

# CHAPTER - I

## INTRODUCTION

### 1.1 Background

Usually, profit do not just happen, profit are managed. There are several different interpretations of the term profit. An economist says that profit is reward for entrepreneurs for taking risk. A labour might say that it is a measure of labour's efficiency that provides a logical base for negotiating a wage increase. An investor might view it as a gauge of the return on his or her money. An internal revenue agent might regard it as a base for determining income taxes. An accountant will define it simply as the excess of revenue over the expenditure.

The primary purpose of planning in business is to increase the chance of making profit. Profit planning is one of the most important managerial tools used to plan and control business operations. Profit plan, clearly states the future state of affairs of a firm and set up the best possible way to get there. Profit plan is a financial plan prepared as a guide to control future business conditions. Profit planning is a systematic approach for attaining effective management performance. The concept of comprehensive profit planning and control encompasses and fully depends upon as to what extent the management follows proper planning, effective co-ordination and dynamic control. This requires that management must plan for future financial and physical requirements to maintain profitability and productivity of the business organization. Thus, the procedure for preparing plan in respect of future financial and physical requirements is generally called profit planning.

As Nepal is bestowed with a pretty condition of water resources organizations like Nepal Electricity Authority (NEA) require to exploit these natural resources at the best interest of nation. For this NEA and the like organizations must have sound profit planning system through which it can rightly address the need of production, sales, cost and marketing of medicinal plants. If profit planning is rightly followed, NEA can increase its efficiency and this will improve the total quality of the organization.

Profit planning is an important tool for every business enterprises to achieve their goals by removing uncertainty and risk. Without proper planned sales revenue, planned production volume and controlled expenses, desired profit cannot be secured. Thus these budgets are used for the planning of profit, their follow up procedure and they are compared with the actual achievement using different means such as cost volume profit analysis, variance analysis and coefficient of variation etc. Profit planning and control is an important managerial tool would be a helpful means to forecasting electricity requirement, generation, distribution, diversification, and control of all the processes of the company.

Realising the facts above, this study is carried out to identify the process and methods of profit planning in this organization and to check whether or not there were any flaws in such planning and to give effective planning and forecasting techniques.

## **1.2 Statement of the Problem**

Profit is one of the major objectives of the company. It is essential for an organization not only to survive in the short-run but also to grow and operate in the future successfully. Profit is usually influenced by planning and control system of any concern. It is known that profit do not just happen it should be managed. That is why commercial enterprises should systematically plan for profit in a manner that enhances overall efficiency of the firm and in a manner that provides a tool for practical administration of a business as a whole.

It is apparent that almost all the enterprises established in public sector are facing huge losses. NEA is one of the public enterprises in industrial sector facing the same problem of dismal performance and financial position of the enterprise is getting worse day by day. So this study is designed to identify the planning for profit aspect of the company. Following are the main issues to be dealt in respect of this company:

- Is there any variance between budgeted and actual figures?
- To what extent is the process of planning is being followed by NEA?
- What steps should be taken to improve the profit planning system in the Public enterprises like NEA?

- Is there any relationship between costs, assets, revenue with the various measures of profitability?

### **1.3 Objective of the Study**

The basic objective of this study is to examine the profit planning and budgeting in NEA and the impact of these in company's overall performance. Keeping the above-mentioned problems in view, following are the main objectives for which this study has been carried out.

1. To analyze the various functional budget of NEA.
2. To analyze the variance between target and actual financial progress of NEA.
3. To evaluates the financial indicator in relationship with profit planning.

### **1.4 Significance of the Study**

This study has primarily focused on profit planning and control aspect of companies like NEA. The systematic and scientific approaches of profit planning and budgeting furnished here would be of immense help to the concerned firm to design and control financial and accounting plan of company. The companies like NEA can prepare, appraise and evaluate the sales, production, expenditure and profit budgeting which in turn help to prepare overall strategic planning, implementation and control. The relationship among financial variables that has been described in the study would give very insightful explanation of how give variables affect another financial variable. This would be significant to manager to produce desire effect on some variable changing another one.

Likewise, government may take advantage of the study to review their policy reforms. Moreover students, researchers, scholars, and other interested parties those are interested this field may take advantage of the study.

Likewise this study is designed to conduct from management perspective, planners and policy makers will find its results important.

Without proper planning, profit will not just happen. So, every profit seeking enterprises should systematically plan for profits in a proper manner. Various functional budgets are the basic tools for proper planning of profit and control over

them. The present study will try to analyse and examine the budgeting system and its uses as tools of profit planning of NEA.

It is only from profit that investors can be compensated for risking their capital. It ensures jobs for workers, customer for suppliers of raw materials and product for consumers. Hence, it is the primary obligation for management of the firm to maximize the firm's profit over the long term by satisfying its social responsibility. Profit planning processes and its elements considerably contributes to improve the profitability of an enterprise and to improve the overall financial performance of an organization by the help of best and effective utilization of resources and thereby an improvement in the industrialization process of a country.

Accomplishment of objectives in every organization depends upon the application of resources. This availability of resources is scare and the financial performance of an organization depends purely on the use of its resources. Budgeting is the key to productive financial planning. So all the organizations running under commercial principle have to give due regard to these most important single tools while managing their physical and financial targets. If the planning process of an organization is effective and result oriented, the pace of development naturally steps forward.

### **1.5 Limitation of the Study**

This study is concerned to profit planning of NEA. Beyond the resource and time constraints followings are some of the hindrances that may occur in course of conducting research.

- This study is primarily based on secondary data. The reliability of results depends on these data.
- Analysis has been focused upon financial and accounting aspect.
- There were innumerable variables having some degree of relationship each other but some of them have only been taken into consideration.
- Only selected financial and statistical tools have been employed for analysis purpose.

## **1.6 Organization of the Study**

This study has been organized into following five different chapters.

**Chapter I: Introduction:** The first chapter deals with introduction. This includes background, statement of problem, objectives of the study, significance of the study, limitation of the study.

**Chapter II: Conceptual Framework & Review of Literature:** Second chapter presents review of available literature. It includes review, book, reports, journal, previous thesis etc.

**Chapter III: Research Methodology:** Third chapter explains the research methodology used in the study, which includes research design, sources of data population and samples, methods of data collection and analysis etc.

**Chapter IV: Presentation and Analysis of Data:** The fourth chapter presents the data collected from different sources. Based on the data analysis of regarding the planning and budgeting system have been conducted.

**Chapter V: Summary, Conclusion and Recommendation:** The fifth chapter summaries, concludes the whole study and offers suggestions for further improvement. After completion of these five chapters, a list of literature that reviewed earlier is included alphabetically in **bibliography**. Likewise, data, information, calculation sheet etc are incorporated in **appendix**.

## **CHAPTER II**

### **CONCEPTUAL FRAMEWORK & REVIEW OF LITERATURE**

This chapter attempts to build strong theoretical background through the help of which further search for solutions of the research problems would be easier. Profit planning: its theoretical background, academic insights, nature, advantages, importance and other various issues have been addressed here in this chapter as contributed by different management experts and others towards this field. While reviewing literature different sources like books, documents, bulletins, reports, journals and articles etc. are consulted. Conceptual framework first and then empirical studies have been presented here in this chapter.

#### **2.1 Conceptual Framework**

Every one desires for rapid socio-economic development of the country by utilizing the scarce resources. Public enterprise is one of the most important means of socio-economic development of the country. The rationale behind the establishment of public enterprises are basically to accelerate the rate of economic growth, to build infrastructures of development, to make provision of public utility, to generate employment opportunity, to supply essential commodities and service; and to reduce trade imbalance of the country. But in fact, operational efficiency of the Nepalese public enterprises does not seem satisfactory in accomplishing their objectives. In this context, a study of profit planning in manufacturing public enterprises in Nepal with a special reference NEA has been undertaken as a case study to analyze the various financial budgets that are prepared by NEA, to sketch the trend of the profitability, to evaluate the variance between budget and actual of the concern and to examine practice and effectiveness of profit planning. Further, reason as to why profitability has been negative, and the factors responsible for such a state of affairs have been explored.

