59.1	-230	42.7	-493.39
loss on Fixed assets	37	191.5	0	40	65	60
Deferred revenue expenditure written off	512.5	411.1	320.1	123.3	105.4	42.56
Profit/ Loss from operation	**-1209.4**	**-900.3**	**-1141.2**	**-1092.9**	**-1565**	**266.75**
Add: Prior years (Income) Expenses	492	444.4	344.9	219.9	-297.2	-47.44
Net profit before tax	**-717.4**	**-455.9**	**-1486.1**	**-1312.8**	**-1267.8**	**314.19**
Provision for Tax	143.3	1497.8	-274.2	0	0	0
Net profit/ Loss After tax	**-860.7**	**-1953.7**	**-1760.3**	**-1312.8**	**-1267.8**	**314.19**
Add: Balance as profit as per last account	1159.6	278.9	-1694.9	-3475.2	-4808	-6095.8
Total profit available for appropriation	298.9	-1674.9	-3455.2	-4788	-6075.8	-5781.61
Less: Insurance fund	20	20	20	20	20	20
Profit / loss transferred to balance sheet	**278.9**	**-1694.9**	**-3475.2**	**-4808**	**-6095.8**	**-5801.61**

By analyzing table -14, we can say that except in FY 2058/059, the authority is suffering loss from operation. Which mean that authority has lost profit by (i) decrease in the total income (ii) increase in the total expenditure. Profit and loss transferred to balance sheet in FY 2059/060 to 2063/064 is negative. Which means that the organization was not utilized their resources optimum. There was Rs.1953.7, 1760.3, 1312.8 and 1267.8 million losses after tax in fiscal year 2059/060 to 2062/063 respectively. As it is a public enterprise, it is facing political interference from the day of its formation. As system of corruption has grown strongly and overall system such as record keeping, authority delegation is based on tradition .It's property such as vehicle and other electronic devices are used by the personnel for personal use and it can be called as misuse of property. All of the above stated and many other are the reasons for generating loss year after year despite of having totally monopoly market.

4.6.1 Future Net Profit Patterns

The comparative profit /loss pattern of NTC and NEA for last 6 years at beginning from fiscal year 2058/059 to 2063/064 and least square analysis with forecasted net profit for next six fiscal year has been presented in following table. **Table -11**

Future Net profit patterns of NTC

Rs in million

FY	X	X=X-3	X^2	Y(Net profit after dividend and sinking fund)	XY	FY	X	Forecasted Net profit
2058/059	1	-2	4	1972.55	-3945.1	2064/065	4	3889.782
2059/060	2	-1	1	2588.223	-2588.223	2065/066	5	4198.649
2060/061	3	0	0	2048.379	0	2066/067	6	4507.516
2061/062	4	1	1	3230.469	3230.469	2067/068	7	4816.383
2062/063	5	2	4	3904.307	7808.614	2068/069	8	5125.25
2063/064	6	3	9	3108.556	9325.668	2069/070	9	5434.117
Total		**3**	**19**	**16852.484**	**13831.428**			

For forecasted Net profit substituting the value of X=4, 5, 6, 7, 8, and 9 in equation (1) for Fiscal year 2064/065 to 2069/070 respectively.

Calculation:-

$Y = a + bX$

Then,

$Y = na + b\ X$…….(i)

$XY = a\ X + b\ X^2$ ……..(ii)

i.e. $16852.484 = 6a + 3b$

$13831.428 = 3a + 19b$

By solving these two equations we get

Y intercept (a) = 2654.314

And slope of trend line of net profit (b) =308.867

Therefore,

$Y = 2654.314 + 308.867X$……. (1)

Thus forecasted value by putting X = 4

$Y = 2654.314 + 308.867 \times 4$

$= 3889.782$

Similarly for others.

Table - 12

Future net profit pattern of NEA

Rs. in million

FY	X	X=X-3	X^2	Y(Net profit transferred to balance sheet)	XY	FY	X	Forecasted Net profit
2058/059	1	-2	4	278.9	-557.8	2064/065	4	-9377.25
2059/060	2	-1	1	-1694.6	1694.6	2065/066	5	-10661.22
2060/061	3	0	0	-3475.2	0	2066/067	6	-11945.19
2061/062	4	1	1	-4808	-4808	2067/068	7	-13229.16

2062/063	5	2	4	-6095.8	-12191.6	2068/069	8	-14513.13
2063/064	6	3	9	-5801.61	-17404.83	2069/070	9	-15797.1
Total		**3**	**19**	**-21596.31**	**-33267.63**			

For forecasted Net profit substituting the value of X = 4, 5, 6, 7, 8, and 9 in equation (1) for Fiscal year 2064/065 to 2069/070 respectively.

Calculation:-

$Y = a + bX$

Then,

$Y = na + b\ X$……. (i)

$XY = a\ X + b\ X^2$ …….. (ii)

i.e. $-21596.31 = 6a + 3b$

$-33267.63 = 3a + 19b$

By solving these two equations we get

Y intercept (a) = - 4241.37

And slope of trend line of net profit (b) = -1283.97

Therefore,

$Y = - 4241.37 - 1283.97X$……. (1)

Thus forecasted value by putting X = 4

$Y = - 4241.37 - 1283.97 \times 4$

$= - 9377.25$

Similarly for others.

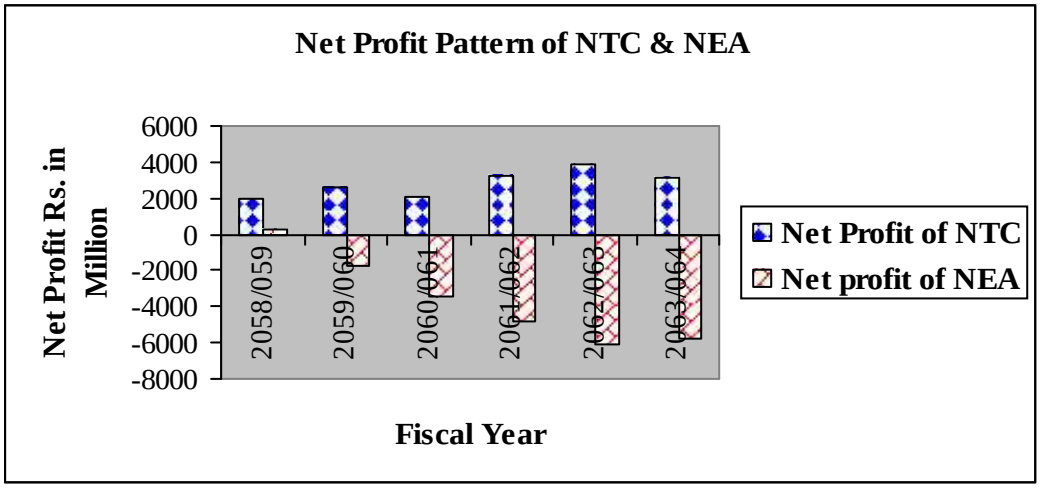
Above two table show that 'Y' intercept (a) and slope of trend line (b) of NTC is Rs.2654.314 million and 308.867 million, NEA is Rs. – 4241.37 million and -1283.97 million respectively and the trend equation by least square method.

For NTC $Y = 2654.314 + 308.867X$

For NEA $Y = - 4241.37 + (-1283.97)X$

On the basis of trend equation obtained above as the forecasted net profit for coming six years , the NTC would be in increasing trend on net profit but the NEA would be in increasing trend of net loss .

Diagram - 5



Graph – 5

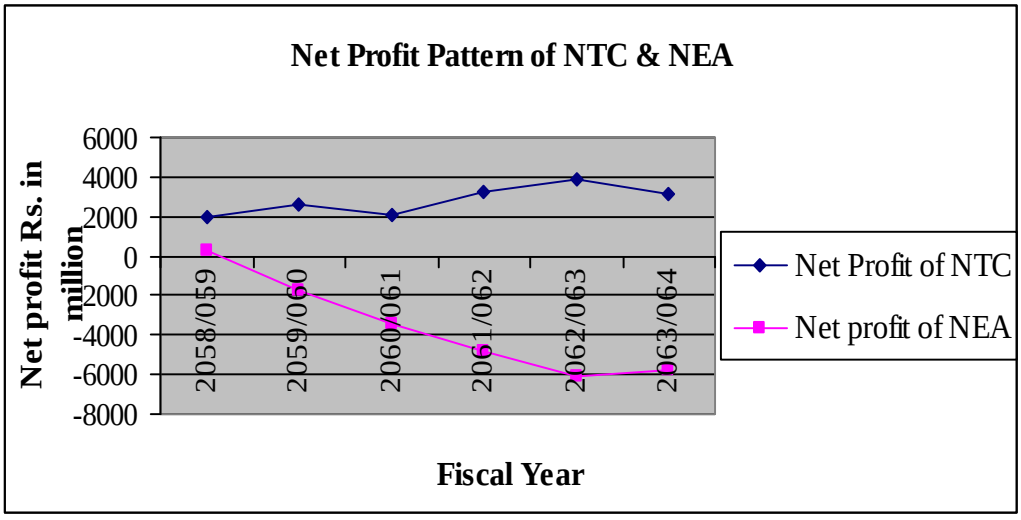
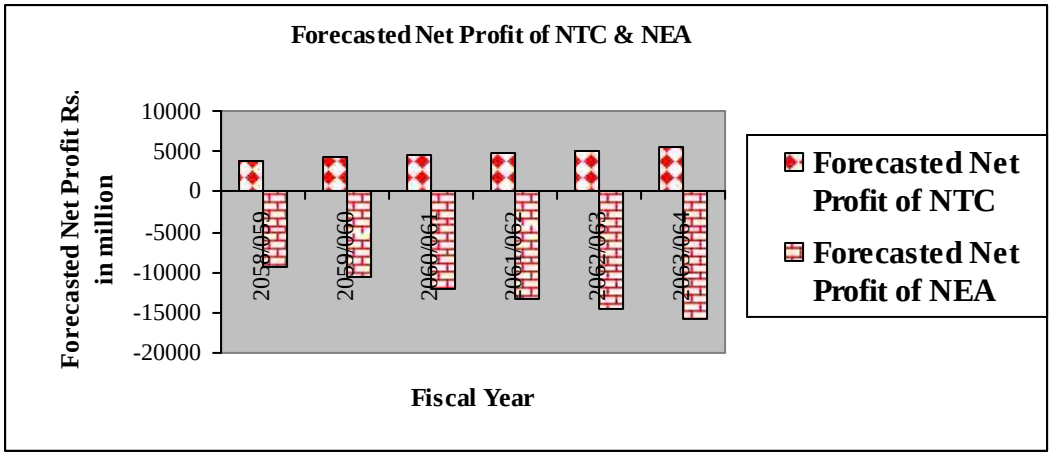
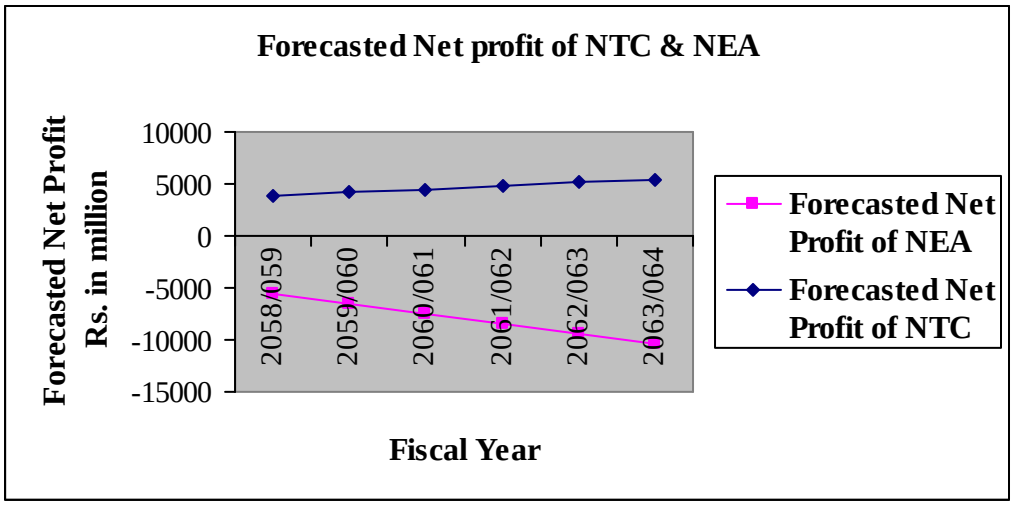


Diagram -6



Graph -6



4.7 Analysis of power losses of NEA

Power loss is the most important problem of NEA. The authority has been suffering from the problem of Power loss since 1963 A.D. Normally, 15% of electricity out of actual production is considered to be loss. Now, it is tried to analyze the power loss of the authority for the last six years i.e. From FY 2058/059 to FY 2063/064.

Table - 13

Power loss of NEA for FY 2058/059 to 2063/064

unit in million(GWH)

Fiscal Year	Total Power Available	Electricity Sales	Power Loss	%of loss in total power

				Available
2058/059	2066.45	1534.32	532.13	25.75
2059/060	2261.13	1696.82	564.31	24.96
2060/061	2380.89	1795.23	585.66	24.60
2061/062	2642.75	1964.39	678.36	25.67
2062/063	2780.92	2032.62	748.30	26.91
2063/064	3051.82	2204.20	847.62	27.77

Source: - Annual Reports of NEA 2063/064

The above table shows the power loss units and percentage of loss on the base of total power available of NEA. Power loss percentage is increasing continuously except in case of fiscal year 2059/060 and 2060/061. In FY 2058/059 total power loss is 532.13 million units and in FY 2063/064 it reached to 847.62 million units. It reduces the profitability of NEA. There are not significant differences in the percentage of power loss in each year. The power loss up to 5% to 6% is normal due to technical effects. But, the above table of power loss of NEA is very high which shows the weaknesses of the authority to control the leakage of power. Management of the authority should be very sensitive to control the loss of power.