The present section, conceptual framework has been made with a view to recapitulate the basic concept of literature to show how to complete the present line of study. They have analyzed and searched using appropriate tools and techniques. The chapter mainly incorporates concept of profit and profit planning, important and limitation of

profit planning development of profit planning. Level of forecasting, corporate planning, budgets and budgeting, process of profit planning and the fundamentals of profit planning are the subjects to be dealt here.

### **2.1.1 Concept of Profit and Planning**

Generally, profit planning is known as planning for profit, which is planned by the management of the concern. The task should be implemented according to plan, so it directs the organization toward achieving profit. Before going into the in-depth view of profit planning the researcher has to get some idea about profit and planning.

Dictionary meaning of profit is the money that you make in business or by selling things, especially after paying costs involved, the advantage that you get from doing something (Hornby; 2000: 1011).

Profit is essential to survive in any business concern for its successful operation, future expansion and growth. It is the primary measures of success of business organization. It is the excess income over the cost of production. The word profit implies a comparison of the operations of business between two dates, which are usually separated by an interval of one year. The term profit is very controversial and there are several different interpretations about it. It has various dimension and views to be realized. The researcher can say that, it has not yet been defined as such definition can solely, wholly and fully be accepted. The researcher has already accepted the view of Lynch and Williamson, an economist, labour leader, investor, revenue agent and an accountant of the concern has different view about profit. An economist will say that profit is the reward for entrepreneurship for risk taking. A labour leader might say that it is a measure of how efficiently labour has produced and that it provides a base for negotiating a wage increase. An investor will view it as a gauge of the return on his or her money. An internal revenue agent might regard it is the base for determining income taxes. The account will define it simply as the excess of a firm's revenue over the expense of predicting revenue in a given fiscal period.

Profit is the reward for risk taking in business. An entrepreneur earns profit as reward for his innovations. It also is resulted from favourable moments of the general price level. The greater degree of monopoly power, the greater profit made by the enterprise

(Joshi; 1993: 10). Economist's argues on profit may be put in three broad groups. The first looks upon profit as the reward for bearing risks and uncertainties, the second views profit as the consequence of perfection and in-perfection in the competitive adjustment of the economy to dynamic change, the third sees profit as the reward for successful innovation (Joel; 1997: 6).

Profit is the primary measure of operational efficiency of a business firm. The success of business depends largely upon the profit earned by the business. In other word, the managerial efficiency of any concern is reflected upon the volume of profit. So, profit is a signal for the allocation of resources and a yardstick for judging managerial efficiency (Kulkarni; 1985: 45).

In the definitions, the researcher can conclude that there is no definite definition of profit. It depends on the definer's views; and their interest. The researcher would use the profit as revenue after cost of production. Under the cost of production, all factors of production should be considered for e.g. house rent, labour wage, material cost, machine cost, cost of capital as well a opportunity cost of capital.

Dictionary meaning of planning is the act or process of making plans for something (for example, curriculum, financial and family planning also) and plan means something that you inter to do or achieve, a set of things to do in order to achieve something, especially one that has been considered in detail in advance and way of investing money for the future: a saving plan (Hornby; 2000: 962).

Planning is process of developing enterprise objectives and selecting a future course of action to accomplish them. It includes (a) establishing enterprise objectives, (b) developing premises about the environment in which they are to be accomplished, (c) selecting a courses of action for accomplishing the objectives, (d) initiating activities necessary to translate plans in to action and (e) re-planning to correct current deficiencies (Welsch et. al.; 1992: 3).

It is a continuous process to be performed in an organization. In the passage of time an organization should make the new plans and re-plans of the existing plans. Existing plans must be revised as continuous change and new information becomes available.



The definition of planning deals it as process which is a system approach of management. Planning is a best tool of operational and financial control of an organization. Management planning and control systems play the vital role in operation, financial any and other area of the management of the organization. Following are the role of management planning and control systems.

Management planning and control begins with the establishment of the fundamental objectives of the organization, and continues as the process by which necessary resources are provided and employed effectively and efficiently toward achievement of the goals. A management planning and control system provides the comprehensive framework within which this process is carried out. Such a system encompasses all aspects of an organization's operations, and thus is seen as a 'total' system.

To help reduce this massive concept to workable proportions, it is convenient to view it in terms of three subsystems.

- a. Strategic Planning
- b. Management Control
- c. Operational Control

#### **a) Strategic Planning**

Strategic planning is along range in its time perspective and complete in its breadth of scope and depth of penetration. Involving as it does the determination and periodic change of organizational objectives, the acquisition and use of the resources required for their attainment and the establishment of the basic policies, which guide the goals oriented activities of the organization, strategic planning is necessarily a top management function. It is highly creative and therefore relatively unstructured in character. Its timing is irregular and opportunistic. It must be tuned in to the external environment within which the organization presently functions, as well as to the direction in which that environment is heading and to the changes that are likely to occur. Thus, there must be a strong external orientation, with sensitivity to social, economic, political, and international and myriads of other influences.

Plans, policies and decisions for an industrial concern might typically involve selection of plant sites; acquisitions and mergers; new product development; changes in markets and distribution channels; changes in fundamental capital structure; formulation of long range policy; expanding into multinational business activities. Indeed, it might be said that strategic planning established the fundamental internal environment within which all the activities of the organization will be carried on.

### **b) Management Control**

Management control is carried on within the environment established by strategic planning. Its primary emphasis is on carrying out the policies resulting from strategic planning, rather than on setting them. Its time span tends to be short to intermediate term. The activity is somewhat rhythmic in its patterns of activity and scheduling. Because of the pervasive nature of this function, the participation of management at all levels of the organization is usually required. Its goals are tangible within the broad framework of overall organizational objectives, and its focus is on line management which participates in the formulation of near-term plans and the criteria by which the line manager's performance is to be measured.

Thus, within the scope of the total operations of the organization, the management control system must comprise an integrated structure of related subsystems, setting forth the plans and standards of measurement for each and all functioning units of the organization. In contrast with the creative approach to planning characteristic of strategic planning, management control requires administrative and persuasive skills in its successful implementation. Typical of the form taken by the plans flowing from the management control system are the detailed budgets for all units of the organization for the next year, and the three to five years plans as an extension thereof (Willsmore; 1971:89).

### **c) Operational Control**

Operational control is employed to assure that management planning is carried to fruition effectively and efficiently in the organizations. Its scope and focus involve the operating unit. It is executed principally at the level of front line supervision. Its goals are invariably short-term and rather rigidly structured, as are the criteria for measuring performance toward their achievement. Its activity patterns are highly

repetitive, and they are characterized by the close adherence to directions, with little exercise of initiative. Some of the typical ways in which operational control systems are implemented are inventory control systems, sales quotas, and sales personnel's reports, credit and collection systems, production scheduling, departmental overhead reports, daily production reports, daily reports of bank balance, responsibility reporting systems measuring actual costs incurred against budget allowances by departments, and the like (Lynch & Williamson; 1996: 139).

Planning should start by deciding and defining the objectives of the company, making sure in the process that there are comparative with the skills and resources of the undertaking.

### **2.1.2 Concept of Profit Planning**

After having some concept of profit and planning, the researcher thinks that it is necessary to know some concept about profit planning. Generally speaking planning for profit is known as profit planning. Profit planning directs the organization toward achieving profit because the task should implement according to plan. In other word if a management plans for profit for a certain period of time it is called profit plans.

The term comprehensive profit planning and control is defined as a systematic and formalized approach for performing significant phases of the management planning and control functions. Specifically, it involves (1) the development and application of broad and long range objectives for the enterprise; (2) the specification of enterprise goals; (3) a long range profit plan developed in board terms; (4) a short-range profit plan detailed by assigned responsibilities (division, products, projects); (5) a system of periodic performance reports detailed by assigned responsibilities; and (6) follow up procedures (Welsch, et. al.; 1992: 1).

When management of a concern plans for profit for certain period of time, it is called profit planning. "It is defined as an estimation and predetermination of revenues and expenses that estimate how much income will be generated and how it should be spent in order to meet investment and profit requirement. In the case of institution operation it presents a plan for spending incomes in manner that does not result in a loss." Explaining the use of budget and profit plans they further mention once developed

managers know that when actual expenses exceed budget limitations there may be problems. The profit plan tells managers how much money remains to be spent in each expense category. Profit plan along with actual accounting information, becomes the basis for developing the next fiscal (accounting) years' budgets (Jack and Raymond; 1998: 133).

The profit planning is used the development and acceptance of objective and goals and moving an organization efficiently to achieve the objectives and goals. It is not a separate technique that can be thought of operated independently of the total management possess. Rather than broad concept of profit planning entails an integration of numerous managerial approaches and techniques.

Profit planning is played vital role in management of an organization and it is guided with some principles and proposes. The main principles and purposes of profit planning are as follows (Kellar & Ferrara; 1992: 389).

- a. To provide of realistic estimate of income and expenses for a period and of the financial position at the close of the period, detailed by areas of management responsibility.
- b. To provide a co-ordinate plan of action which is designed to achieve the estimates reflected in the budget.
- c. To provide a comparison of actual results with those budgeted and an analysis and interpretation of deviation by areas of responsibility to indicate courses of corrective action and to lead to improvement in procedures in building future plans.
- d. To provides a guide for management decision in adjusting plans and objectives an uncontrollable conditions change.
- e. To provides a ready basic for making forecasts during the budget period to guide management in making day to today decisions.

Comprehensive profit planning is a new term in literature of business. It is defined as a process designed to help management effectively perform significant phase of the planning function. The profit planning model includes development and application of broad and long range objectives of enterprise, specification of enterprise goals,

development of long range profit plan in broad terms, specification of tactical short range profit plan detailed by assigned responsibilities (like division, department, projects) and follow up procedures.

## **2.2 Importance and Limitation of Profit Planning**

Importance and limitation of any subject help make clear their concept. Keeping the fact in mind, the researcher is going to deal about importance and limitation of profit planning in the present section.

### **2.2.1 Importance of Profit Planning**

Profit planning is a base of the management process. Management requires a variety of information to plan, to control and to make decision. The information and guidance are given by profit planning and management & profit planning are closely inter-linked. Profit planning is very important to any business organization. The following main arguments are usually given for profit planning and control (Welsch, et.al., 1992: 60).

1. It forces early consideration of basic policies.
2. It requires adequate and sound organization structure; that is, there must be a definite assignment of responsibility for each function of the enterprise.
3. It compels all members of management from the top to down to participate in the establishment of goals and plans.
4. It compels departmental managers to make plans in harmony with the plans of other departments and of the entire enterprise.
5. It requires that management put own in figures what is necessary for satisfactory performance.
6. It requires adequate and appropriate historical accounting data.
7. It compels management to plan for the most economical use of labour material and capital.
8. It instils at all levels of management the habit of timely, careful, and adequate consideration of the relevant factors before reaching important decisions.
9. It reduces cost by increasing the span of control because fewer supervisors are needed.

10. It frees executives from many day-to-day internal problems through predetermined policies and clear-cut authority relationship. It thereby provides more executive time for planning and creative thinking.
11. It tends to remove the cloud of uncertainty that exists in many organizations, especially among lower levels of management, relative to basic policies and enterprise objectives.
12. It pinpoints efficiency and inefficiency.
13. It promotes understanding among members of management of their co-workers' problems.
14. It forces management to give adequate attention to the effect of general business conditions.
15. It forces a periodic self-analysis of the company.
16. It aids in obtaining bank credit; banks commonly require a projection of future operations and cash flows to support large loan.
17. It checks progress or lack of progress toward the objectives of the enterprise.
18. It forces recognition and corrective action (including rewards).
19. It rewards high performance and seeks to correct unfavourable performance.
20. It forces management to consider expected future trends and conditions.

### **2.2.2 Limitations of Profit Planning**

Profit is primary measure of operational efficiency of any business organization. Profit do not just happen, profit are managed which is know as profit planning. Profit planning is one of the most important management tools which is used to plan and control business organization. But profit planning has some argument as limitations.

The following main arguments are usually given against profit planning and control (Welsch, et.al.; 1992: 42).

1. It is difficult, if not impossible, to estimate revenues and expenses in our company realistically.

2. Our management has no interest in all the estimates and schedules. Our strictly informal system is better and works well.
3. It is not realistic to write out and distribute our goals, policies and guidelines to all the supervisors.
4. Budgeting places too great a demand on management time, especially to revise budgets constantly. Too much paper work is required.
5. It takes away management flexibility.
6. It creates all kinds of behavioural problems.
7. It places the management in a straitjacket.
8. It adds a level of complexity that is not needed.
9. It is too costly, aside from management time.
10. The managers, supervisors, and other employees hate budgets.

## **2.3 Development of Profit Planning**

The preceding section gives an overview of a comprehensive profit planning. The initiating management decisions, in developing the plan were the statements of broad, objectives, specific goals, basic strategies, and premises. Following those activities and decision, the strategic (long range) and tactical (short range) profit plans are developed. These profit plans are based on a structured planning process that includes a series of sequential steps. The end result is called a comprehensive profit plan (Welsch; et.al.; 1992: 171). Development of profit planning relates about sales plans, production plan, materials purchase budget, labour budget, overhead budget, capital expenditure and capital addition budget for strategic (long range) as well as tactical (short range).

### **2.3.1 Sales Plan**

Sales plan is the starting point in the proportion of the comprehensive profit planning and control. All the other plans and budgets depend upon the sales budget. The budget is usually presented both in units and dollars of the sales revenue or sales volume. The preparation of sales plan is based upon the sales forecast. A variety of methods are used to forecast the sales for the planning period (Arthur et.al.; 1997: 684).

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 a responsibility area by the use of sales quotes. A well developed sales plan is generally built up on a quota basis in the first place. So, that the double check by individual quota on total plan is inherent in the building. In a multi-plant situation, where there is a choice of manufacturing product items in more than one plant, the geographical distribution of sales is of special importance for production planning. Adequate sales planning is basic fundamental to profit planning program (William; 1998: 502).

Unless there is a realistic sales plan, partially all other elements of a profit plan will be out of writer with reality. The sales plan is the foundation for periodic planning in the firm because practically all other enterprise planning is built on it. The primary source of cash in sales; the capital additions needed the amount of expense to be planned, the manpower requirements, the production levels and other important operational aspects depend on the volume of sales. In harmony with the comprehensive profit plan, both strategic (long-term) and tactical (short-term) sales plans must be developed. Thus one commonly observes a five years strategic sales plan many management decision commit a large amount of resources involving a life span of many years. Basic strategic and major moves often involve irreversible commitments of resources and long time span (Welsch et.al.; 1992: 139).

The strategic and tactical sales plans have three distinct parts (i) the planned volume of sales at the planned sales price per unit for each product, (ii) the sales promotional plan (advertising and other promotional costs) and (iii) the sale (distribution) expenses plan (Welsch, et.al.; 1992: 139). The primary purpose of sales plan are (a) to reduce uncertainty about revenues, (b) to incorporate management, judgements and decisions in to the planning process (e.g. in the marketing plans), (c) to provides necessary information for developing other elements of a comprehensive profit plan, and (d) to facilitate management's control of sales activities (Welsch, et.al. ; 1992: 172).

### **2.3.1.1 Sales Planning and Forecasting**



Sales planning and forecasting often are confused. Although related, they have distinctly different purposes. A 'forecast' is not a plan; rather it is a statement and/or a quantified assessment of future conditions about a particular subject (e.g. sales revenue) based on one or more explicit assumptions. A forecast should always state the assumption upon which it is based. A forecast should be viewed as only one input in to 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 forecast, other inputs, and management judgements about such related items as sales volume, prices, sales efforts, production, and financing (Welsch, et.al.; 1992: 172).

The short-term sales forecast provides the base for the current years sales plan and finished goods inventory plan. At the same time the influence of the long-term sales forecast is reflected in the capital expenditure plan and in the finished goods inventory plan. The long-term forecast serves at what might be called the anchor end of the finished goods inventory plan. Since inventory at the end of this year is the beginning inventory for next year business it is necessarily influenced by the long-term sales thinking as well as the current year's short-term forecast. The long-term sales forecast provides the base for developing, in rough out line, the capital expenditure plan. The portion of the plan falling within the current year is reflected in the capital expenditure budget (William; 1998: 502).

It is important to make a distinction between the sales forecast and the sales plan primarily because the internal technical staff should not be expected or permitted to make the fundamental management decisions and judgements implicit in every sales plan (Welsch, et.al. ; 1992: 172).