4.8 BALANCE SHEET

Balance sheet indicates the financial strength and weakness of the firm. It is prepared at the end of the accounting period. Balance sheet of NTC and NEA include fixed assets, capital, work- in –progress, investment, current assets, loan and advances and deferred expenditure. The actual summarized balance sheet of NTC and NEA from F.Y 2058/059 to 2063/64 has been given below:-

Table - 14

Actual summarized Balance Sheet of NTC
For FY 2058/059 to 2063/064 Rs .in million

Particulars / FY	2058/059	2059/060	2060/061	2061/062	2062/063	2063/64
Assets:-						
Fixed assets	6840.4	7607.61	8094.88	9040.92	10088.43	11361.04
Capital work in progress	1857.82	1922.71	1377.24	2452.58	2443.061	3764.647
Investment	1080.82	1770.17	3394.56	3338.73	4156.948	4883.856
Current assets & advance	15336.63	18424.15	20213.76	20598.35	22526.52	23519.75
Deferred expenditure	166.17	168.36	140.91	142.19	136.448	131.815

Total	**25281.84**	**29893**	**33221.35**	**35572.77**	**39351.41**	**43661.11**
Capital &Liabilities						
Equity capital	2053.86	2053.86	15000	15000	15000	15000
Reserve & surplus	14873.56	17468	5580.39	5825.86	8686.027	11794.28
Loan from Govt. of Nepal	299.99	233.78	11.25	24.24	0	1191.68
Current Liabilities	2943.38	3675.42	3630.86	3858.48	4475.753	5712.295
Provisions	5111.05	6461.94	8998.85	10864.19	11189.63	9962.858
Total	**25281.84**	**29893**	**33221.35**	**35572.77**	**39351.41**	**43661.11**

Source: - Annual Report of NTC, 2063/064

Table -15
Actual summarized Balance Sheet of NEA
For FY 2058/059 to 2063/64

Rs. in million

Particulars / FY	2058/059	2059/060	2060/061	2061/062	2062/063	2063/64
Assets:-						
Fixed assets*	58538.2	56949	58963.4	61286.8	61573	60902
Capital work in progress	4837.8	8655.5	10619.6	16060.4	21991.5	29145.19
Investment	553	613	713	777	819.9	882.05
Current assets & advance.	7322	7690	7883.4	8491.6	8995.3	10322.97
Deferred expenditure	926.7	637.4	228.3	376	359.8	-124.23
Total	**72177.7**	**74544.9**	**78407.7**	**86991.8**	**93739.5**	**101128**
Capital &Liabilities:-						
Equity capital	16601.3	16976.9	18215.9	20161.8	23113.1	26382.18
Reserve & surplus	8153.8	5584.3	4550.6	4826.1	4284.3	8466.43
Secured long term loan	41474.5	43786	45252	48686.4	50636.8	47616.15
Current Liabilities*	5948.1	8198.1	10389.2	13318.5	15705.3	18663.24
Total	**72177.7**	**74545.3**	**78407.7**	**86992.8**	**93739.5**	**101128**

Source: - Annual Report of NEA, 2063/064

*NEA is adopting a policy of revaluation of it majority of property, plant & equipment by applying revaluation factors provided by the World Bank every year.

*Interest during the Construction (IDC) period amounting to Rs 4148.89 million has not been adjusted from long term loan to current liabilities.

Above two tables of summarized balance sheet shows that NEA's total assets or liability and capital is higher than that of NTC. The liability side of balance sheet of NEA shows the higher percentage of long term liability. Out of the total liability of F.Y. 2063/064, 47.085% is represented by long term liability. NEA is suffering from paying a huge amount of interest each year. Long term loan of NTC is very few and in decreasing trend but NEA's is very high and in increasing trend. Current liabilities of each utility enterprise are very high and increasing trend. Fiscal Year 2007/08 is marketed as a successful year for NEA in bringing out its new debt instrument, NEA power Bond, in the capital market. This is the first of its kind in Nepalese capital market and was overwhelmingly subscribed by the public as well as institutional investors. This has essentially provided comfort to NEA in managing its budget deficit. At the same time, it opened up new horizon for mobilizing much needed financial resources from domestic market for funding power projects.

4.9 Performance evaluation

Performance of any firm is the concern of various groups like investors, creditors, management of the firm and government. Generally, the information provided in annual reports of the firm is just the raw information. One has to process that information as per user's need. The health of any organization is reflected in its financial statements as the health of an individual shown in pathological reports. Hence financial statement analysis has been considered as the analysis of human body by the physician. Regardless of the size, type of ownership, or product or service being sold, one basic goal for any business is to generate profits. Most organization would consider quality, customer service, efficiency, controlling costs, and responsiveness to change as five critical factors for success. If all of these factors are managed properly, the organization should be financially successful, if they are not, sooner or later the organization will fail. Responsibility center manager can be evaluated only by using measures of performance that relate to the type of authority and

responsibility they have. Therefore, different performance measurements are applicable to different type of responsibility centers.

Nepalese public enterprises have no a systematic and depth approach to performance evaluation. Public utility concerns to not care of their performance evaluation. Various techniques and criteria can be used to evaluate the business performance. This research reports uses following evaluation techniques to measure the performance of NTC and NEA.

- ❖ Identification of cost variability and CVP analysis
- ❖ Flexible Budgets
- ❖ Ratio analysis
- ❖ Variance analysis

4.10 IDENTIFICATION OF COST VARIABILITY

Cost classification is the process of grouping cost according to their common characteristics. The same cost figure sometime can be classified according to different ways by the costing department as per the purpose to be achieved and requirements of a particular concern. Identification of the cost variability is necessary in planning and control of the cost. The knowledge of the cost behavior is very important. All cost do not show the same behavior through out the operation. There exists a relationship between costs and volume of activity. Cost behavior implies the relationship between cost and activity. Cost behavior answers what happens in each expenditure when the output increases or decreases.

In most of the organizations, costs can be classified as variable, fixed and mixed as these behave in relation to activity volume. Fixed cost remains constant in total for a certain range of output for a certain time. It doesn't change within an activity level either there is increase or decrease in out put. The variable cost increases or decreases as the output increase or decrease. There is the direct relationship of variable cost with output. And those expenses which are neither variable nor fixed nature are called semi-variable or mixed cost.

Classification of cost into fixed and variable is very important to plan and control the cost. It helps to determine the volume of operation desired to maintain profitability of the authority. NTC & NEA have not maintained any clear cut boundaries about cost classification as fixed and variable cost. We have classified the cost into variable and fixed as per the information of management committee of those two enterprises. The classifications of the cost are as follows:-

Classification of Cost under behavior of NTC

Particular	**Nature of cost**
Employee cost	Fixed
Administrative expenses	Fixed
Depreciation	Fixed
Bonus	Fixed
Royalty	Fixed
Incentive package	Fixed
Interest on Subscriber's deposit and loan	Fixed
Operation and maintenance cost	Variable
Loss(gain) on foreign currency	Variable

Classifying of Cost under behavior of NEA

Particular	**Nature of cost**

Distribution expenses	Fixed
Administrative expenses	Fixed
Interest	Fixed
Depreciation	Fixed
Royalty	Fixed
Employee cost	Fixed
Fuel	Variable
Generation(Power purchase)	Variable
Repair and maintenance	Variable
Profit/loss on foreign exchange	Variable

4.11 COST VOLUME PROFIT ANALYSIS

Cost- volume- profit analysis is a systematic method of examining the relationship between changes in activity (i.e.) output) and changes in total sales revenue, expenses and net profit. The relationship between production cost, units sold and profit gained is analyzed in CVP. Cost volume profit analysis (CVP) and is a supplementary tool of planning for profit. Cost volume profit analysis, though most often illustrates business cases, is equally applicable for non- profit making organizations to allocate scarce economic resources most effectively among the competing alternatives. Allocation of scarce resources among the various demanding sectors is the most important part of national planning.

Cost volume profit analysis includes both contribution analysis and break even analysis. Break even sales volume is that levels of sales volume in which a company neither makes a profit nor suffers losses. Break even analysis helps the management to know which sales volume will only recover its cost and after which it starts giving profit. Therefore, it can provide management some insight into profit planning. It is a great helpful in managerial decision

making, specially cost control, cost reduction and profit planning. Cost volume profit analysis of NTC and NEA are based on the following assumption:-

- Actual base is selected in term of sales revenue.
- The CVP analysis is based on profit and loss account of fiscal year 2058/059 to 2063/064.
- Selling price, variable cost volume ratio and fixed cost per annum are assumed to be remaining constant.
- Costs are classified as fixed and variable as presented above.
- There is no assumption or supposition of inventory.
- Miscellaneous income i.e. non –operating income is excluded from cost volume profit relationship.

Table - 16

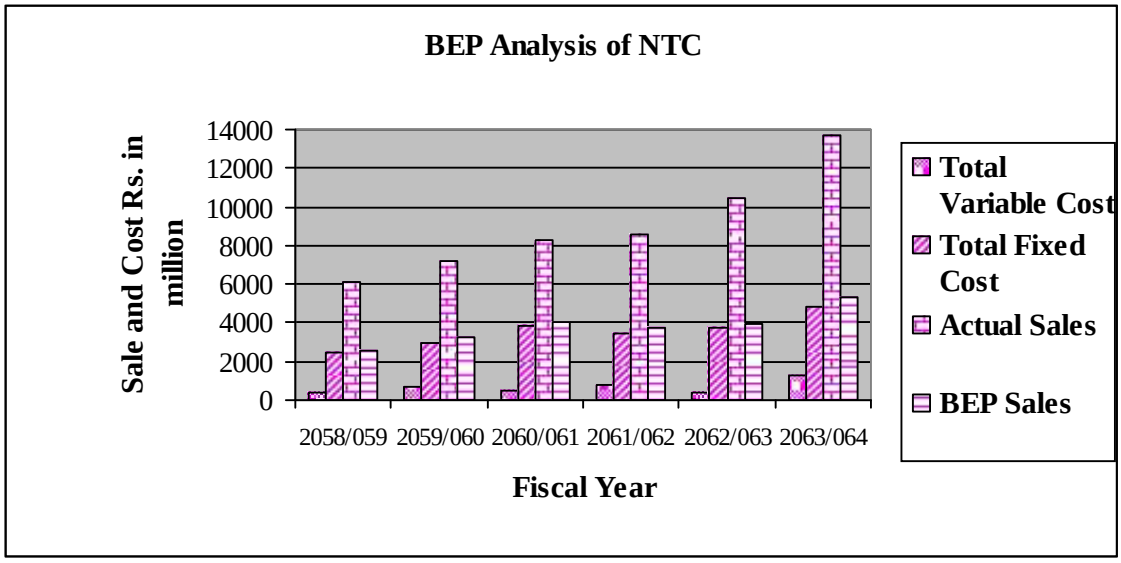
Cost Classification, Actual sales and BEP Analysis of NTC

Rs. in million

FY / Particular	2058/059	2059/060	2060/061	2061/062	2062/063	2063/064
Variable Cost:						
Opt. maintenance cost	503.30	490.89	463.30	552.16	655.13	797.40
Loss(gain) foreign exchange	-157.99	162.00	28.44	251.12	-280.01	526.03
Total Variable cost	**345.31**	**652.89**	**491.74**	**803.28**	**375.13**	**1323.43**
Fixed cost						
Employee cost	664.19	717.41	927.25	1136.82	1164.81	1280.52
Administration cost	494.57	874.34	1334.95	408.79	442.82	853.18
Interest Expenses	106.78	98.20	89.94	57.73	65.05	67.14
Royalty and bonus	174.98	180.67	310.33	679.30	787.16	1052.00
Incentive package	131.23	120.97	125.45	93.71	126.69	243.87
Depreciation	863.86	931.69	1016.31	1048.44	1195.08	1366.50
Total Fixed cost	**2435.61**	**2923.28**	**3804.23**	**3424.79**	**3781.61**	**4863.21**
Actual sales	6159.52	7208.09	8312.24	8584.14	10413.65	13967.32
Actual profit under income statement	1972.55	2588.22	2048.38	3230.47	3904.31	3108.56
CVP(BEP) Analysis						
Variable Cost volume ratio (VC Ratio = TVC / Total sales)	0.06	0.09	0.06	0.09	0.04	0.09

Profit volume ratio (PV Ratio = 1 – VC Ratio)	0.94	0.91	0.94	0.91	0.96	0.91
BEP(Rs in million) = TFC / PV Ratio	2580.26	3214.44	4043.44	3778.36	3922.92	5372.24
Margin of safety = (Actual sales-BEP sales)	3579.26	3993.65	4268.80	4805.78	6490.73	8595.08
Margin of safety ratio =(Margin of safety Rs / Total actual sales)	0.58	0.55	0.51	0.56	0.62	0.62
Profit under Margin of safety = (margin of safety Rs × PV ratio)	**3378.60**	**3631.92**	**4016.27**	**4356.07**	**6256.92**	**7780.68**
Summary						
Actual Sales	6159.52	7208.09	8312.24	8584.14	10413.65	13967.32
BEP sales	2580.26	3214.44	4043.44	3778.36	3922.92	5372.24
Actual profit	1972.55	2588.22	2048.38	3230.47	3904.31	3108.56
Profit under margin of safety	3378.60	3631.92	4016.27	4356.07	6256.92	7780.68
Difference in profit	**1406.05**	**1043.70**	**1967.89**	**1125.60**	**2352.61**	**4672.12**

Diagram -7



Graph – 7

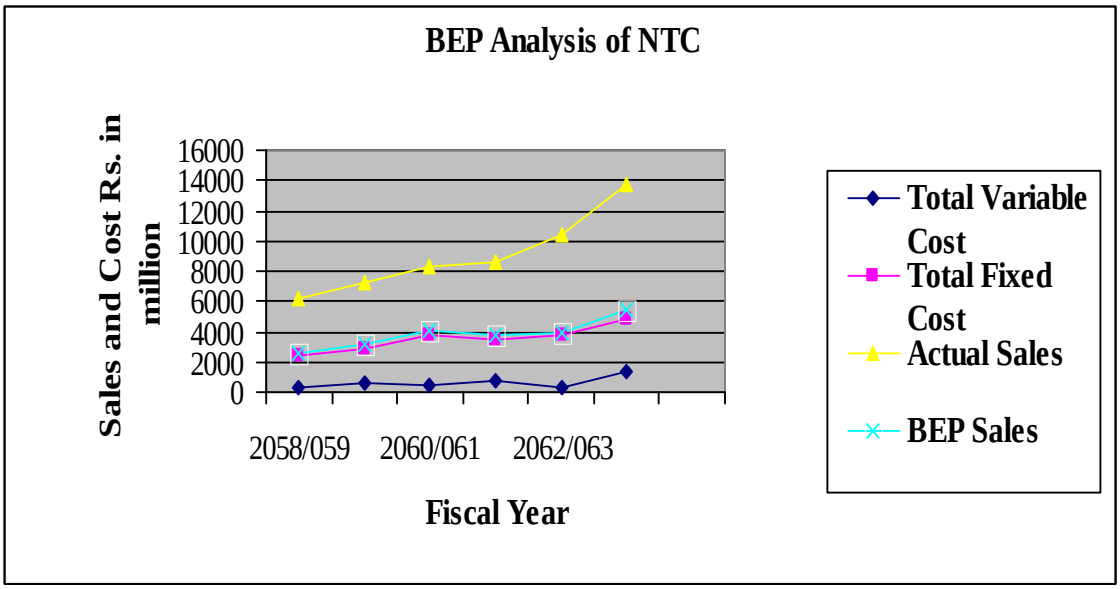


Table – 17

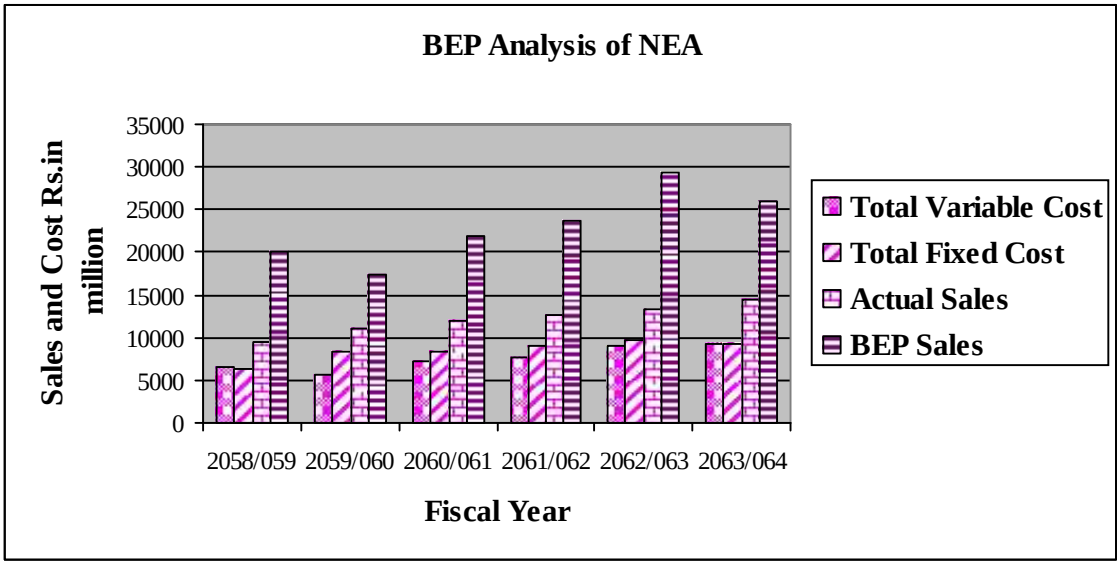
Cost Classification, Actual sales and BEP Analysis of NEA