#### **2.3.1.2 Strategic and Tactical Sales Plan**

As a practical approach, a company may schedule completion of the strategic (long-term) sales plan as one of the first steps in the overall planning process. For example, a company operating on a calendar year may complete a long-term sales plan at least in tentative form, by the end of July because this gives sufficient lead time for interim considerations essential to development of next year's comprehensive short-term

profit plan during the latter part of the proceeding calendar year. Long-term sales plans are usually developed as annual amounts. The long-term sales plan uses broad grouping of products (product lines) with separate consideration of major and new products and services. Long-term sale plans usually involve in depth analyses of future market potentials, which may be build up form a basic foundation such a population changes, state of the economy, industry projections, and finally company objectives. Long-term managerial strategies would affect such areas as long-term pricing policy, development of new products, and innovations of present products, new directions in marketing efforts, expansion or changes in distribution channels and cost patterns. The influence of managerial strategy decisions is explicitly brought to bear on the long-term sales plan primarily on a judgemental basis (Welsch et. al.; 1992: 173).

Tactical sales plan is a short-range sales plan that is prepared for a year in the future. According to Welsch, "A common approach used for short time horizons in a company is to plan sales for twelve months in to the future, detailing the plan initially by quarters and by months for the first quarter. At the end of each month or quarter throughout the year, the sales plan is restudied and revised by adding a period in the future and by dropping the period just ended. Thus, tactical sales plans are usually subject to review and revision on a quarterly basis. The short-term sales plan includes a detailed plan for each major product and for groupings of minor products. Short-term sales plans are usually developed in term of physical units (or jobs) and in sales and/or service dollars. Short-term sales plan must also be structured by marketing responsibility (e.g. by sales districts) for planning and control purposes. Short-term sales plan may involve the application of technical analyses; however, managerial judgement plays a large part in their determination. The amount of detail in a tactical sales plan is a function of the company's environment and characteristics. A short-range sales plan should include considerable detail where as a long range plan should be in broad term (Welsch et. al.; 1992: 174).

### **2.3.1.3 Developing a Comprehensive Sales Plan**

For developing a comprehensive sales plan, generally following steps should be taken.

Step I<sup>st</sup> : Develop management guidelines for sales planning.

Step II<sup>nd</sup> : Prepare sales forecast.

Step III<sup>rd</sup> : Assemble relevant data.

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

Step IV<sup>th</sup> : Develop strategic and tactical sales plans.

Step V<sup>th</sup> : Consideration of alternatives.

Step VI<sup>th</sup> : Develop pricing policies.

Step VII<sup>th</sup> : Develop product line consideration.

Step VIII<sup>th</sup> : Price cost volume consideration.

#### **2.3.1.4 Methods of Projecting Sales**

Following four methods are used in projecting sales (Welsch, et.al.; 1992: 155).

##### **1. Judgemental Methods**

- Sales force composite,
- Sales division supervisors composite,
- Executive opinion method.

##### **2. Statistical Methods**

- Economic rhythm method,
- Cyclical sequence method,
- Special historical analogy,
- Cross out method.

##### **3. Special Purpose Methods**

- Industry analysis,
- Product-line analysis,
- End-use analysis.

##### **4. Combination Methods**

#### **2.3.2 Production Plan**

When the sales plan is completed, the next step in building the short range profit plan for superior manufacturing company is to develop a production plan. The production plan involves determining the number of units of each product that must be manufactured to meet planned sales and maintain the planned inventory levels of finished goods. Planning production requirements necessitates another decisional input, which is the management decision about inventory levels of finished goods that are to be planned (Welsch et. al.; 1992: 136).

Production planning and scheduling are factory functions involving determination of the amount of goods to produce and production timing; therefore the production plan is the primary responsibility of the manufacturing vice-president. It is prepared on the basis of sales budget, plant capacity, opening inventory of finished goods, required closing inventory of finished goods and production policy of management.

Once sales and inventory requirements have been established, the logical first step in the production area is a facility survey. This survey should determine that all planned produced on existing or contemplated equipment and that they can be made in the volumes required. In this initial stage availability of labour supply and skill are considered. Bottlenecks caused by lack of skills or equipments are frequently uncovered. At this point decisions must be made either to eliminate bottlenecks or to reduce planned volume (William; 1989: 508); Economic batch quantity delivery schedules, seasonal conditions, optimum utilization of plant capacity, reduction of bottlenecks such as shortage of manpower, materials etc., stock of requirements; and work in progress are also considerable factor of the production planning.

This entails the development of the policies about efficient production levels, use of productive facilities and inventory re-levels (finished goods and work-in-process inventory). The quantities specified in the marketing plan, adjusted to conform to production and inventory policies, give the volume of goods that must be manufactured by product and interim time period. Thus, the production budget can be represented in this way: production requirement = sales volume  $\pm$  goods inventory change (Welch et. al.; 1992: 210).

The production budget specifies the planned quantity of goods to be manufactured during the budget period. To develop the production budget, the first step is to establish policies for inventory levels. The next step is to plan to total quantity of each product that is to be manufactured during the budget period. The third step is to schedule this production by interim period. A complete production plan should shown budget data classified. By (a) products to be manufactured, (b) interim time periods; and (c) activities of each responsibility centre in the manufacturing process (Welsch et. al.; 1992: 212).

### **2.3.2.1 Responsibility for Production Planning**

The completed marketing plan should be given to the manufacturing executive who is responsible for translating it into a production program consistent with managerial policies and subject to certain constraints. Planning, scheduling and dispatching of the actual production throughout the year are functions of the production department; therefore, it is essential that the production managers perform responsibility for the planning and control of these functions. These managers have firsthand knowledge of the plant and personnel capacities, availability of materials and production process. Although responsibility rests directly upon the production managers, top management policies must be considered in such matters as inventory levels, stability of production and capital additions (plant capacity) (Welsch et. al.; 1992: 211).

### **2.3.2.2 General Consideration in Planning Production and Inventory Level**

The production plan does not aim to set the precise amounts and timing of actual production during the budget period. Rather, the production plan represents the implications of planned sales volume for planned production volume as a basis for planning the various aspects of the manufacturing function plant capacity requirements, direct material and component requirements, timing of purchases, direct labour requirement and costs and factory overhead.

The production budget should be developed in terms of quantities of physical units of finished goods. Therefore, when it is possible to plan sales volume by units as well as by dollar amounts, production budgeting is simplified. To develop the production plan, manufacturing executives must resolve the problem of coordinating sales, inventories, and production so that the lowest possible overall cost results. The importance of

coordination of production planning cannot be overemphasized, because it affects so many decisions relating to cost, capital commitments, employees, and so on. Decisions required to develop the production plan include the following.

1. Total production requirements (by product) for the budget period.
2. Inventory policies about levels of finished goods, work-in-progress and the costs of carrying inventory.
3. Plant capacity policies, such as the limits of permissible departures from a stable production level throughout the year.
4. Adequacy of manufacturing facilities (expansion, contraction of plant capacity).
5. Availability of direct materials, purchased components, and labour.
6. Length of the processing time.
7. Economic lots and runs.
8. Timing of production throughout the budget period by responsibility centres (Welsch et. al.; 1992: 213).

### **2.3.2.3 Developing the Production Plan**

Production managers must translate the quantities in the sales budget into unit production requirements for the budget period for each product while considering management inventory policies. The budgeted production for the budget period has been determined; the next problem is prorating this producing by interim periods during the budget year. Interim production must be planned to (1) provide sufficient goods to meet interim sales requirements, (2) keep interim inventory levels within policy constraints and (3) manufactured the goods as economically possible (Welsch et. al.; 1992: 213).

Generally, the following table method is used to obtain the planned production of a business concern.

|  |             |
|--|-------------|
| Requirement for sales (in units)                     | XXX         |
| Add; desired final inventory level of finished goods | <u>+XXX</u> |
| Total required production                            | <u>XXXX</u> |
| Less; opening stock of finished good                 | -XXX        |

Planned production for the year

XXXX

#### **2.3.2.4 Setting Inventory Policy**

In most business, inventories represent a relatively high investment and may have a significant impact on the major functions of the enterprise and its profit. If the level of inventory is greater than requirement, it is a sign of under utilization of their fund and cost of capital burden. If the level of inventory is lower than requirement it loses the opportunity of profit by unsuccessful to fulfil of the market demand. So, inventory and requirement of production must be at balance position. In other word, the objectives of inventory policies should be to plan the optimal level of inventory, investment and through control to reasonably maintain these optimal levels.

To determine inventory polices for finished goods, management should consider these factors (Welsch et. al.; 1992: 220).

1. Quantities (in units) needed to meet sales requirements. Resolving this problem entails consideration of the sales budget and seasonal demand. The sales department executives should be directly involved in this problem.
2. Perish ability of items.
3. Length of the production period.
4. Storage facilities.
5. Adequacy of capital to finance inventory production some time in advance of sales.
6. Distribution time requirement.
7. Cost of holding inventory. Frequently there are numerous and significant costs connected with stocking large quantities of goods. The principle holding costs involved are labour, insurance, taxes, rent, depreciation, transportation, and handing.
8. Protection against district material and component shortages.
9. Protection against labour shortages.
10. Protection against materials and parts price increases.
11. Risks in involved in inventory:

- Price declines,
- Obsolescence of stock,
- Casualty loss and theft,
- Lack of demand,
- Customer returns policies.

### **2.3.2.5 Setting Production Policies**

Yet production efficiency is usually enhanced by relatively by stable production levels. In many companies where sales of the primary product are seasonal, developing new products that can be stored or that have inverse seasonal pattern stabilizes production levels. Inventory fluctuation provides a tempting method of levelling production, yet as previously discussed, certain pitfalls should be considered. Stabilization of production is desirable for a number of completing reasons and generally results in significant reductions of costs and improvements in operations. The advantages of stable production levels can be outlined as follows (Welsch et. al.; 1992: 223):

1. Stability of employment, resulting in:
  - Improved morale and hence greater worker efficiency,
  - Less labour turnover,
  - Attraction of better employees,
  - Reduction of expense for training new employees.
2. Economic in purchasing raw materials and components as a result of:
  - Availability,
  - Volume discounts,
  - Simplified storage problems,
  - Smaller capital requirements,
  - Reduced inventory risk.
3. Better utilization of plant facilities, which tends to:
  - Reduce the capacity required to meet peak seasons.
  - Avoid the capacity.



### **2.3.3 Material Purchase and Usage Budget**

#### **2.3.3.1 Concept of Materials Purchase Budget**

After having the concept of sales plan and production plan the next step in the budget process involves the determination of material purchase and usage budget. The determination of materials usage leads to the solution of the problem of when and how much to purchase of each material. Material purchase and usage budget demonstrates the build up of the quantities of each materials to be used by quarters, based on the production budget. The material cost is also considered in material purchase budget. Material budget should be also budgeted by types of raw material and parts, by user responsibility, by interim period and by types of finished goods.

Ruthmen viewed "after the sales and production has estimated, the next step's to prepare material purchase budget, when the production budget is completed than the requirement of raw materials and components to be used in the process of manufacturing the finished products could be estimated. A purchase budget gives the details of materials purchase to be made in the budget period (Ruthmen; 1994: 5).

A comprehensive profit planning and control program includes planning and controlling raw material and component used in the manufacturing of finished products. Adequate co-ordination and balance should be planned and controlled in between (1) factory requirements for raw materials, (2) raw materials inventory levels, and (3) purchase of raw materials.

To assure that right amounts of raw materials will be on hand at the time required and to plan for the costs of such materials, it is essential that the tactical (short-term) profit plan includes (1) detailed budget specifying quantity and cost of materials required and (2) a related budget of raw materials purchase. Thus planning raw materials usually requires four sub budget namely, (1) material budget, (2) purchase budget, (3) materials inventory budget, and (4) cost of materials used budget (Welsch et. al.; 1992: 211).

### **1. Material Budget**

This budget specifies the planned quantities of each raw materials and part required for planned production. It should specify by time, by product, and by using responsibility.

## **2. Purchase Budget**

The material budget specifies the quantities and timing of each raw materials need therefore a plan for material purchase must be developed. The purchases budget specifies the estimated quantities of raw materials and parts to be purchased and their estimated cost as well as delivery dates.

## **3. Material Inventory Budget**

The budget reports the planned levels of raw materials inventory items of quantities and cost. The difference in units between materials requirements as specified in materials budget and the purchase budget is reflected as in increases or decreases in the inventory budget.

## **4. Cost of Materials Used Budget**

This budget reports the estimated cost of the materials planned for the materials budget observe that the materials budget cannot be costed unit the planned cost of purchases. It specifies the planned cost of the materials and parts that will be used in the production process.

### **2.3.3.2 Materials and Parts Inventory Policies**

The quantity differential planned between the materials and parts budget and the purchases budget is accounted for by the change in materials and parts inventory levels. As with the finished goods inventory budget, with respect to sales and production, the materials and parts inventory budget provides a cushion between materials and parts requirements and purchases. If materials and parts requirements are seasonal, a stable materials and parts inventory level means that purchases must exactly parallel factory material and parts requirement. Yet, in the same case, purchase can be at a uniform level only if inventory is allowed to absorb variations in materials and part requirements. The optimal purchasing plan will generally be between these

two extremes. The timing of purchases will depend on inventory policies. The primary consideration in setting inventory policies for materials and parts are:

1. Timing and quality of manufacturing needs.
2. Economics in purchasing through quantity discounts.
3. Availability of materials and parts.
4. Lead time (order and delivery).
5. Perish ability of materials and parts.
6. Storage facilities needed.
7. Capital requirement to finance inventory.
8. Costs of storage.
9. Expected changes in the cost of materials and parts.
10. Protection against shortages.
11. Risks involved in inventories.
12. Opportunity costs (inadequate inventory) (Welsch et. al.; 1992: 243).

### **2.3.3.3 Purchasing Policy**

Purchasing is the most important function of materials management as the moment an order is placed for the purchase of materials, a substantial part of the company's finance is committed which affects cash flow position of the company. So, the purchasing policy should be included the answer of some question like, what to purchase?, when to purchase ?, where to purchase ?, from where purchase ?, how much to purchase ?, and at what price to purchase?

Management policy with respect to purchases and inventory should be specified. The two basic timing factors are (i) how much to purchase at a time and (ii) when to purchase (Welsch et. al.; 1992: 244). To solve the first question (How much to purchase at a time), there is a well-known approach. The approach is known as economic order quantity 'EOQ'. An economic order quantity is the number of units per order to be purchase that will resulting in the lowest total of order costs and carrying cost of a annual's supply of the product. Such as the quantity seeks to balance the cost of inventory acquisition the cost of inventory possession.

For the calculation of 'EOQ', the following formula is used:

$$EOQ = \sqrt{\frac{2AO}{C}}$$

Where,

- A = Annual quantity used in units
- O = Average annual cost of placing an order
- C = Annual caring cost of one unit in inventory for one year (e.g. storage insurance, return as investment in inventory).

Another approach which is a recent development in materials' and parts' inventory control is called Just-in-time (JIT), purchasing and manufacturing. Its primary objective is to minimize inventory level and the resulting cost. In this approach, materials and parts are not purchased until needed for production, there by minimizing inventory-holding costs. In such an approach, it is critical to anticipate exactly when the materials and parts will be needed for production so that the acquisition can be reflected in the materials and parts budget for profit planning and control (PPC) purposes (Welsch et. al.; 1992: 245).

### **2.3.4 Direct Labour Budget**

#### **2.3.4.1 Concept of Direct Labour Budget**

Direct labour is all labour expended in altering the construction, composition, confirmation or condition of the product. In other word, it is that labour that can be conveniently identified or attributed wholly to a particular job, product or process or expended in converting raw materials into finished goods. It includes payment made to labour engaged on the actual production of the product or in carrying out of an operation or process, labour engaged in aiding the manufacturing by way of supervision, maintenance, tool setting, transportation of material and inspectors, analysist etc. Specially required for such production. But wages paid to supervisors, inspectors etc. is not direct labour, can be treated as direct labour if they are directly engaged on specific product or process and they spend their time on it can be directly measured without much of an effort. Similarly where the cost is not significant like the wages of trainees or apprentice, their labour though directly spent on a product is not treated as direct labour.