Rs. in million

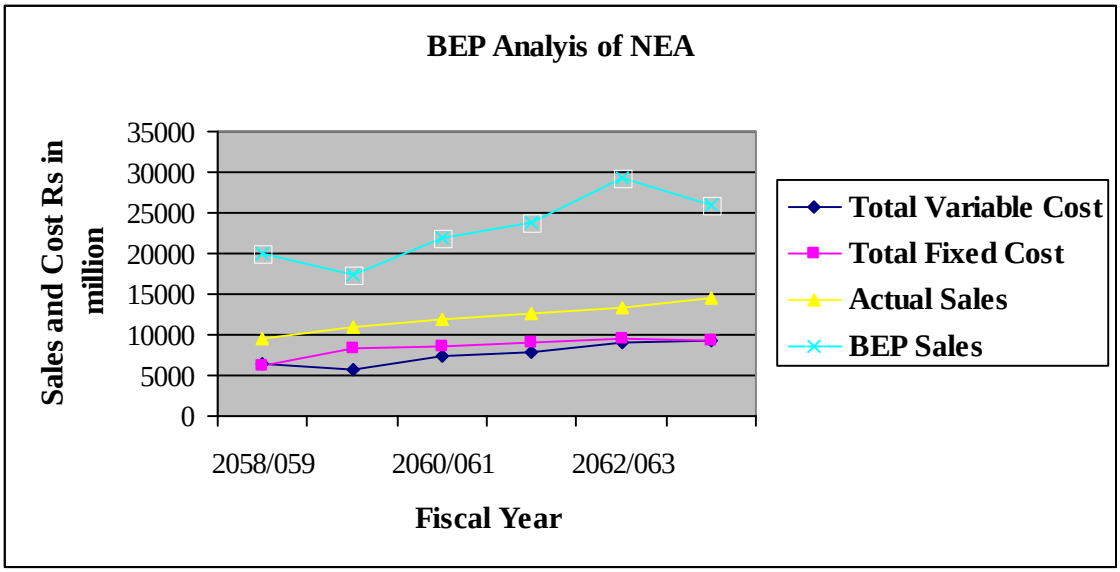
FY / Particular	2058/059	2059/060	2060/061	2061/062	2062/063	2063/064
Variable Cost:-						
Generation (including power purchase)	5728.00	5169.40	6565.90	7246.50	8100.60	8793.68
Repair & Maintenance cost)	528.48	586.98	678.41	759.13	800.14	967.99
Profit(loss) on foreign exchange	271.60	0.00	59.10	-230.00	42.70	-493.39
Total Variable cost	**6528.08**	**5756.38**	**7303.41**	**7775.63**	**8943.44**	**9268.28**
Fixed cost:-						
Employee cost	1229.38	1209.28	1305.61	1469.07	1740.23	1769.04
Administration cost	447.40	536.10	489.10	622.40	419.50	479.59
Interest Expenses	1395.50	2973.40	2991.50	3079.80	3050.90	2385.41
Royalty	591.05	660.22	606.09	709.12	897.50	970.46
Distribution Expenses	1174.40	1308.60	1376.10	1484.20	1703.70	1834.39
Depreciation	**1420.10**	**1656.70**	**1686.00**	**1733.50**	**1816.90**	**1856.47**
Total fixed cost	**6257.83**	**8344.30**	**8454.40**	**9098.09**	**9628.73**	**9295.36**

Actual sales	9476.20	11012.60	11874.70	12605.20	13331.90	14449.73
Actual profit	**278.90**	**-1694.60**	**-3475.20**	**-4808.00**	**-6095.80**	**-5801.61**
CVP (BEP) Analysis						
Variable Cost volume ratio (VC Ratio = TVC / Total sales)	0.69	0.52	0.62	0.62	0.67	0.64
Profit volume ratio (PV Ratio = 1 – VC Ratio)	0.31	0.48	0.38	0.38	0.33	0.36
BEP(Rs in million) = TFC / PV Ratio	20114.67	17482.61	21961.74	23746.06	29251.55	25922.37
Margin of safety = (Actual sales-BEP sales)	-10638.47	-6470.01	-10087.04	-11140.86	-15919.65	-11472.64
Margin of safety Ratio = (margin of safety sales /Total sales	**-1.12**	**-0.59**	**-0.85**	**-0.88**	**-1.19**	**-0.79**
Profit under margin of safety = (margin of safety Rs × PV ratio	-3309.71	-3088.08	-3883.11	-4268.52	-5240.27	-4113.91
Summary						
Actual sales	9476.20	11012.60	11874.70	12605.20	13331.90	14449.73
BEP sales	20114.67	17482.61	21961.74	23746.06	29251.55	25922.37
Actual Profit	**278.90**	**-1694.60**	**-3475.20**	**-4808.00**	**-6095.80**	**-5801.61**
Profit under margin of safety	-3309.71	-3088.08	-3883.11	-4268.52	-5240.27	-4113.91
Difference in profit	**3588.61**	**1393.48**	**407.91**	**-539.48**	**-855.53**	**-1687.70**

Diagram - 8



Graph – 8



Above table shows that actual sales of NTC is greater than BE sales at all fiscal year (i.e. 2058/059 to 2063/064).On the other hands actual sales of NEA is less than BE sales at all fiscal years. BE sales with comparison actual sales of NTC indicates that it is in very good condition from the view point of CVP analysis. Management of NEA has not been able to utilize their assets and resources effectively.

4.12 Flexible Budget

Flexible expenses budget is complementary to tactical profit plan. The primary purpose of flexible budget is to enhance expense control. A flexible budget estimates costs at different level of activity. By the help of flexible budget, a firm can determine the operation level by considering the cost and profit at different level of activity.

At activity level of 75%, 90%, 100% and 110% the behavior of the cost and it's impact on net income of NTC and NEA are shown in following table.

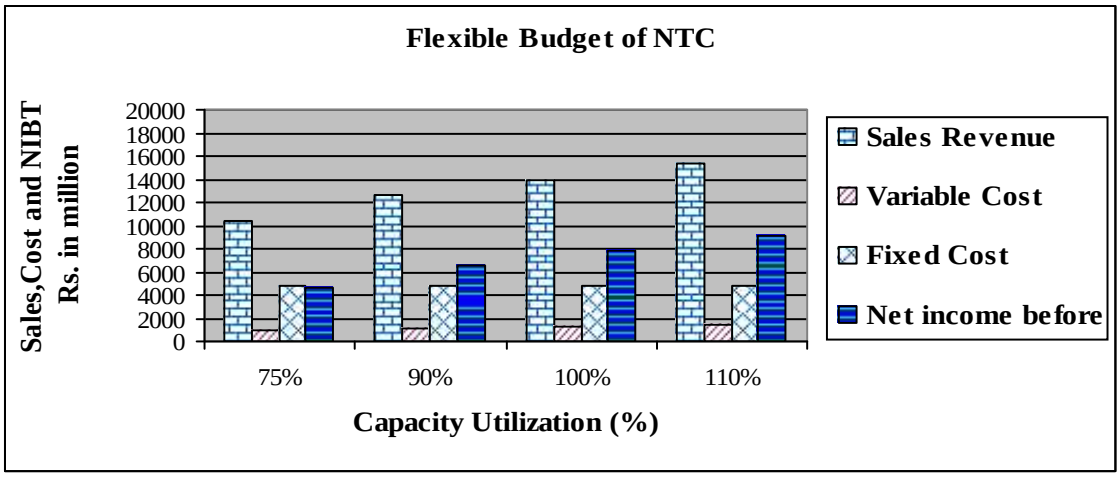
Table - 18

Flexible Budget of NTC and NEA at different Activity level for FY 2063/064 **Rs in million**

From above table, the variable cost of NEA is higher than NTC. Due to high fixed cost of NEA, the net income before tax is negative. NEA should control properly their cost, which is a main obstacle to generate satisfactory operating profit. Variable cost of NTC is very low, due to this reason contribution margin is greater than NEA. From the analysis of above table we can conclude that NTC performance is better than NEA.

Diagram - 9

	NTC				**NEA**			
		Activity Level				**Activity Level**		
Particular	**75%**	**90%**	**100%**	**110%**	**75%**	**90%**	**100%**	**110%**
Sales revenue	10475.5	12570.59	13967.318	15364.05	10837.3	13004.757	14449.73	15894.7
Less :- Variable cost	992.573	1191.087	1323.43	1455.773	6951.21	8341.452	9268.28	10195.11
Contribution margin	**9482.92**	**11379.5**	**12643.888**	**13908.277**	**3886.09**	**4663.305**	**5181.45**	**5699.595**
Less : - Fixed cost	4863.21	4863.21	4863.21	4863.21	9295.36	9295.36	9295.36	9295.36
Net income before tax	**4619.71**	**6516.289**	**7780.678**	**9045.0668**	**(5409.27)**	**(4632.055)**	**(4113.91)**	**(3595.77)**



Graph - 9

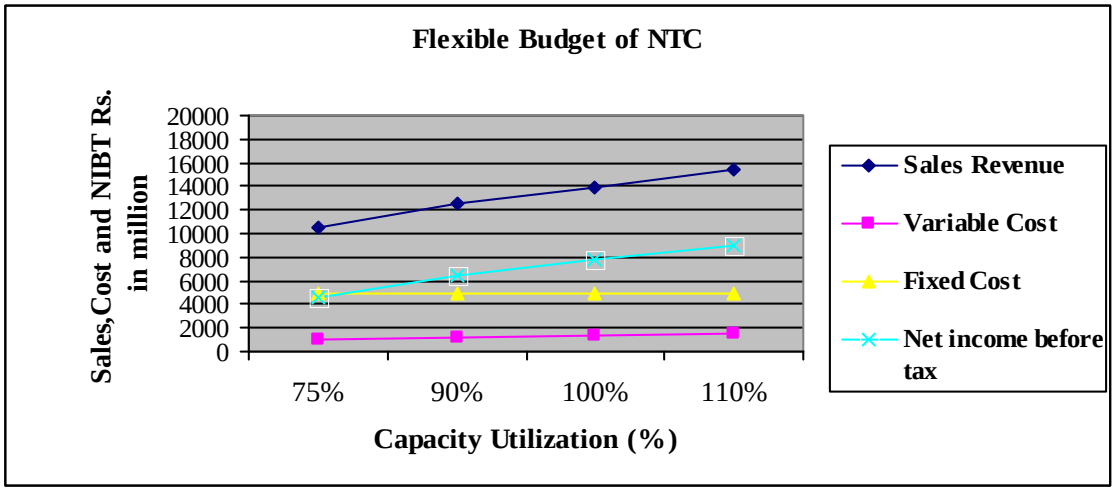
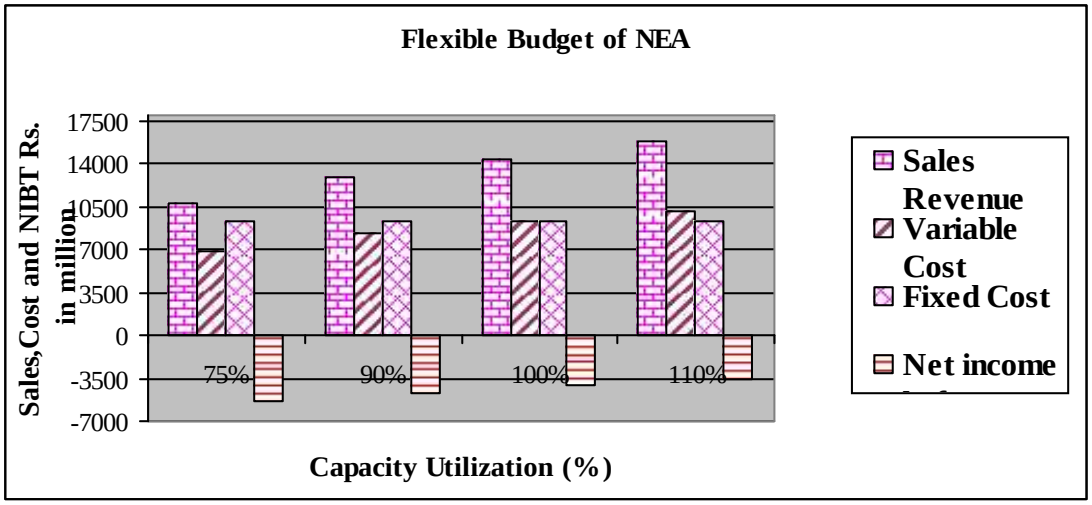
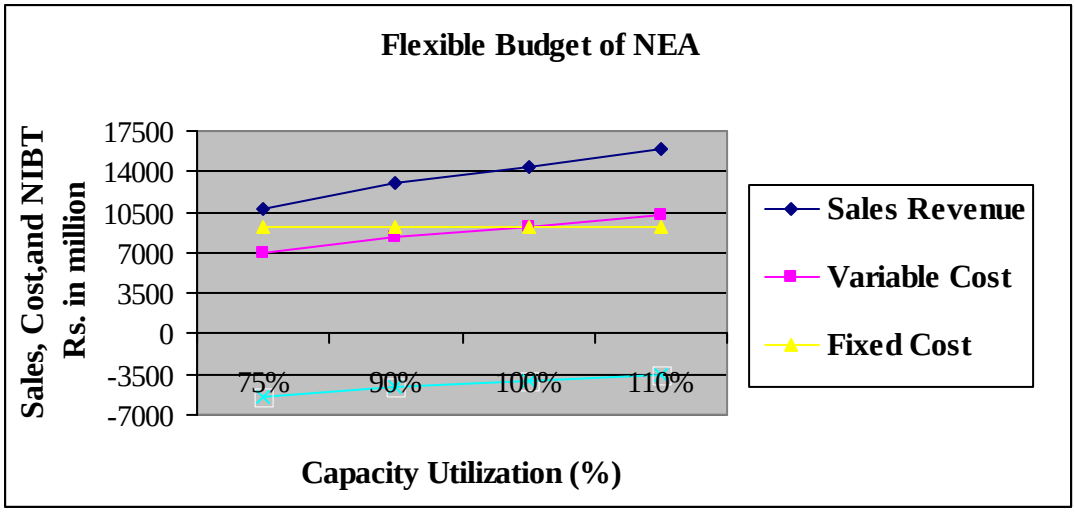


Diagram - 10



Graph - 10



4.13 ANALYSIS OF FINANCIAL POSITION OF NTC AND NEA BY APPLYING THE TOOL OF RATIO ANALYSIS

There are various approach of analyzing the financial statements of a firm. Ratio analysis is one of the important tools out of them. The analysis can be done in different ways. There are: trend analysis of the firm's ratios, comparison with industry average and benchmarking with competitors. The approaches are based on nature of organization and variability of data. Ratio analysis is the numerical relationship between any two variables of financial statement, which should serve some meaningful purpose. It makes a relationship between the figures of income statement and balance sheet and it helps to analyze the major strengths and weaknesses of a firm. Ratio analysis is a tool of scanning the financial statement of the firm. Through this, one comes to known which areas of the operation the organization is strong and in which areas it is weak. Financial analysis can be done by applying different kinds of ratios which are as follows

1. Liquidity ratio
2. Activity ratio
3. Capital structure ratio
4. Profitability ratio

In spite of calculating all these ratios, some of the major ratios that are also used as indicators by Nepal Government to analyze the financial position of the PEs are calculated as below

4.13.1 TOTAL ASSETS TURNOVER RATIO

This ratio sets the relationship between total assets and sales of a firm. It analyzes to what extent assets of a firm are managed and utilized. A higher the total assets turnover ratio is preferable. The higher TATR means the more efficiently its assets have been used. Low ratio indicates that the firm is not generating sufficient sales volume for the size of its assets, investment, or there are more excessive assets than that can be utilized. The following table shows the relationship between total assets and sales revenue of NTC and NEA.The detail results of this analysis are presented by given below on table by applying the following formula:-

$$\text{Total assets turnover ratio} = \frac{\text{Sales}}{\text{Total Assets}} = \ldots\ldots\text{Times}$$

Where, Total assets = Net fixed assets +Capital work in progress+ Investment+ total current assets – deferred expenditure written off.

Table - 19

Computation of Total Assets Turnover Ratio of NTC and NEA from FY 2058/059 to FY2063/064.

Rs. In Million

	NTC			NEA		
FY	Sales revenue	Total assets	Total assets turnover ratio	Sales revenue	Total assets	Total assets turnover ratio
2058/059	6159.52	25115.66	0.25 times	9476.20	71251.00	0.13 times
2059/060	7208.09	29724.63	0.24 times	11012.60	73907.50	0.15 times
2060/061	8312.24	33080.44	0.25 times	11874.70	78179.40	0.15 times
2061/062	8584.14	35430.58	0.24 times	12605.20	86615.80	0.15 times
2062/063	10413.65	39214.96	0.27 times	13331.90	93379.70	0.14 times
2063/064	13967.32	43529.25	0.32 times	14449.73	101252.23	0.14 times
Average	**9107.49**	**34349.25**	**0.26 times**	**12125.06**	**84097.61**	**0.14 times**

Source: Annual Report of NTC and NEA, 2058/059 to 2063/064.

According to the above table, the sales of NTC and NEA have increased every year. The investment on assets has increased in the subsequent years. Total assets cover the value of net fixed assets, capital work in progress, investment and current assets excluding differed expenditure written off.

Comparatively total assets turnover ratio of NTC is higher than NEA. On the basis of this analysis, NTC has better performance than NEA by utilizing the assets to generate revenue

4.13.2 Capital Employed Turnover Ratio

Capital employed turnover ratio establishes the relationship between the amount of sales and capital employed. Capital employed is the value of shareholder equity plus long term loan. It shows how efficiently capital employed has been generating its sales revenue. This ratio can be calculated by using the following formula.

$$\text{Capital employed turnover ratio} = \frac{\text{Sales}}{\text{Capital employed}}$$

Where, capital employed = Equity capital +Reserve & surplus +Long term loan

Table -20

Capital Employed Turnover Ratio of NTC and NEA from the FY 2058/059 to 2063/064

Rs. in million

	NTC			**NEA**		
FY	Sales revenue	Capital Employed	Ratio	Sales revenue	Capital employed	Ratio
2058/059	6159.52	17227.40	0.36 times	9476.20	66229.60	0.14 times
2059/060	7208.09	19755.65	0.36 times	11012.60	66347.20	0.17 times
2060/061	8312.24	20591.64	0.40 times	11874.70	68018.50	0.17 times
2061/062	8584.14	20850.09	0.41 times	12605.20	73674.30	0.17 times
2062/063	10413.65	23686.03	0.44 times	13331.90	78034.20	0.17 times
2063/064	13967.32	27985.96	0.50 times	14449.73	82464.76	0.18 times
Average	**9107.49**	**21682.79**	0.42 times	**12125.06**	**72461.43**	**0.17 times**

Source: - Annual Report of NTC and NEA, 2058/059 to 2063/064

The above calculation shows that capital employed turnover ratio of NTC is in increasing trend within the study period and NEA's is static for three year and increase in one percent of final year. The capital employed of NTC and NEA have increased year by year, but comparatively NEA's utilization is

not satisfactory than NTC. As a result, huge amount of capital have remained idle and cost of capital has increased day by day.

4.13.3 QUICK / ACID TEST RATIO

This ratio establishes a relationship between quick or the liquid assets and current liabilities. It is also called acid test ratio. This ratio is a more accurate guide to measure the liquidity position of any firm. An asset is liquid, if it can be converted in to the cash immediately or reasonably soon without the loss of any value. The calculation of quick ratio includes only those assets that are most liquid in nature i.e. Cash, marketable securities etc. quick assets are calculated by deducting inventories and prepaid expenses from total current assets because these are not highly liquid. This ratio measures the ability of the firm for immediate payment of current liabilities. This ratio is calculated by dividing the total quick assets by the total of current liabilities. Quick ratio of the last six years for NTC and NEA are given below.

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

Table - 21

Quick/ Acid Test Ratio of NTC and NEA for the FY 2058/059 to 2063/064

Rs. In million

	NTC			NEA		
FY	Quick Assets	Current liabilities	Ratio	Quick Assets	Current Liabilities	Ratio
2058/059	10378.90	8054.42	1.29:1	2949.50	5948.10	0.50:1
2059/060	13176.26	10137.35	1.30:1	4456.40	8198.10	0.54:1
2060/061	14462.40	12629.72	1.15:1	4772.10	10389.20	0.46:1
2061/062	12452.51	14722.68	0.85:1	5020.30	13317.50	0.38:1
2062/063	15167.93	15665.38	0.97:1	5346.60	15705.30	0.34:1
2063/064	16764.78	15675.15	1.07:1	6298.99	18663.24	0.34:1
Average	**13733.79**	**12814.12**	**1.10:1**	**12337.77**	**12036.91**	**0.43:1**

Source : Annual Report of NTC and NEA, 2058/059 to2063/064

According to above table, the liquidity position of NTC was satisfactory in the F.Y. 058/059 to 060/061.In FY 061/062 and 062/063 it was less than its standard rate. In average it reflects good position of NTC. For

NEA the liquidity position was weak within study period, which is less than its standard rate. Generally quick ratio 1:1 or equal portion of liquid assets and current liability is considered to represent measure of satisfactory liquidity position of the organization. Excessive as well as short quick ratio serve against the interest of organization. It is clear that NEA does not have enough working capital. In all FY NEA's quick ratio are below normal standard 1:1 On the other hand it seems the fluctuating trend of quick ratio.

In conclusion, we can say that NEA has not satisfactory liquidity position. This organization could not be able to meet the obligations as and when due. So, it should be improved to make liquidity position sound and strong. On the other hand, quick ratio of NTC is above the normal standard 1:1. Which indicate quick assets is increases and ideal in this organization. NTC should revise quick asset and minimized it.

4.13.4 Profitability Ratio

Profitability is an important measure of company's operating success. Profitability shows overall efficiency of a company. Generally, Profitability ratio can be calculated in terms of the company's sales, investment, earnings and dividends. Besides the management of the company, creditors, owners, and potential investors are also interested in the profitability of the firm. Higher profitability ratio ensures to the creditors, owners and potential investors that their investment is safe and they can get regular return. The following important profitability ratio are computed for NTC and NEA

A Net Profit Ratio:-

This ratio measures the overall profitability of a business by establishing the relationship between net profit and net sales. It shows the firm's net profit earning ability on per rupee sales. Higher net profit margin is better. It shows the overall performance of the firm. This ratio also indicates the firm's capacity to withstand in adverse economic conditions. Net profit ratio is measured by dividing net profit after tax by sales as shown below:

$$\text{Net profit ratio} = \frac{\text{Net Profit after tax}}{\text{Sales}}$$

Table - 22

Computation of net profit ratio of NTC and NEA from FY 2058/059 to 2063/064 **Rs in million**

	NTC			NEA		
FY	Sales revenue	Net Profit after tax	Ratio	Sales revenue	Net profit after tax	Ratio
2058/059	6159.52	2,467.93	40.07 %	9476.20	(860.70)	(9.08%)
2059/060	7208.09	3,087.78	42.84 %	11012.60	(1,953.70)	(17.74%)
2060/061	8312.24	3,290.12	39.58 %	11874.70	(1,760.30)	(14.82)
2061/062	8584.14	3,542.46	41.27 %	12605.20	(1,312.80)	(10.41%)
2062/063	10413.65	4,936.65	47.41 %	13331.90	(1,267.80)	(9.51%)
2063/064	13967.32	5,652.69	40.47 %	14449.73	314.19	2.17%
Average	**9107.49**	**3,829.60**	**41.94%**	**12125.06**	**(1,140.19)**	**(9.90%)**

According to above table, Net profit ratio of NTC was satisfactory in the F.Y. 058/059 to 062/063. In FY 063/064 its ratio is decreased by 7% as compared to previous year. On an average, NTC is in good position from the view point of net profit ratio. For NEA Net profit ratio was weak within study period, which was negative except in FY 2063/064. NEA shall reduce its unnecessary expenses and power loss to increase its profit. The table shows, net profit ratio is increasing negatively year by year, which denotes the dark future of NEA.

B RETURN ON CAPITAL EMPLOYED

Return on capital employed establishes a relationship between the profit and total capital employed by a firm. This ratio helps to analyze the rate of return in total invested capital. It indicates how well the management has used

the fund supplied by the creditors and the owners. Higher ratio indicates the efficient utilization of fund and makes it entrust able to the creditors and the owners. NTC's and NEA's return on capital employed are calculated in the following table from F.Y.058/059 to F.Y. 063/064.

$$\text{Return on Capital Employed Ratio} = \frac{\text{Net profit after tax}}{\text{Capital employed}}$$

Table - 23

Computation of Return on Capital Employed of NTC and NEA from the FY 2058/059 to 2063/064.

Rs. in million

		NTC			NEA	
FY	Net Profit after tax	Capital employed	Ratio	Net profit after tax	Capital employed	Ratio
2058/059	2,467.93	17,227.40	14.33 %	(860.70)	66,229.60	(1.30%)
2059/060	3,087.78	19,755.65	15.63 %	(1,953.70)	66,347.20	(2.94%)
2060/061	3,290.12	20,591.64	15.98 %	(1,760.30)	68,018.50	(2.59%)
2061/062	3,542.46	20,850.09	16.99 %	(1,312.80)	73,674.30	(1.78%)
2062/063	4,936.65	23,686.03	20.84 %	(1,267.80)	78,034.20	(1.62%)
2063/064	5,652.69	27,985.96	20.20 %	314.19	82,464.76	0.38 %
Average	**3,829.60**	**21,682.79**	**17.33 %**	**(1,140.19)**	**72,461.43**	**(1.64%)**

Source: Annual Report of NTC and NEA, 2058/059 to 2063/064

AS to capital employed, NEA is incapable to yield desired rate of return. Overhead expenses should be controlled and operating profit should be increased to increase rate of return. NEA is to manage its capital effectively so as to increase its return ratio. On the other hand, NTC is capable to yield desired rate of return. Its capital employed ratio is very good which indicates the efficient utilization of fund and makes it worthy to the creditors and the owners.