After having the concept of direct labour the researcher is going to recapitulate the concept of 'direct labour budget'. Generally a plan about the direct labour is called the 'direct labour budget' that is prepared after completed the production budget. The direct labour budget is developed in a Manama similar to that of the material purchase budgets. The main difference lies in the fact that labour is not purchased and stored in inventory, as raw materials are direct labour is used at the time of purchase (i.e. it is incurred only at the time of production). Thus, to develop the direct labour input (i.e. incurred), it is necessary only to know the amount of time required by production departments and the wage rate prevailing in the production department.

Welsch views, the direct labour budget includes the planned direct labour requirements necessary to produce the types and quantities of outputs planned in the production budget. This budget may given details about direct labour cost are about both direct labour hours cost. Planning and controlling labour cost involve major and complex problem areas: (a) personnel needs, (b) re-measurement, (c) training, (d) job description and evaluation, (e) performance measurement, (f) union negotiations and (g) wage and salary administration.

1. Labour generally classified as direct and indirect. Direct labour cost includes the wages paid to employees who work directly on specific productive out put. As with direct material costs, labour costs that can be directly traced to z.
2. Estimate ratios direct labour cost to some measure of output that can be planned realistically.
3. Develop personnel tables by enumerating personnel requirements (including) for direct labour in each responsibility centre.

#### **2.3.4.2 Planning Standard Labour Time**

An important function of industrial engineers is to develop standard labour time for various operations and products. In some cases, it is impractical to estimate direct labour time expect in terms of averages based on experience. The following four approaches are commonly used for planning standard labour time.

#### **1. Time and Motion Studies**

These studies are usually made by industrial engineers. They analyze the operations required on a product (by cost centres). By observation (and by actual timing with a stop watch), a standard time for each specific operation is determined. The industrial engineer must decide (frequently along with the union) whether the fastest, slowest, or average employees' time should be used. Never the time and motion studies can provide reliable information about the labour time needed to perform each specific operation. The results of time and motion studies can provide basic input data for developing the direct labour hours needed to meet planned production.

## **2. Standard Costs**

If a standard cost accounting system is used, careful analyzes of direct labour hour requirements per unit of production will generally have been made. In such cases, the standard labour time per unit of product used to derive labour hour requirements.

## **3. Direct Estimate by Supervisors**

Some companies ask the manager of each productive operation to estimate the direct labour hours required for the planned output. In making such estimates, the manager must rely on (1) Judgement, (2) recent past performance of the department, (3) assistance from the next level of management, and (4) technical staff personal.

## **4. Statistical Estimates by a Staff Group**

Cost accounting records of past performance usually provide useful information for converting production requirements to direct labour hours. This approach is frequently used for producing departments that process several products simultaneously. The historical ratio of direct labour hours to some measure of physical output is computed and then adjusted for planned changes in the responsibility centre. The accuracy of this method depends on the reliability of the cost records and the uniformity of the production process from period to period. However, it is questionable because past in efficiencies will often be projected into the future. Even though some other method of estimating direct labour hours in used historical ratios of direct labour hours to productive output are frequently good checks on the accuracy of other methods used (Welsch et. al.; 1992: 282).

## **2.3.5 Overhead Budgets**

### **2.3.5.1 Concept of Overhead Budget**

Cost may be divided into two portions direct and indirect. The indirect portion of total cost is overhead. Which is the aggregate of indirect material, indirect labour and indirect expenses? Overheads comprise all expenditure incurred for or in connection with the general organization of the whole or part of the undertaking i.e. the cost of operating supplies and services used by the undertaking including the maintenance of capital assets. There are three main types of the overhead namely, manufacturing/factory overhead, selling and distribution overhead and office and overhead.

After having the concept of the overhead, the researcher is going to recapitulate the concept of overhead budget. Welsch viewed, "Expenses planning should not focus on decreasing expenses, but rather on better utilization of limited resources. Viewed in this light, expense planning and control may cause either decreased or increased expenditures. Expenses planning and control should focus on the relationship between expenditures and the benefits should be viewed as goals, and sufficient resources must be planned to support the operating activities essential for their accomplishment (Welsch et. al.; 1992: 302).

The overhead budget should be in detail for each responsibility centre and by interim time period. The budget can be divided into three sub-budget namely, manufacturing factory overhead budget, selling distribution expenses budget, and office and administrative, expenses budget.

### **2.3.5.2 Manufacturing/Factory Overhead Budget**

Manufacturing overhead is that part of total production cost not directly identifiable with (traceable to) specific products or jobs. Manufacturing overhead consists of (1) indirect material, (2) indirect labour (including salaries), and other miscellaneous factory expenses; such as taxes, insurance, depreciation, supplies, utilities and repairs. Manufacturing overhead includes many dissimilar expenses; therefore, it causes problems in the allocation of those cost to products. Since there are many different types of expenses, control responsibility often widely diffused. For example, such items

are depreciation, taxes, and insurance are usually not subject to direct control by factory managers, but rather by higher level management (Welsch et. al.; 1992: 307).

Manufacturing overhead/factory overhead budget gives an estimate of the worker overhead expenses to be incurred in a budget period to achieve the production target. The budget includes the cost of indirect material, indirect labour, and indirect worker expenses. The calculation of the manufacturing overhead is made using the following methods.

|                               |            |
|-------------------------------|------------|
| Indirect materials            | XXX        |
| Add: Indirect labour          | +XXX       |
| Add: Indirect Worker expenses | <u>XXX</u> |
| (Indirect Factory cost)       |            |
| Total manufacturing overheard | XXX        |

Manufacturing overhead budgets are developed immediately of let the production budget, as tentatively approved, has been converted to expected out put (however measured) for each producing and service department in the factory (Welsch et. al.; 1992: 306). When developing the manufacturing overhead budget, the following steps should be taken.

- Step 1:** Translate the requirements specified in the production plan in to output in each department.
- Step 2:** Plan departmental overhead expenses.
- Step 3:** Allocate the planned departmental expenses to the producing department.
- Step 4:** Allocate the producing department expenses to be products the product.

After these above steps, per unit overhead rate for each product could be computed and by adding the direct material cost and indirect labour cost for each product. The position is in to compute the cost of goods manufactured.

The budget may be classified into fixed cost and semi variable cost. It can be broken into department overhead budget to facilitate control. In preparing the budget, fixed works overhead can be estimated on the basis of past information after taking into



consideration the expected changes which may occur during the budget period. Variable costs are on the basis of the budget output because these expenses are bound to change with the change in output.

### **2.3.5.3 Selling and Distribution Overhead Budget**

Selling and distribution expenses include all cost related to selling, distribution and delivery of products to customers. The expenses are not cost and are not allocated to specific product. Welsch viewed, "fundamentally, the top marketing executive has the direct responsibility for planning the optimum economic balance (for profit potential) between (1) the sales budget, (2) the advertising budget and the distribution expenses budget. Therefore profit planning and control views sales, advertising, and distribution expenses as one basic problem rather than as three separate problems. This view is logical because of the interrelationship between them (Welsch et. al.; 1992: 314). There are two type of selling expenses namely (1) sales office expenses which cover the cost of sales man and their administrative support; and (2) sales direction and promotion expenses, which cover the cost of directing the sales efforts and promotional changes such as advertising.

The distribution expenses budget should be planned by responsibility centre, district or by the products. The top marketing executive has the overall responsibility for developing the distribution expenses budgets; the promotion manager should be responsible for developing the promotion plan, and the field. Sales managers should be responsible for developing both their marketing plan and their distribution expenses budget. The budget should separately identify controllable and non controllable expenses, and this budget should be detailed by interim time period (Welsch et. al.; 1992: 315).

### **2.3.5.4 Administrative Office and Administrative Overhead Budget**

Administrative expenses include those expenses other than manufacturing and distribution. They are incurred in the responsibility centres that prove supervision of and service to all factions of the enterprise, rather than in the performance of any one function. Because a large portion of administrative expenses are fixed rather than variable, the notion persists that they can not be controlled (Welsch et. al.; 1992: 316).

Administrative expenses budget covers the expenses incurred in framing policies, direction the organization and controlling the business operation. The budget provides an estimate of the expenses of the control office and of manager salaries. The budget can be prepared with the help of past experience and anticipated changes. Much difficulty is appeared when the planner is not experienced in developing such budget as most of the administration expenses are of a fixed nature. Although fixed expenses remain constant and are not related to sales volume in the short run, they are dependent upon sales in the long-run with a small change in output, they do not change. However, reduced by discharging the services of some member of the staff and lacking other economy measures. On the other hand with persistent increase in output or business activity, administration expenses will increase but they may lag behind business activity. According to Welsch, "It is advisable to base budgeted administrative expenses on specific plans and programs. Past experience, adjusted for anticipated changes in management policy and general economic conditions is helpful. Because most administrative expenses are fixed, an analysis of the historical record will often provide a sound basis for budgeting them (Welsch et. al.; 1992: 317).

### **2.3.6 Capital Expenditure Budget**

#### **2.3.6.1 Concept and Capital Budget**

A capital expenditure is the use of funds (e.g. cash) to obtain operational assets that will (a) help earn future revenues or (b) reduce future costs. Capital expenditure includes such fixed (i.e. operational) assets as property, plant, equipment, major renovations and patents. Typically, capital expenditures projects involve large amount of cash, other resource and debt that are tied up for relatively long periods of time, capital expenditures are investments because they require the commitment benefit today to receive higher economic benefits (i.e. profit) in the future. Capital expenditure becomes expenses in the future as their related goods future profits from future revenues or to achieve future cost savings (Welsch et. al.; 1992: 395).

A major issue in planning capital expenditure is the problem of ensuring that a company has the capacity to produce, acquire, or be able to deliver the goods and services that will be needed to meet its sales and services plans (Welsch et. al.; 1992: 632). A major issue in control in the actual expenditure of funds is the problem of ensuring that the actual expenditures are consistent with the plans and that funds are available when the expenditures are incurred. The capital expenditure is an important part of comprehensive profit plan. The capital expenditure budget is variously referred to as the capital additions budget, plant and equipment budget, construction budget, capital outlay budget, investment budget or plant additions budgets.

The capital budgeting decisions, as already pointed out, pertain to fixed assets or long-term assets which by definition refer to assets which are in operation, and yield a return, over a period of time, usually exceeding one year. The capital budgeting decision, therefore, involves a current outlay or series of outlays of cash resources in return for an anticipated flow of future benefits (Quirin; 1967: 2). Capital expenditure management, therefore, includes addition disposition, modification and replacement of fixed assets. From the preceding discussion may be deduced the following basic feature of capital budgeting. (1) Potentially large anticipated benefits; (2) a relatively high degree of risk; and (3) a relatively long time period between the initial outlay and the anticipated return (Oster; 1974: 4). Capital budgeting is the planning of expenditure whose return will be available beyond one year time interval. It is the process of deciding in advance whether a concern should commit its resources to a project or not whose benefits would be spread over several time periods (Jain & Narang; 1984: 231). It may be defined as the decision making process by which firms evaluate the purchase of major fixed assets, including building, machinery, and equipment. It is part of the firms' formal planning process for the acquisition and investment of capital (Hampton; 1976: 245).

Capital budgeting involves the entire process of planning expenditures whose returns are expected to extend beyond one year. The choice of one year is arbitrary, of course, but it is a convenient cut off point for distinguishing between kinds of expenditures (Weston & Brigham; 1978: 144). Capital budgeting involves the generation of investment proposals. The estimate of cash flows for the proposals; the evaluation of

cash flows, the selection of projects based upon an acceptance criterion and finally the continual revaluation of investment projects after their acceptance (Van Horne; 1997: 148).

A capital budgeting is the process of determining which capital investments will be undertaken. There are three stages of capital budgeting namely (i) proposal generation, (ii) analysis, and (iii) implementation. Capital budgeting is the analysis of proposal long-term investments, it is the decision making process that determines the types of plan and equipment firm will own. How much will be invested in such assets and when the expenditure will be made (Henderson; 1995: 118).

### **2.3.6.2 Method for Evaluation of Capital Budgeting**

To examine the various investment proposals, the necessary information should have collected and evaluated them. The all investment proposals have some risk or quality. The investment proposals does not differ form the risk of existing investment projects of a firm and that the acceptance of any proposal or group of a investment proposal does not change the relative business risk of the firm. The investment decision will be either to accept or to reject the proposal. About the method for evaluation of capital budgeting. Van Horne suggests "we evaluate four method of capital budgeting (1) average rate of return, (2) payback period, (3) internal rate of return, and (4) net present value (Van Horne; 1997: 149).

A brief introduction of the above mentioned method is given below:

#### **a. Average Rate of Return (ARR)**

This accounting measure represents the ratio of the average annual profits after tax to the investment in the project (Van Horne; 1997: 149) ARR is calculated by the following formula.

$$ARR = \frac{\text{Average Annual Profit (After Tax)}}{\text{Average Investment Over the Life of the Project}} \times 100\%$$

The method of evaluating proposal capital expenditure is also known as the accounting rate of return method. It is based upon accounting information rather than cash flow. The most important advantage of the method is its simplicity in calculation and it

makes use of readily available accounting information. But it does not take into consideration the timing of cash inflows and out flows. The method ignores the time value of money to consider of the project evaluation. The higher the ARR is better to the firm.

### **1. Pay Back Period (PBP)**

The payback period of an investment project tell us the number of years required to recover our initial cash investment. It is the ratio of initial fixed investment over the annual cash inflows for the recovery period (Var Horne; 1997: 150). Payback period is calculated by the following the formula.

$$\text{Payback Period} = \frac{\text{Cost of the Investment}}{\text{Net Cash Inflow Per Year}}$$

The method is based on the idea that the original cost of investment must be recovered if the company is to remain in effective existence. The method is also simple to understand and easy to calculation. It is also ignore the time value of money.

### **2. Internal Rate of Return (IRR)**

Because of the various short comings in the average rate of return and payback methods, it is generally that discounted cash flow methods provide a more objective base for evaluating and selecting investment projects. These methods take account of both the magnitude and the timing of expected cash flows in each period of a project life. The internal rate of return for an investment proposal is the discount rate that equates the present value of the expected cash flows with the present value of the expected inflows (Van Horne; 1997: 150). A discounted cash flow or time value adjusted method for appraising capital investment decision is the internal rate of return method. The IRR depends entirely on the initial outlay and the cash proceeds of the project which is being evaluated for acceptance or rejection. It is defined as the discount rate which equates the aggregate present value of the net cash inflows (cash flow after taxes) within the aggregate present value cash out flows of a project. It is represented by 'r' and calculated by the following formula.

$$A_0 = \frac{A_1}{(1+r)} + \frac{A_2}{(1+r)^2} + \dots + \frac{A_n}{(1+r)^n}$$

Where,

- $A_0$  = The initial outlay
- $A_1, A_2, A_n$  = Stream of future net cash flows
- $r$  = Internal rate of return

If there are a number of alternative proposals, the internal rate of return of all alternatives should be compared and the alternative which gives the maximum internal rate should be selected as the most profitable one. The main difficulty of the method lies with the calculation it which will equate present value of net cash flows with that of initial cost of the project.

### **3. Net Present Value (NPV)**

The present value method is a discounted cash flow approach to capital budgeting. With the present value method, all cash flows are discounted to present value, using the required rate of return. The net present value is calculated by the following formula (Van Horne; 1997: 152).

$$NPV = \sum_{t=0}^n \frac{A_t}{(1 + K)^t}$$

Where,

- $K$  = Overall cost of capital
- $t$  = No. of year (no of period)
- $A$  = The stream of cash flows including initial cash outlay.

From the above formula, NPV may be defined as the summation of the present values of the cash flow after tax in each year minus the summation of present values of the net cash outflows in each year. The method has some merits (like, it explicitly) recognizes the time value of money, it considers the total benefits arising out of proposal over its life time; the method is particularly useful for selection of mutually exclusive projects. After having a brief introduction of the four methods of capital budgeting decision, the decision criteria can be summarized the following ways:

**Table 2.1**  
**Capital budgeting decision criteria**

| S.N. | Name of methods               | Accept/Reject Rule  |
|------|-------------------------------|---|
| 1.   | Average Rate of Return (ARR)  | Highest/Higher the ARR is accepted and vice versa.                                      |
| 2.   | Pay Back Period (PBP)         | Lowest/lower the pay back period is accepted and vice-versa.                            |
| 3.   | Internal Rate of Return (IRR) | IRR should be higher than overall cost of capital ( $K_0$ ) is accepted and vice versa. |
| 4.   | Net Present Value (NPV)       | Highest/higher the NPV is accepted and vice versa (only the positive).                  |

### 2.3.7 Cash Budget

The cash budget is a forecast of expected cash receipts and payments for a future period (Ruthman; 1994: 275). Cash shows the planned cash inflows, outflows and ending position by interim periods for a specific time span. A cash budget basically includes two parts. First part is the planned cash receipts (inflows) and second part is the planned cash disbursement (outflow). It prepared after all of the other budgets have been completed. It is the most important part of the firm's budget programme. It consists of three parts namely - (1) estimates of cash receipts, (2) estimates of cash disbursements and (3) cash balances of each budget period.