4.13.5 Du Pont analysis

Du Pont shows how the return on equity is affected by assets turnover, profit margin, and leverage. The Du Pont chart was developed by Du Pont managers for evaluating performance and analyzing ways of improving performance. The profit margin times the total assets turnover as called the Du Pont equation. This equation gives the rate of return on assets (ROA):

ROA = Net profit margin ×Total assets turnover ratio

$$= \frac{\text{Net income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Total assets}} = \frac{\text{Net income}}{\text{Total assets}}$$

$$\text{Return on Equity (ROE)} = \frac{\text{Net income}}{\text{Total assets}} \times \frac{\text{Total assets}}{\text{Common Equity}} = \frac{\text{Net income}}{\text{Common Equity}}$$

Table - 24

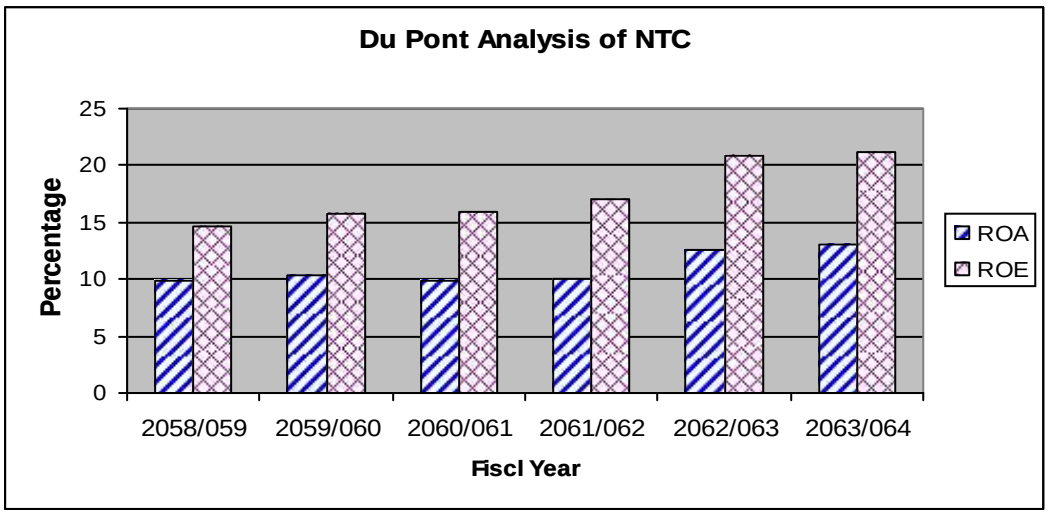
Computation of Return of Assets and Return of Equity of NTC for FY 2058/059 to 2063/064

NTC					
FY	Net profit after tax	Total assets	Common equity	ROA	ROE
2058/059	2467.93	25115.66	16927.41	9.83	14.58
2059/060	3087.78	29724.63	19521.87	10.39	15.82
2060/061	3290.12	33080.44	20580.39	9.95	15.99
2061/062	3542.46	35430.58	20825.86	10.00	17.01
2062/063	4936.65	39214.96	23686.03	12.59	20.84
2063/064	5652.69	43529.25	26794.28	12.99	21.10

Sources: Annual Report of NTC and NEA

As per prescription of Du Pont Corporation, financial performance of any corporation is reflected in its returns, especially in return on equity (ROE) and return on assets (ROA). While observation has been made ROE of the NTC it was 14.58 %, 15.82%, 15.99%, 17.01%, 20.84% in FY 2058/059 to 2062/063 respectively. Return of asset is also positive and increasing trend which reflect improving performance of net profit with total assets.

Diagram - 11



Graph –11

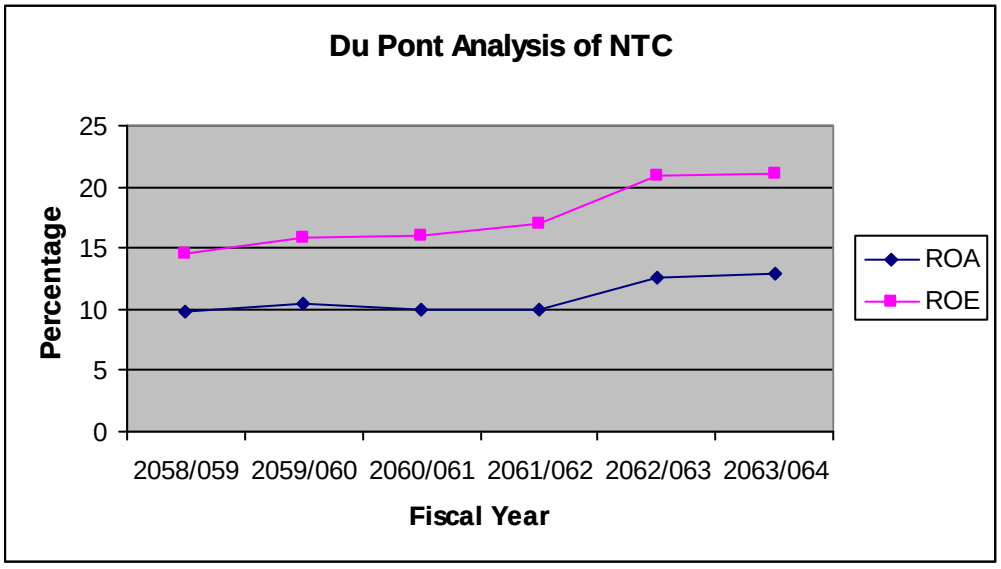


Table - 25

The above table shows ROE of the NEA is negative. This result may be due to various reasons like unsatisfactory ROA or equity multiplier

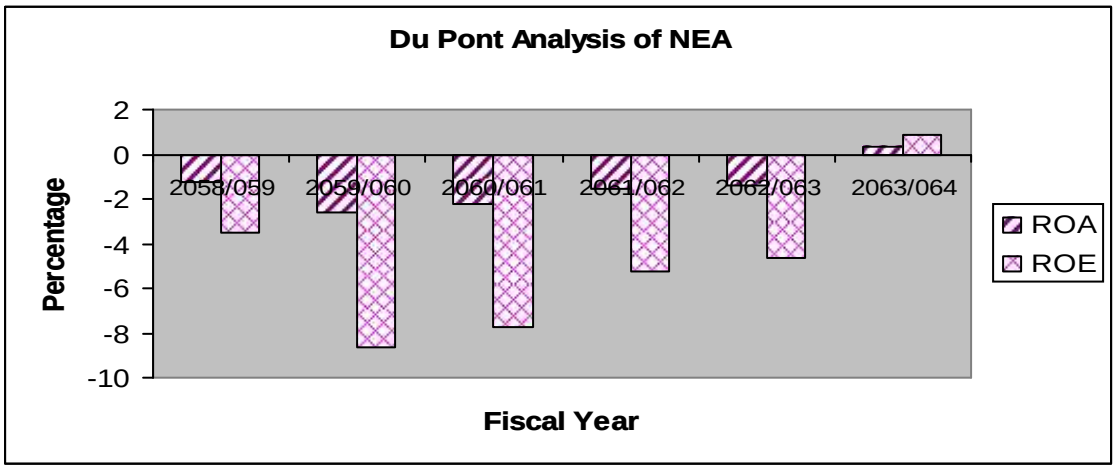
(EM) .while analysis has been made it is found that the return of NEA are

Computation of Return of Assets and Return of Equity of NEA for FY 2058/059 to 2063/064

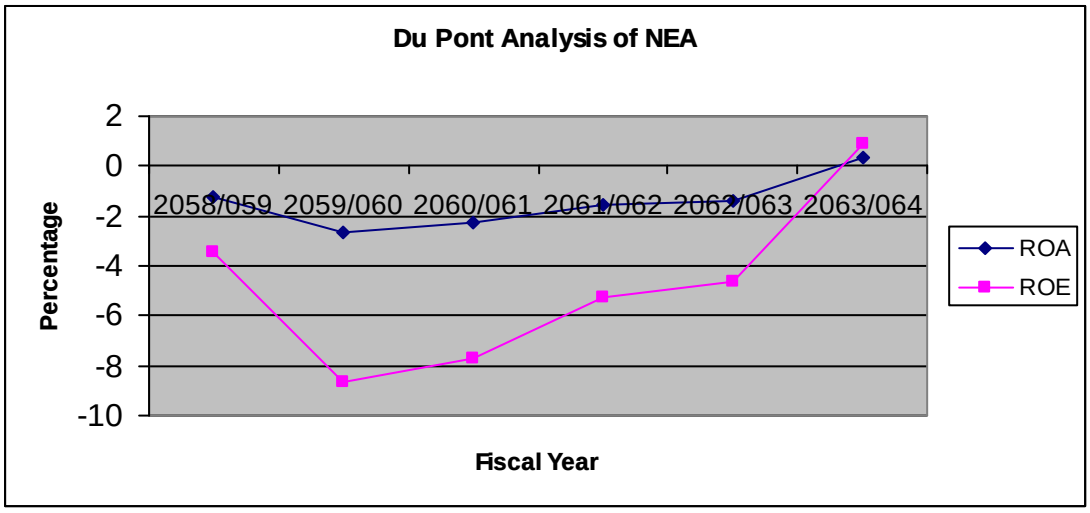
Fiscal Year	Net profit after tax	Total assets	Common equity	ROA	ROE
2058/059	-860.70	71251.00	24755.10	-1.21	-3.48
2059/060	-1953.70	73907.50	22561.20	-2.64	-8.66
2060/061	-1760.30	78179.40	22766.50	-2.25	-7.73
2061/062	-1312.80	86615.80	24987.90	-1.52	-5.25
2062/063	-1267.80	93379.70	27397.40	-1.36	-4.63
2063/064	314.19	101252.23	34848.61	0.31	0.90

negative over all study period. As per the results mentioned in analysis part one of the reasons for negative ROE is because of high interest cost. Therefore it is beneficial to NEA to raise fund even if the interest rate is lower in foreign debt.

Diagram – 12



Graph – 12



4.13.6 Account Receivable and Debtors Turnover Ratio

Average collection period provides the information on the liquidity of the receivable, the shorter period of collection periods express inefficient credit policy. It measures and evaluates the management's efficiency to collect its credit sales in timely manner. It shows the quality of the debtors and the average length of time that the firm must wait after making a credit sale before receiving cash .To analyze the account receivable of NTC and NEA, mainly debtors turnover and average collection periods are used in this research study. Average collection period and debtors turnover ratio is calculated by using following formula.

$$\text{Average collection period} = \frac{\text{Days in a year (365)}}{\text{Debtor turnover ratio}}$$

$$\text{Debtor's turnover ratio} = \frac{\text{Sales}}{\text{Closing Debtors}}$$

Table - 26

Average collection period and Debtor turnover ratio of NTC and NEA for 2058/059 to 2063/064

	NTC				NEA			
FY	Sundry debtors and account receivable	sales revenue	Average collection period(in Days)	Debtors turnover ratio	Sundry debtors and account receivable	sales revenue	Average collection period(in Days)	Debtors turnover ratio
2058/059	2468.08	6159.52	146	2.50	2284.90	9476.20	88	4.15
2059/060	3030.28	7208.09	153	2.38	3380.20	11012.60	112	3.26
2060/061	2668.94	8312.14	117	3.11	3735.71	11874.70	115	3.18
2061/062	2825.94	8584.14	120	3.04	3697.70	12605.20	107	3.41
2062/063	3099.50	10413.65	109	3.36	4088.00	13331.90	112	3.26
2063/064	3455.51	13967.32	90	4.04	5151.41	14449.73	130	2.81

Sources: - Annual report of NTC and NEA 2058/059 to 2063/064

The above table shows efficiency of trade credit management of NTC and NEA. The account receivable of NTC has increased from Rs.2468.08 million to Rs. 3455.51 million for the study period. The sales revenue of both company are in increasing trend over the six year study period. The collection period of NTC for the FY 2058/059 is 146 days and it has reached 90 days for the year 2063/064.The debtors turnover ratio is scaled up to 4.04 times at maximum level in FY2063/064, while the outstanding debt collection period is minimum.

The account receivable of NEA has increased from Rs.2284.90 million to Rs. 5151.41 million for the study period. The collection period of NTC for the FY 2058/059 is 88 days and it has reached 130 days for the year 2063/064.The debtors turnover ratio is scaled up to 4.15 times at maximum level in FY2058/059, while the outstanding debt collection period is minimum. By observing the above table it is found that receivable turnover has been decreased gradually from 2058/059 to 2063/064, which indicates the NEA's receivable has not been managed well. It is supported by average collection period (ACP) also which was 88 days in the year 2058/059 and increase to 112 in the year 2059/060 and suddenly jumped to 130 days in the year 2063/064.The receivable of NEA has not been managed well therefore it is better to try to manage its assets effectively to improve its return.

A minimum average collection period is favorable. It measures the quality of debtors. It indicates the rapidity or slowness of collection from debtors. An increasing collection period is usually a bad sign as it suggests the lack of proper credit control. The higher collection period shows liberal credit policy while lower collection period shows tight credit policy.

From the above analysis of receivable, it can be known that NEA has adopted the liberal credit policy. It shows that low turnover of sundry debtors or longer debt collection period. An excessively long collection period implies a too liberal and inefficient credit and collection performance. Where as NTC has adopted the tight credit policy. It shows that higher turnover of sundry debtors or short debt collection period. In general, short collection period or high turnover ratio is preferable, so comparatively NTC's credit management or credit efficiency is better than NEA.

Diagram – 13

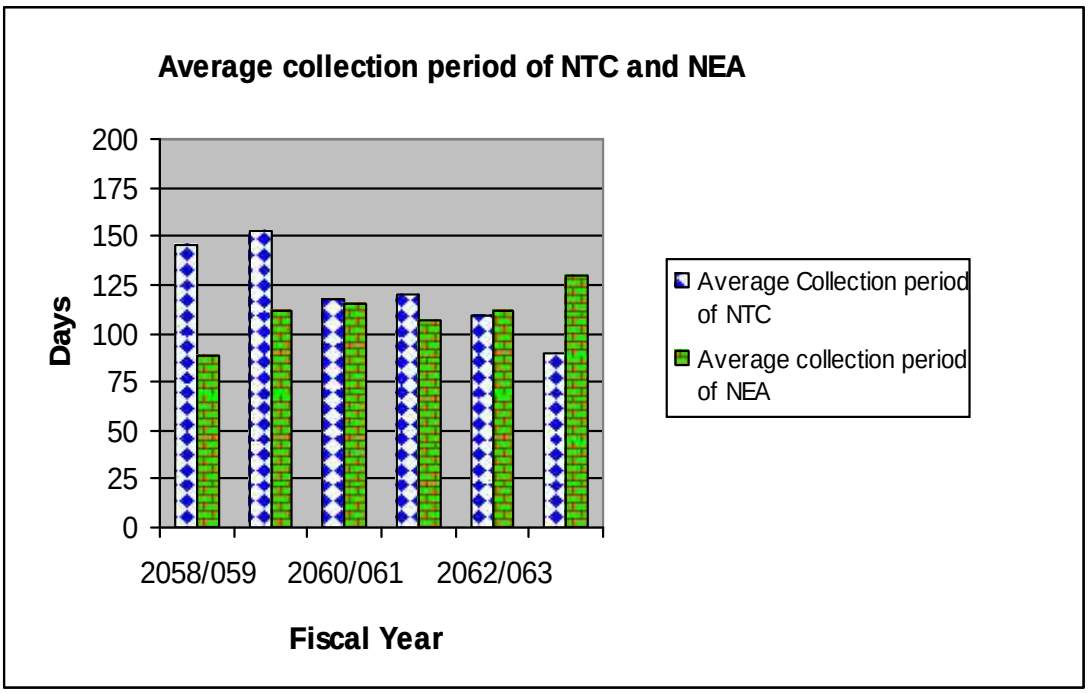
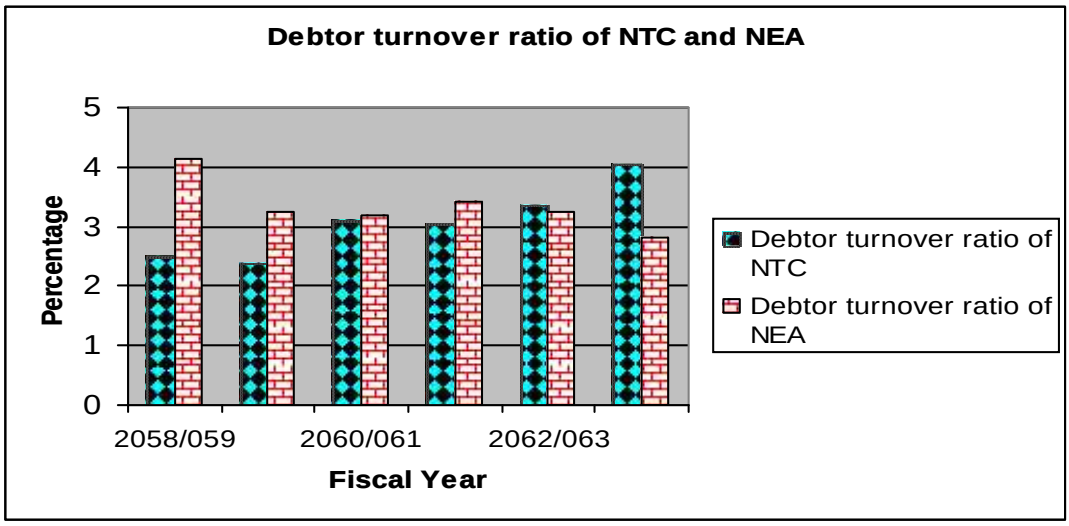


Diagram – 14



4.14 Variance Analysis

Variance analysis is a task of comparing the actual performance with predetermined performance standards to determine how well the targets have been met. Variances are the deviations or the difference between what should be (the standard) and what has happened (the actual). If the actual performance meets the standards, the achievement is considered good. If there is big gap between the actual results and the standards, the performance is considered poor.

Following steps are taken while analyzing variance:-

- Standard should be developed.
- Comparison between actual result and standard should be made to find variance.
- Causes should be analyzed and diagnosed as controllable and uncontrollable.
- Responsibility and accountability should be designed and delegated.
- Necessary corrective actions should be taken to improve unfavorable variances.

4.14.1 Sales variance

The variance between budgeted and actual sales of NTC and NEA can be identified in the following table. **Table - 27 Sales variance of NTC for FY 2058/059 to 2063/064**

Rs. in million

NTC					
Fiscal Year	Budgeted Sales	Actual Sales	Variance amount	Variance in %	Remark
2058/059	5,724.63	6,159.52	434.89	7.06	Favorable
2059/060	6,184.00	7,208.09	1,024.09	14.21	Favorable
2060/061	7,315.00	8,312.24	997.24	12.00	Favorable
2061/062	7,979.79	8,584.14	604.35	7.04	Favorable
2062/063	9,200.92	10,413.65	1,212.74	11.65	Favorable
2063/064	12,909.46	13,967.32	1,057.86	7.57	Favorable

Table - 28
Sales variance of NEA for FY 2058/059 to 2063/064

Rs. in million

NEA					
Fiscal Year	Budgeted Sales	Actual Sales	Variance amount	Variance in %	Remark
2058/059	11,521.39	9,476.20	(2,045.19)	(21.58)	Unfavorable
2059/060	11,498.06	11,012.60	(485.46)	(4.41)	Unfavorable
2060/061	12,825.73	11,874.70	(951.03)	(8.01)	Unfavorable
2061/062	12,998.72	12,605.20	(393.52)	(3.12)	Unfavorable
2062/063	13,940.84	13,331.90	(608.94)	(4.57)	Unfavorable
2063/064	15,315.62	14,449.73	(865.89)	(5.99)	Unfavorable

The above table no 28 shows that NTC has favorable variance in all fiscal years. Actual sales Rs are higher than budgeted sales for all fiscal years. The budget should be based on the previous year's sales amount. Variance %

for 2062/063 was 11.65 which decreased to7.57 % for 2063/064. It indicates that he management of NTC is progressive. The table no 29 shows NEA has unfavorable variance for all fiscal year. It variance is in fluctuating trend .In FY 2058/059 its sales variance is highest which is (21.58%), then after it is in decreasing trend. This shows that management of NEA has neglected the cause and effect of unfavorable variance. Management of NEA should take the corrective action to avoid the unfavorable variance.

4.14.2 Production Variance

The variance between budgeted and actual production of NTC and NEA is given below.

Table - 29

Production Variance of NTC for FY 2058/059 to 2063/064

Units in million

	NTC				
FY	Budgeted	Actual	Variance	%	Remark
2058/059	48.763	52.926	4.163	7.866	Favorable
2059/060	72.049	75.031	2.982	3.974	Favorable
2060/061	96.143	99.423	3.280	3.299	Favorable
2061/062	123.625	125.755	2.130	1.694	Favorable
2062/063	175.630	179.580	3.950	2.200	Favorable
2063/064	268.540	273.570	5.030	1.839	Favorable

Table - 30
Production Variance of NEA for FY 2058/059 to 2063/064
Units in million

	NEA				
FY	Budgeted	Actual	Variance	%	Remark
2058/059	2,372.90	2,066.33	(306.57)	(14.84)	Unfavorable
2059/060	2,744.17	2,261.13	(483.04)	(21.36)	Unfavorable
2060/061	2,986.39	2,837.98	(148.41)	(5.23)	Unfavorable
2061/062	3,012.52	2,894.17	(118.35)	(4.09)	Unfavorable
2062/063	2,784.80	2,780.92	(3.88)	(0.14)	Unfavorable
2063/064	3,094.60	3,051.82	(42.78)	(1.40)	Unfavorable

The above table shows that the production variance of NTC is favorable for all fiscal year. Where as NEA has unfavorable production variance for all fiscal year. NEA is lacking the proper study of past year's trend while preparing the budget for future years. So management of NEA should focus on production process, control over power leakage/loss or revising the budgeted production.

4.15 Major Findings

The analysis of various functional budgets, actual achievements, financial position analysis, CVP analysis, and variance analysis shows that NTC and NEA are suffering from various internal and external problems in formulating and implementing budgetary system and revenue planning. NEA is suffering from heavy operating loss due to heavy fixed cost, power loss and interest expenses NTC and NEA have followed up Government's plan and policies and have paid attention towards customer's satisfaction as well as social obligation to provide telephone, and electricity in urban and rural areas. Frequently changes of government and their policies on the related field have adversely affected the performance of NTC and NEA.

On the basis of data presentation and their analysis the most remarkable findings are listed below:

- NTC and NEA have not adopted the practice of preparing monthly sales and revenue reports.
- The revenue plan prepared by the branch and sub branch were not taken as reference for preparation on of central revenue plan of both company.
- No plan and programmed has been made about possible consumption of telephones.
- Collection period and debtors turnover showed decreasing trend for NTC.
- NTC has practiced the international accounting standard.
- The analysis of category –wise revenue plan shows that achievement in domestic, non- commercial, commercial and industrial categories are highly consistent. But the achievements in remaining categories are fluctuating.
- Lack of proper communication and coordination among various responsible departments.
- Sound and effective management of NEA is essential for the better utilization of available water resources of the country.
- Achievement of NEA is more variable and not satisfactory in comparison with NTC due to lack of scientific research for budget forecasting.
- Calculated value of 'T' is greater than tabulated value which means actual average sales and production of each organization significantly differ.
- Overhead expenses are not classified systematically and it creates problem to analyze its expenses properly. Interest and desperation expenses of NEA are very high than NTC.
- Increase in the total income and decrease in the total expenditure has made NTC able to enjoy net profit .NEA bear heavy losses due to

decrease in the total income and increase in the expenditure and power loss.

- Sales variance of NTC is favorable but NEA shows unfavorable trend.
- There is no proper system of segregating cost in to fixed, variable and semi- variable in both companies.
- Flexible budget and variance analysis is completely ignored in both companies.
- There is not proper system of accountability and responsibility in case of power loss and bad performance in these organizations.
- Actual sales are significantly less than actual production which reveals that there is remarkable loss of electricity power in NEA.
- NEA has practice of preparing both strategic and tactical managerial budgeting but tactical plan is prepared for external purpose and strategic plan is prepared for internal purpose.
- There are perfect correlations between budgeted and actual sales, budgeted and actual production.
- The information systems of NTC and NEA have not seen effective. The lower level staff normally did not get information about overall operation.
- NEA is not able to meet its BEP sales therefore it faces loss every year.
- Specific goals and objectives are not conveyed to lower level staffs and it denotes the absence of MBO principle of management in the both organization.
- Return on sales, acid test ratio and return on capital employed are not satisfactory though total assets turnover ratio seems better for NEA. But above ratio is satisfactory condition for NTC.
- NEA is suffering from high fixed cost.
- Return on assets(ROA) and return on equity (ROE) is positive and in increasing trend on NTC. It indicates improving performance of net profit with total assets.
- ROA and ROE is negative of NEA for all study period .

- There is absence of skilled and academic manpower in budgeting section in both enterprises.
- Strikes and unrest in mid south Terai aggravated the financial health of NEA to a large extent. Strikes ,bandas and unrest in Terai restricted mobility leading to lapses in theft control, meter reading and maintenance etc which substantially hampered NEA's efforts of controlling losses.
- Managerial accounting tools such as annual budgeting, cash flow and ratio analysis are most widely practiced tools , where as practices of tools like zero- base budgeting, activity based budgeting, activity costing, target costing and value engineering are almost nil in the Public utility enterprises of Nepal. Application of new tools of managerial accounting is not in practices.

CHAPTER: - V

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

Public Enterprises in Nepal constitutes a vital instrument for the socio-economic development of the country. It enjoys a strategic and crucial position in our mixed economy. In developing country like ours public enterprises occupy a distinct position. However, their performance has been a challenge both to planners and the PE managers. The important question addressed these days is not so much whether we need enterprises but how to manage them efficiently. In developing country like Nepal, government has to play paramount role for building these infrastructures by the help of PE.

Management planning provides the basis for performance of the four managerial functions of organizing, staffing, leading and controlling. It is sometimes said that planning is the primary managerial functions, which logically precedes all other functions. The paramount consideration in today's age of "Global throat cut competition" in business is profit. Revenue planning and control is one of the most important management tool used to plan and control business operations. Revenue planning and control is a management tool which helps to increase the business in profitable condition.

Budgeting is the most important managerial tool used in profit planning and control of the business. The efficient and effective operations of business depend upon good formulation and application of various tools and techniques of budget. Revenue planning is also the important tool for the success of the business operation. It helps to achieve objectives and goals of the enterprises. Revenue planning and budgetary system is important techniques of management, which can be used in private, public sector as well s government organizations. Each and every public enterprises or firm or government corporation of genuine interest becomes the vital factors in revenue planning and budgetary control system.

Nepal is endowed with the total hydropower potential of 83000 MW of which technically feasible capacity is about 45000MW and 42000MW is considered as economically and technically feasible potential. Potentially Nepal could be a large net power producers and exporter to neighboring countries. But the present total installed capacity of the country is nearly 616 MW which is merely around one percent of the potential.

An energy crisis is one of the burning issues in the world nowadays. Electricity is one of the major components of energy, water resources is one of the main source of generation of electricity. Though Nepal is second richest country in natural water resources in the world, we Nepalese people are in the condition of "shadow under light". Nepal electricity Authority (NEA) is single organization generating, transmitting and distributing the electricity in Nepal. Therefore, its role is vital in the development of nation.

Government of Nepal made a policy to allow and promote hydropower development by private promoters, the results is that several projects are under construction both in the private and public sectors. Despites of all these development and effects, NEA still have to resist load shedding from time to time, the reasons for this are at present not enough capacity or any reserve margin which is required for any system to operate in a reliable manner.

At present, unfortunately, the country has been facing an acute shortage of peak load during the dry season. The present generation capacity of the Integrated Nepal Power System (INPS) in the dry season is only about 450 MW, while the peak demand was about 720 MW in December 2007. This shortfall has been managed by severe load shedding (max. 48 hours/week), Import of power from India and thermal generation.

First telecommunication service in the country was introduced in 1974 BS. Which was called Magneto Telephone Since then and up to the lunching of first five year plan of 2013 BS, the development of telecommunication was in slow pace. With the formal inception of Nepal Telecommunications Corporation in 2032 BS, a systematic development of telecommunications service has been stared. It was established under the Telecommunication Corporation Act 2028

BS. Nepal Telecommunications Corporation has been changed to Nepal Doorsanchar Company limited in 2061 BS under the Company act. It's popularly known viable name "Nepal Telecom". Nepal Telecom has been established with a mission that is "As a progressive, customer spirited and consumer responsive entity is committed to provide nation wide reliable telecommunication services as an impetus to the social, political and economic development of the country."

The present study intends to analyze and examine the budgetary system and revenue planning in NTC and NEA. The significance of the study is really on the examination that whether the NTC and NEA have applying revenue planning and budgetary system properly or not. The study tries to answer the question like what are the overall practices of budgeting in NTC and NEA? What are the major problems and issues relating to developing and implementing revenue planning and budgetary system?

The study has been organized in five main chapters consisting of introduction, Review of literature, research methodology, presentation and analysis of data and summary, conclusion and recommendation. This study covers the analysis of only six year from 2058/059 to 2063/064.

5.2 Conclusion

After analyzing the present budgetary System and revenue planning of NTC and NEA, the following are the major conclusion of this study:-

- Lack of coordination between various departments, lack of proper management and managerial capability and also lack of professionalism among employees are common in both enterprises.
- There is lack of skilled planners and budgeting experts. Budgets are prepared on traditional and adhoc basis. Financial department and few higher level officials only formulae plans & policies of NTC and NEA which is not a democratic and scientific system.
- NTC and NEA have no practice of analyzing the variances. They neither follow the periodic performance report nor consider the use of

flexible budgeting. So the management of these companies are not conscious to rethink about the causes of variance.

- Electricity leakage, theft and wastage is one of the remarkable problem of NEA which reduces the profit earning capacity of the authority and it has become the main reason behind the gap between actual sales and actual production.
- The NEA has high amount of fixed costs and the interest payable on long term loans every year constitutes considerable portion of fixed costs.
- The accumulated amount of account receivable which is increasing year by year denotes the inefficiency to collect its revenue in time in both enterprises.
- There is the absence of effective utilization of capital employed and liquidity position is also not satisfactory of NEA. But comparatively NTC's position is better than NEA.
- NTC and NEA prepares both long term and short term profit plan but the long term profit plans are confined only to the top level executives
- The NEA fails to analyze its strength and weaknesses in depth. Because of the absence of the competitors, authority has become monopolistic and, hence, it is not alert towards its possible threats and opportunities.
- While setting the target sales for next years, NTC and NEA have not considered other factors such as growth of consumer and other relevant factors.
- NTC and NEA have practices of using 10% increment over the figure the past to forecast next year's sales as 'benchmark' which is unscientific and unrealistic.
- NTC has sufficient capacity fulfill the demand of it's customers but NEA has not capacity to fulfill the demand of it's customers. NTC has better trading profit comparatively than NEA

- Cost volume profit analysis has not been considered while developing the sales plan, fixed assets purchase plan etc. Increase in BEP each year is not good symptom for the corporation and authority.
- The balance sheet of NEA show greater portion of long term debt. Therefore, NEA has paid high amount as interest each year than that of NTC.
- While comparing net profit of two organizations, NTC has shown net profit. Its financial position is better and reveal positive trend of profit in future. NEA will not be able to eliminate loss and to make profit until and unless it is not able to implement the cost reduction program effectively.
- NEA bears huge units of power loses. It is increasing every FY and reached 847 unit million GWH in FY 2063/064 which is 27.76%of total available unit.
- NEA has not efficiently able to adopt new technology advancement. That's why the costs of production are too high.
- All overhead expenses such as manufacturing, administration, selling and distribution are not kept separately and systematically. All these expenses are combined together as well as various cost are diagnosed as controllable and non –controllable expenses. So effort is made neither to reduce controllable expenses nor expenses control activities are being launched in both enterprises.
- These organizations have not proper communication system between top level management and employees. There is only one way communication. There is no participation of low –level manpower in decision –making procedure.
- Net profit ratio of NEA does not indicate the sound position of profit. It is suffering from loss in each year though the ratio was found to be decreasing in comparison to fiscal year 2060/061 to 2062/063. Where as net profit ratio of NTC indicate sound position of profit than NEA.

- Quick ratio of NTC is above standard. On the other hand quick ratio of NEA is found at below the standard for the period covered by the study.
- ROA and ROE is negative of NEA for all study period because of high interest cost. It is beneficial to NEA to raise fund if the interest rate is lower in foreign debt.
- Review of customer tariff, gradual recovery of accumulated losses, loss reduction, creation of fund for hydropower development and addressing future inflation- these have emerged as the major issues, which promptly need to be addressed for sustainability of the NEA.

- . Perception of the lower level staffs and participation are ignored by most of the public enterprises in developing goals, objectives, plan and strategies. There is lack of proper co-ordination and communication among the different levels of management. There is lack of commitment of the management on the goals and objectives of the organization. Planers having no proper skills and techniques are involved to develop various functional budgets. There is no practice of developing flexible budget in NTC and NEA.
- The collection of NEA is impeded by strikes and unrest in different parts of the country. The public sectors and the street light due still remain serious problems in revenue collection. The receivable balance from municipalities, government offices and public institutions are increasing year by year.
- In Nepalese PEs, there is still not an awareness of cost identification as variable, and fixed. In some case only an arbitrary classification is made, the regression method is not found to be practiced for segregating mixed costs into fixed and variable. It is basically due to the lack of skilled manpower in this area.

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5.3 RECOMMENDATIONS

The following suggestions are recommended to improve the formulation and implementation of revenue planning and budgetary system of NTC and NEA.

- While preparing central budget of NTC and NEA, it should take suggestions made by branches and sub – branches.
- NTC and NEA should avoid the practice of using 10% increment as benchmark figure while preparing budget .To achieve target growth rate in sales revenue NTC should make realistic forecast.
- NEA must restructure its capital structure and should emphasize the internal financing to minimize the burden of high interest of long term loans. For this, it can issue shares and can refund the debt.
- Trained and qualified manpower for budgeting and planning should be hired and existing human resources should be trained for effective formulation and implementation of budgeting & revenue planning.
- Leakage of electricity should be controlled. For this, meter reading and meter joining system should be improved. The most important aspect is to motivate its employees who are engaged in transmission and distribution line to control the leakage. Rules and regulations should be strictly implemented to control the leakage and those staffs who are themselves engaged in encouraging power leakage should be investigated and strictly be demoralized.
- NTC and NEA should develop their overhead expenses budget in a well classified and scientific way so as to reduce overhead expenses and increase overall operating profit.
- It should develop sound relation between departments and directors and encourage the participatory management system in setting the overall objectives of the enterprises. Both enterprises should undertake regular supervision and monitoring from top level management.
- NEA should give emphasis to private and foreign investors for the development of power production of small and major project.

- NTC and NEA should stress on an efficient utilization of fixed asset. NTC and NEA should develop the capital budgeting techniques scientifically.
- NTC and NEA should emphasize on cost volume profit relationship while developing the sales plan and strategy. To maintain the level of BEP, NTC should minimize its fixed cost and variable cost as well as increase the sales revenue.
- The liquidity position of NEA is not satisfactory. So it should be corrected by increasing current assets and /or by decreasing current liabilities.
- NEA should try to maximize its operating profit. For this, cost control program can be launched in one respect and the alternatives for the replacement of long term loans should be searched. NTC and NEA must classify the cost into fixed cost and variable to maintain the Accounting standard.
- NEA should utilize its optimum capacity by importing the latest technology around the world and by making a group of management standby for it maintenance.
- Variance analysis should be effective. Variance should be classified as favorable and unfavorable and causes for unfavorable variances should be controlled in time and the concerned officials should be made responsible for any deficiency.
- Democratic style of management should be followed while formulating plans, policies of the organization. Participation of lower level management should be encouraged in revenue planning and formulating and implementation budget.
- NEA should invest in generation, transmission and distribution projects with a view of improving the supply situation. For improving the supply situation, NEA should encourage the private sector by entering into power purchase agreements and by taking initiatives to develop projects in other modalities.

- Regular inspection and monitoring of budget centers should be undertaken. The effective implementation system of management is to be made. There should be timely evaluation of strengths and weaknesses. Different aspects such as managerial involvement, organizational adoption, responsibility accounting, full communication, realistic expectations, time dimensions, flexible application, behavioral point of view and follow up programs should be made more effective, productive and result oriented for the successful operation of the organization.
- Strengthen the competitiveness of Nepalese Public utility enterprises and carry out managerial activity, the use of managerial accounting tools is recommended. For planning activities, tools like: budgeting, cost-volume –profit analysis, leaner programming model of planning can be used. For controlling activities, tools like; budgetary control; variance analysis, standard costing and responsibility accounting can be used. While implementing any tools of managerial accounting, it is recommended that cost and benefit of the tools be analyzed. To implement the tools, congenial environment is a must. For this purpose, a separate managerial accounting department should be established within an organization. Managerial accounting expert should be hired. If the company cannot hire outside experts, it can send its existing employees for short- term training. If this also is not feasible for them, they can manage it by taking the service of fee- based consultants.

APPENDIX – 1

STATISTICAL CALCULATION

A.1. Calculation of Mean($\bar{X}$), Standard Deviation(±),coefficient of Variation(C.V),Correlation Coefficient(r) and Probable Error [P.E.(r)] of NTC

Budgeted Sales and Actual Sales of NTC

(Rs. in million)

Fiscal Year	NTC						
	Budgeted(X)	Actual (Y)	$\sum X - \bar{X}$	$\sum Y - \bar{Y}$	$\sum X - \bar{X}^2$	$\sum Y - \bar{Y}^2$	$\sum X - \bar{X} \sum Y - \bar{Y}$
2058/059	5724.63	6159.52	-2494.34	-2947.97	6221732	8690527	7353239
2059/060	6184	7208.09	-2034.97	-1899.4	4141103	3607720	3865222
2060/061	7315	8312.24	-903.97	-795.25	817161.8	632422.6	718882.1
2061/062	7979.79	8584.14	-239.18	-523.35	57207.07	273895.2	125174.9
2062/063	9200.917	10413.65	981.947	1306.164	964219.9	1706064	1282584
2063/064	12909.463	13967.32	4690.493	4859.828	22000725	23617928	22794989
Total	X =49313.8	ψ =54644.96			$\sum X - \bar{X}^2$ = 34202148	$\sum Y - \bar{Y}^2$ = 38528558	$\sum X - \bar{X} \sum Y - \bar{Y}$ =36140092

Let X and Y be the budgeted sales and actual sales respectively.

For Budgeted Sales:

Mean $\bar{X} = \frac{X}{n} = \frac{49313.8}{6} = 8218.97=$

Standard Deviation (σ) = $\sqrt{\frac{1}{n} \sum X - \bar{X}^2} = \sqrt{\frac{34202148}{6}} = 2387.54$

C.V = $\frac{\sigma}{\bar{X}} \times 100\% = \frac{2387.54}{8218.97} \times 100 = 29.049\%$

For Actual Sales:

Mean $\bar{Y} = \frac{Y}{n} = \frac{54644.96}{6} = 9107.49$

Standard Deviation $\pm \sigma = \sqrt{\frac{1}{n} \sum (Y - \bar{Y})^2}$

$$= \sqrt{\frac{1}{6} \times 38528558} = 2534.053$$

Co-efficient of Variation (C.V.) $= \frac{\sigma}{\bar{Y}} \times 100\ \%$

$$= \frac{2534.053}{9107.49} \times 100\ \% = 27.823\%$$

Correlation coefficient $r_{xy} = \frac{\sum (X - \bar{X}).(Y - \bar{Y})}{\sqrt{\sum (X - \bar{X})^2} . \sqrt{\sum (Y - \bar{Y})^2}}$

$= \frac{36140092}{\sqrt{34202148} . \sqrt{38528558}}$ = 0.9955, Probable Error (r) = 0.6745 X S.D.

$$0.6745 \times \frac{1 - r^2}{\sqrt{n}} \quad 0.6745 \times \frac{1 - (0.9955)^2}{\sqrt{6}}$$

$$= 0.00247$$

B. Calculation of Least Square Trend for NTC

FY	X	X =(X-3)	X^2	Actual Sales Y)	XY
2058/059	1	-2	4	6159.52	-12319
2059/060	2	-1	1	7208.09	-7208.09
2060/061	3	0	0	8312.24	0
2061/062	4	1	1	8584.14	8584.14
2062/063	5	2	4	10413.65	20827.31
2063/064	6	3	9	13967.32	41901.95
Total		3	19	54644.96	51786.27

Let the regression equation of Y on X be

Y= a+bX …… (1)

Then normal equations on fitting Y = a +bX are:-

$$Y = na + b X \quad \ldots\ldots\ldots (i)$$

$$XY = a X + b X^2 \quad \ldots\ldots\ldots (ii)$$

i.e. 54644.96 = 6a + 3b

51786.27 = 3a +19b

By solving these two equations we get

a = 8408.528 and b = 1397.93

Therefore, required equation Y = 8408.528 + 1397.93X

A.2. Calculation of Mean($\bar{X}$), Standard Deviation(±),coefficient of Variation(C.V),Correlation Coefficient(r) and Probable Error [P.E.(r)] of NEA

Budgeted and Actual Sales of NEA

(Rs.in million)

Fiscal Year	NEA						
	Budgeted (X)	Actual (Y)	$\sum X - \bar{X}$	$\sum Y - \bar{Y}$	$\sum X - \bar{X}^2$	$\sum Y - \bar{Y}^2$	$\sum X - \bar{X} \sum Y - \bar{Y}$
2058/059	11521.39	9476.2	-1495.34	-2648.86	2236041.7	7016459.3	3960946.312
2059/060	11498.06	11012.6	-1518.67	-1112.46	2306358.6	1237567.3	1689459.628
2060/061	12825.73	11874.7	-191	-250.36	36481	62680.13	47818.76
2061/062	12998.72	12605.2	-18.01	480.14	324.3601	230534.42	-8647.3214
2062/063	13940.839	13331.9	924.109	1206.84	853977.44	1456462.8	1115251.706
2063/064	15315.622	14449.73	2298.892	2324.67	5284904.4	5404090.6	5344165.266
Total	78100.361	72750.33			10718088	15407794	12148994.35

Let X and Y be the budgeted sales and actual sales respectively.

For Budgeted Sales:

Mean $\bar{X} = \frac{X}{n} = \frac{78100.361}{6} = 13016.73$

Standard Deviation (σ) = $\sqrt{\frac{1}{n} \sum X - \bar{X}^2} = \sqrt{\frac{10718088}{6}} = 1336.54$

C.V = $\frac{\pm}{\bar{X}} \times 100\% = \frac{1336.54}{13016.73} \times 100 = 10.267\%$

For Actual Sales:

Mean $\bar{Y} = \frac{Y}{n} = \frac{72750.33}{6} = 12125.055$

Standard Deviation $\sigma = \sqrt{\frac{1}{n} \sum (Y - \bar{Y})^2}$

$$= \sqrt{\frac{1}{6} \times 15407794} = 1602.487$$

Co-efficient of Variation $(C.V.) = \frac{\pm}{\bar{Y}} \times 100\%$

$$= \frac{1602.487}{12125.055} \times 100\% = 13.216\%$$

Correlation coefficient $r_{xy} = \frac{\sum (X - \bar{X}).(Y - \bar{Y})}{\sqrt{\sum (X - \bar{X})^2} . \sqrt{\sum (Y - \bar{Y})^2}}$

$= \frac{12148994.35}{\sqrt{10718088} . \sqrt{15407794}} = 0.945$, Probable Error (r) = 0.6745 X S.D.

$$0.6745 \times \frac{1 - r^2}{\sqrt{n}} \quad 0.6745 \times \frac{1 - (0.945)2}{\sqrt{6}}$$

$$= 0.0294$$

B. Calculation of Least Square Trend of NEA (actual sales)

FY	X	X =(X-3)	X^2	Actual(Y)	XY
2058/059	1	-2	4	9476.2	-18952.4
2059/060	2	-1	1	11012.6	-11012.6
2060/061	3	0	0	11874.7	0
2061/062	4	1	1	12605.2	12605.2
2062/063	5	2	4	13331.9	26663.8
2063/064	6	3	9	14449.73	43349.19
Total		3	19	72750.33	52653.19

Let the regression equation of Y on X be

Y= a+bX …… (1)

Then normal equations on fitting Y = a +bX are:-

$$Y = na + b\sum X \quad .....(i)$$

$$XY = a\sum X + b\sum X^2 \quad .....(ii)$$

i.e. 72750.33 = 6a + 3b

52653.19 = 3a +19b

By solving these two equations we get

a = 11659.968 and b = 930.1728

Therefore, required equation Y = 11659.968 + 930.1728X

C. Calculation of Combined S.D. and T-Test

Rs.in million

	NTC			NEA		
FY	Actual Sales (X)	$\sum(X-\bar{X})$	$\sum(X-\bar{X})^2$	Actual Sales(Y)	$\sum(Y-\bar{Y})$	$\sum(Y-\bar{Y})^2$
2058/059	6159.52	-2947.97	8690527	9476.2	-2648.855	7016432.8
2059/060	7208.09	-1899.4	3607720	11012.6	-1112.455	1237556.1
2060/061	8312.24	-795.25	632422.6	11874.7	-250.355	62677.626
2061/062	8584.14	-523.35	273895.2	12605.2	480.145	230539.22
2062/063	10413.654	1306.164	1706064	13331.9	1206.845	1456474.9
2063/064	13967.318	4859.828	23617928	14449.73	2324.675	5404113.9
Total	54644.962		38528558	72750.33		15407794

Null hypothesis Ho: $\mu_1 = \mu_2$ i.e. the sample means of X and Y do no differ significantly under the assumption that $\sigma_1^2 = \sigma_2^2$ i.e. population variances are equal

Alternative hypothesis H1: $\mu_1 \neq \mu_2$ i.e. the sample means of X and Y differ significantly under the assumption that $\exists_1^2 \neq \exists_2^2$ i.e. population variances are not equal.

Test statistic: under H0, the test statistic is

$$t = \frac{\bar{X} - \bar{Y}}{S\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

Where, $\bar{X} = \frac{X}{n_1}$, $\bar{Y} = \frac{Y}{n_2}$, $S = \sqrt{\frac{\sum X - \bar{X})^2 + \sum Y - \bar{Y})^2}{n_1 + n_2 - 2}}$

Mean $\bar{X} = \frac{X}{n_1} = \frac{54644.96}{6}$ = 9107.49

Mean $\bar{Y} = \frac{Y}{n_2} = \frac{72750.33}{6}$ = 12125.055

$$S = \sqrt{\frac{\sum X - \bar{X})^2 + \sum Y - \bar{Y})^2}{n_1 + n_2 - 2}} = \sqrt{\frac{38528558 + 15407794}{6 + 6 - 2}}$$

= 2322.42

$$t = \frac{\bar{X} - \bar{Y}}{S\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} = \frac{9107.49 - 12125.055}{2322.42\sqrt{\frac{1}{6} + \frac{1}{6}}} = \frac{-3017.51}{1340.849} = -2.25$$

Hence, /t/ cal = 2.250

Degree of freedom = n_1+n_2 -2 = 6+6-2 = 10

~ =5%

The tabulated value of t for 10 d.f. at 5% level of significant for two tailed test is 2.228

Conclusion: Since the calculated value of t is greater than the tabulated value of t, it is significant and Ho is rejected and hence H1 is accepted which means that there is significant different of mean sales of NTC and NEA

APPENDIX - 2

A.1 Calculation of Mean($\bar{X}$), Standard Deviation(±),coefficient of Variation(C.V),Correlation Coefficient(r) and Probable Error [P.E.(r)] of NTC

Budgeted production and actual production of NTC

Unit in million

FY	Budgeted(X)	Actual (Y)	$\sum X - \bar{X}$	$\sum Y - \bar{Y}$	$\sum X - \bar{X} \sum Y - \bar{Y}$	$\sum X - \bar{X}^2$	$\sum Y - \bar{Y}^2$
2058/059	48.763	52.926	-82.027	-81.454	6681.427	6728.4287	6634.7541
2059/060	72.049	75.031	-58.741	-59.349	3486.22	3450.5051	3522.3038
2060/061	96.143	99.423	-34.647	-34.957	1211.155	1200.4146	1221.9918
2061/062	123.625	125.755	-7.165	-8.625	61.79812	51.337225	74.390625
2062/063	175.63	179.58	44.84	45.2	2026.768	2010.6256	2043.04
2063/064	268.54	273.57	137.75	139.19	19173.42	18975.063	19373.856
Total	784.75	806.285			32640.79	32416.374	32870.336

Let X and Y be the budgeted sales and actual sales respectively.

For Budgeted Sales:

Mean $\bar{X} = \frac{X}{n} = \frac{784.75}{6}$ = 130.79

Standard Deviation (∃) = $\sqrt{\frac{1}{n} \int X Z \bar{X} A} = \sqrt{\frac{32416.374}{6}} = 73.503$

C.V = $\frac{\pm}{\bar{X}} | 100\% = \frac{73.506}{130.79} | 100 = 56.199\%$

For Actual Sales:

Mean $\int \bar{Y} A X \frac{Y}{n} X \frac{806.285}{6} = 134.38$

Standard Deviation $\int \pm A X \sqrt{\frac{1}{n} \int Y Z \bar{Y} A}$

$X \sqrt{\frac{1}{6} | 32870.336} = 74.016$

Co-efficient of Variation (C.V.) $X \frac{\pm}{\bar{Y}} | 100\%$

$= \frac{74.016}{134.38} | 100\% = 55.079\%$

Correlation coefficient $r_{xy} X \frac{(X Z \bar{X}).(Y Z \bar{Y})}{\sqrt{(X Z \bar{X})^2}.\sqrt{(Y Z \bar{Y})^2}}$

$X \frac{32640.79}{\sqrt{32416.374}.\sqrt{32870.336}} = 0.9999$

Probable Error (r) = 0.6745 X S.D. $X 0.6745 | \frac{1 Z r^2}{\sqrt{n}}$

$X 0.6745 | \frac{1 Z (0.9999)2}{\sqrt{6}}$

$= 0.000055$

B. Calculation of Least Square Trend of NTC (Production unit)

. FY	X	X =(X-3)	X^2	Actual (Y)	XY
2058/059	1	-2	4	52.926	-105.852
2059/060	2	-1	1	75.031	-75.031
2060/061	3	0	0	99.423	0
2061/062	4	1	1	125.755	125.755

2062/063	5	2	4	179.58	359.16
2063/064	6	3	9	273.57	820.71
Total		3	19	806.285	1124.742

Let the regression equation of Y on X be

Y= a+bX …… (1)

Then normal equations on fitting Y = a +bX are:-

$$\Sigma Y = na + b\Sigma X \quad .....(i)$$

$$\Sigma XY = a\Sigma X + b\Sigma X^2 \quad .....(ii)$$

i.e. 806.285 = 6a + 3b

1124.742 = 3a +19b

By solving these two equations we get

a = 113.7638 and b = 41.234

Therefore, required equation Y = 113.7638 + 41.234X

A.2 Calculation of Mean($\bar{X}$), Standard Deviation(±),coefficient of Variation(C.V),Correlation Coefficient(r) and Probable Error [P.E.(r)] of NEA

Budgeted and actual production of NEA

(Units in million)

FY	Budgeted(X)	Actual (Y)	$\sum X-\bar{X}$	$\sum Y-\bar{Y}$	$\sum X-\bar{X}\sum Y-\bar{Y}$	$\sum X-\bar{X}^2$	$\sum Y-\bar{Y}^2$
2058/059	2372.9	2066.33	-459.66	-582.395	267703.69	211287.32	339183.936
2059/060	2744.17	2261.13	-88.39	-387.595	34259.522	7812.7921	150229.884
2060/061	2986.39	2837.98	153.83	189.255	29113.097	23663.669	35817.455
2061/062	3012.52	2894.17	179.96	245.445	44170.282	32385.602	60243.248
2062/063	2784.8	2780.92	-47.76	132.195	-6313.633	2281.0176	17475.518
2063/064	3094.6	3051.82	262.04	403.095	105627.01	68664.962	162485.579
Total	16995.38	15892.35			474559.97	346095.36	765435.62

Let X and Y be the budgeted Production and actual Production respectively.

For Budgeted Production:

Mean $\bar{X} = \frac{X}{n} = \frac{16995.38}{6} = 2832.56$

Standard Deviation (σ) = $\sqrt{\frac{1}{n}\sum(X-\bar{X})^2} = \sqrt{\frac{346095.36}{6}} = 240.172$

C.V = $\frac{\sigma}{\bar{X}} \times 100\% = \frac{240.172}{2832.56} \times 100 = 8.478\%$

For Actual Production:

Mean $\bar{Y} = \frac{Y}{n} = \frac{15892.32}{6} = 2648.725$

Standard Deviation $\sigma = \sqrt{\frac{1}{n}\sum(Y-\bar{Y})^2}$

$= \sqrt{\frac{1}{6} \times 765435.62} = 357.173$

Co-efficient of Variation (C.V.) $= \frac{\sigma}{\bar{Y}} \times 100\%$

$= \frac{357.173}{2648.725} \times 100\% = 13.485\%$

Correlation coefficient $r_{xy} = \frac{\sum(X-\bar{X}).(Y-\bar{Y})}{\sqrt{\sum(X-\bar{X})^2}.\sqrt{\sum(Y-\bar{Y})^2}}$

$= \frac{474559.97}{\sqrt{346095.36}.\sqrt{765435.62}} = 0.922$

Probable Error (r) = 0.6745 X S.D. $= 0.6745 \times \frac{1-r^2}{\sqrt{n}}$

$= 0.6745 \times \frac{1-(0.922)2}{\sqrt{6}}$

$= 0.041289$

B. Calculation of least square trend of NEA (production unit)

FY	X	X =(X-3)	X^2	Actual (Y)	XY
2058/059	1	-2	4	2066.33	-4132.66
2059/060	2	-1	1	2261.13	-2261.13
2060/061	3	0	0	2837.98	0
2061/062	4	1	1	2894.17	2894.17
2062/063	5	2	4	2780.92	5561.84
2063/064	6	3	9	3051.82	9155.46
Total		3	19	15892.35	11217.68

Let the regression equation of Y on X be

Y= a+bX …… (1)

Then normal equations on fitting Y = a +bX are:-

$$Y = na + b X \quad .....(i)$$

$$XY = a X + b X^2 \quad .....(ii)$$

i.e. 15892.35 = 6a + 3b

11217.68 = 3a +19b

By solving these two equations we get

a = 40.909 and b = 186.943

Therefore, required equation Y = 40.909 + 186.943X

C. Calculation of Combined S.D. and T-Test

(Unit in million)

	NTC			NEA		
FY	Actual Sales(X)	$\sum X - \bar{X}$	$\sum X - \bar{X}^2$	Actual Sales(Y)	$\sum Y - \bar{Y}$	$\sum Y - \bar{Y}^2$
2058/059	52.926	-81.454	6634.7541	2066.33	-582.395	339183.936
2059/060	75.031	-59.349	3522.3038	2261.13	-387.595	150229.884
2060/061	99.423	-34.957	1221.9918	2837.98	189.255	35817.455
2061/062	125.755	-8.625	74.390625	2894.17	245.445	60243.248
2062/063	179.58	45.2	2043.04	2780.92	132.195	17475.518
2063/064	273.57	139.19	19373.856	3051.82	403.095	162485.579
Total	806.285		32870.336	15892.35		765435.62

Null hypothesis Ho: $\mu_1 = \mu_2$ i.e. the sample means of production of X and Y do no differ significantly under the assumption that $\sigma_1^2 = \sigma_2^2$ i.e. population variances are equal

Alternative hypothesis H1: $\mu_1 \neq \mu_2$ i.e. the sample means of production of X and Y differ significantly under the assumption that $\sigma_1^2 \neq \sigma_2^2$ i.e. population variances are not equal.

Test statistic: under H0, the test statistic is

$$t = \frac{\bar{X} - \bar{Y}}{S\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

Where, $\bar{X} = \frac{X}{n_1}$, $\bar{Y} = \frac{Y}{n_2}$, $S = \sqrt{\frac{\sum X - \bar{X}^2 + \sum Y - \bar{Y}^2}{n_1 + n_2 - 2}}$

Mean $\bar{X} = \frac{X}{n_1} = \frac{806.285}{6}$ = 134.38

Mean $\bar{Y} = \frac{Y}{n_2} = \frac{15892.35}{6}$ = 2648.725

$$S = \sqrt{\frac{\sum X - \bar{X})^2 + \sum Y - \bar{Y})^2}{n_1 + n_2 - 2}} = \sqrt{\frac{32870.336 + 765435.62}{6 + 6 - 2}}$$

= 282.543

$$t = \frac{\bar{X} - \bar{Y}}{S\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} = \frac{134.48 - 2648.725}{282.543\sqrt{\frac{1}{6} + \frac{1}{6}}} = \frac{-2514.245}{163.1262} = -15.4128$$

Hence, /t/ cal = 15.4128

Degree of freedom = $n_1+n_2 -2 = 6+6-2 = 10$

~ =5%

The tabulated value of t for 10 d.f. at 5% level of significant for two tailed test is 2.228

Conclusion: Since the calculated value of t is greater than the tabulated value of t, it is significant and Ho is rejected and hence H1 is accepted which means that there is significant different of mean production of NTC and NEA

APPENDIX-3

SUPPLEMENTARY QUESTIONNAIRE

The questionnaires are baseline to conduct research work entitled "A Comparative Study on Budgetary System and revenue planning in Nepalese Public Utility Concerns", in partial fulfillment for the degree of Master of Business Studied (MBS).All the alternatives are equality important. The reliability and validity depends on the response of the respondent.

Name of the Company: - ……

Name of the respondent: - …….

Position:-……..Department:-…….

[Please tick (✓) marks it for choosing the alternative or alternatives]

1. What Techniques does the company practice to segregate the semi variable (mixed) cost into variable and fixed?
   a. Least square regression method [ ]
   b. High-low point method [ ]
   c. Average method [ ]
   d. Accounting estimate method [ ]
   e. Visual fit method [ ]
   f. Engineering method [ ]
   g. There is no any clear cut boundary [ ]

2. Which Techniques does the company practice to forecast the cost and revenue of the company for the future periods?
   a. Past trend analysis [ ]
   b. Market survey [ ]
   c. Engineering analysis [ ]
   d. Judgmental analysis [ ]
   e. Regression method [ ]
   f. Time series analysis [ ]
   g. Any other, Please specify ……..

3. What types of management system is adopted in your organization?
   a. Participatory management [ ]
   b. Democratic management [ ]
   c. Authoritative management [ ]
   d. Other

4. While making the long term investment decision or purchasing the fixed assets which of the following capital budgeting tools are practiced?

a. Pay Back period (PBP) [ ]
b. Net Present Value (NPV) [ ]
c. Internal Rate of Return (IRR) [ ]
d. Profitability Index (PI) [ ]
e. Average Rate of Return (ARR) [ ]
f. Other, please specify…….

5. What might be the major difficulties of formulation and implementation of various budget and revenue planning for short term as well as long term?

a. High cost / quite expensive [ ]
b. Long procedure [ ]
c. Lack of expert and qualified trained employee. [ ]
d. Other, please specify……

6. What is the wages payment system adopted in your organization?

a. Daily basis [ ]
b. Monthly basis [ ]
c. Piece work Basis [ ]
d. Others, ……..

7. How the company does measures and controls the overall performance at the end of the accounting period?

a. Profit and loss made by the company [ ]
b. Standard costing system [ ]
c. Flexible budgeting [ ]
d. Ratio analysis [ ]
e. Variance Analysis [ ]
f. Other, please specify…….

8. Which method does the company apply for pricing the issue of inventory (stock) in your company?

a. Perpetually specified items pricing [ ]
b. First in first out (FIFO) [ ]
c. Last in first out (LIFO) [ ]
d. Weighted average [ ]
e. Simple average [ ]

9 Who are responsible to prepare budget and revenue plan?

a. Committee [ ]
b. Planning department [ ]
c. Finance department [ ]
d. Outside Experts [ ]

10. Which of the following mentioned management accounting tools are practiced in your company for revenue planning, formulating budget and decision making?

a. Cost Volume profit analysis (BEP) [ ]
b. Standard costing [ ]
c. Flexible budget and overhead cost control [ ]
e. Ratio analysis [ ]
f. Cash flow analysis [ ]
g. Capital budgeting [ ]
h. Responsibility accounting [ ]

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