Van Horne viewed, "a cash budget is arrived at through a projection of future cash receipts and cash disbursements of the firm over various intervals of time. It reveals the timing and amount of expected cash inflows and outflows over the period studied (Van Horne; 1997: 806). Cash budget may be made for almost any period of time for near term, forecast, monthly periods - probably are most frequently used because they take into account seasonal variations in cash flow ----- . When cash flows are relatively

stable, budgeting at quarterly or even longer intervals may be justified (Van Horne; 1997: 807).

Planning cash inflows and cash outflows gives, the planned beginning and ending cash position for the budget period. Planning the cash inflows and outflows will indicate (1) the need for financing probable cash deficits or (2) the need for investment planning to put excess cash to profitable use. The cash budget is directly related to other plans. Such as the sales plan, account receivable and expenses budgets and the capital expenditures budget.

The primary purposes of the cash budget are to:

1. Give the probable cash position at the end of each period as a result of planned operations;
2. Identify cash excess or shortage by time periods;
3. Established the need for financing and/or the availability of idle cash for investments;
4. Coordinate cash with total working capital;
  - a. Sales revenue,
  - b. Expenses,
  - c. Investment, and
  - d. Liabilities.
5. Establish a sound basis for continuous monitoring of the cash position (Welsch et. al.; 1992: 434).

A comprehensive profit planning and control programme establishes the foundation for a realistic cash budget. There must be a balance between available cash and the cash demanding activities operations. Capital expenditures and so on (Welsch et. al.; 1992: 435).

### **2.3.7.1 Approaches used to develop Cash Budget**

There are two primary approaches are used to develop the cash budget. They are following:



1. Cash receipts and disbursement approach.
2. Financial accounting approach.

### **1. Cash Receipts and Disbursement Approach**

Cash receipts and disbursement approach is based on a detailed analysis of the increases and decreases in the budgeted cash account that should reflect all cash inflows and outflows from such budgets as sales, expenses, and capital expenditures (Welsch et. al.; 1992: 436). So, that, it is also called the direct or cash account method. It is often used for short-term cash planning as a part of the annual profit plan. Generally, the approach is not appropriate for the more long-term profit plan. The underlying budgets the cause cash inflow and out flows are carefully analyzed to translate them from an accrual basis to a cash basis.

Cash inflows arise from cash sales, collection of accounts, notes receivable, interest received on investment, sales of capital assets and miscellaneous income resources; and cash outflows arise from purchase (in cash), payment of loan, increase in investment, repurchase of the common share, payment of salaries payment of rent, payment of taxes, losses and miscellaneous expenditures.

### **2. Financial Accounting Approach**

The starting point in this approach is planned net income shown on the budgeted income statement. Basically, planned net income is converted from an accrual basis to cash basis (that is, adjusted for changes in the non cash working capital accounts such as inventories, receivables, prepaid expenses, accruals, and deferrals). This approach requires less supporting detail and provides less detail about the cash inflows and outflows. It is useful for making long-ranges cash projections.

This approach is also known as the indirect to or income statement approach. It is used for analytical purpose to develop the annual cash budget. However, it is used more of ten for long-term cash planning. Basically the method develops cash flows starting with net incomes; adjustment to net income is made for non cash items affecting accrual basis net income. The other cash inflows and outflows are estimated for non operating items such as sale of fixed assets, capital additions, and payment of debt and dividends. These estimates are computed much like the cash receipts and disbursements

methods. For a common set of underlying plans, the cash receipts and disbursements approach and the financial accounting approach derive the same cash flow results (Welsch et. al.; 1992: 447).

### **2.3.7.2 Techniques for Improving Cash Flow**

Improving cash flow basically involves increasing the amount of available cash on day-to-day basis. To accomplish the objectives the management should focus on (a) cash collection process, (b) cash payment process, and (c) investment policies.

A number of methods have been employed to speed up the collection process of cash and maximize available cash. These methods are designed to do one or all of the following.

- a. Speed the mailing time of payments from customers to the firm;
- b. Reduce the time during which payments received by the firm remain uncollected funds;
- c. Speed the movement of funds to disbursements banks.

In the connection, Shafer viewed, some of the ways often used to improve the efficiency of the cash collection process are as follows.

1. Review the lag from the date of sales of good and services on credit to the mailing of (a) invoices and (b) the first billing, to the extent feasible, invoices should be designed to also be the first billing to encourage immediate payment by the customer. The time lag here can avoid significance adverse after on early collection.
2. If cash discounts are given to customers for early payments, review their effect on early cash collection and whether the discount is too high or too low. Also, monitor whether the discount policy is being violated in the company. Alternatively, if discounts are not given, does the company assess an 'interest' penalty for late payment? How much cash inflows are lost by not charging for late payment?
3. Review the credit granting process to determine whether bad credit risks are being screened out. Also, are delinquent receivables being identified early and collection action taken before the receivable becomes an unforgettable?

4. Consider ways to decrease the time between the date that customers pay by check and the date that the cash is available for use in the company's bank account. This time is called 'float' and it may vary from one day to ten days. Float can be very costly because (a) the cash inflow is slow and (b) the opportunity to earn interest on the cash during the float period is lost (Shafer; 1987: 114).

## **2.4 Forecasting**

### **2.4.1 Concept of Forecasting**

A forecast should always state the assumptions upon which it is based; a forecast should be viewed as only one input into the development of a plan. The management of a firm may accept, modify, or reject the forecast. Forecasts are indispensable factors in planning. Forecasts are statements of expected future conditions; definite statements of what will actually happen are patently impracticable. Expectations depend upon the assumptions. If the assumptions are plausible, the forecast has a better chance of being useful. Gupta viewed, "when estimates of future conditions are made on a systematic and the figure or statement obtained is known as 'forecast'" (Gupta; 1992: 82).

Forecasting is the integral part of decision-making activities of management. An organization establishes goals, and objectives, seeks to predict the environmental factors, then selects actions that it hopes will result in attainment of goals and objectives. The need for forecasting is increasing as management attempts to decrease its dependence on chance and becomes more scientific in dealing with its environments. Since, each area of an organization is related to all others, a good or bad forecast can affect the entire organization (Makridakis et. al.; 1977: 4).

### **2.4.2 Level of Forecasting**

A large number of forecasting methods are available to management today. To handle the increasing variety and complexity of managerial forecasting problems, the different levels of forecasting and different forecasting techniques have been developed in recent years. The selection of level of forecasting depends upon many factors like the context of forecasts, the relevance and availability factors, the degree of accuracy of the

data, the desirable time period to be forecast, the time available for making the forecast, and the cost of the forecasting. There are three levels of forecasting namely (1) short-term forecasting (2) intermediate-term forecasting, and (3) long-term forecasting.

#### **2.4.2.1 Short-Term Forecasting**

The short-term forecasting is a predication extending a maximum of two years into the future. The short-term forecasting provides more rationally ordered information and a sound base for decision making to the management. The short-term forecast of general business conditions often important in deriving a short-term sales forecast is useful in making internal estimates of the company operations. The internal estimates made by the adjoining department in the large enterprises can be integrated with up to date.

#### **2.4.2.2 Intermediate-Term Forecasting**

The intermediate-term forecasting covers from three to five years in to the future. This is on of the least developed area of prediction because the forecaster does not have the advantage of surveys of consumer and business intentions. Neither can be extrapolate long-term trends nor one is a particularly good position to rank the importance spending intentions are of vital assistance in the development of short run predications.

#### **2.4.2.3 Long-Term Forecasting**

Forecasts are frequently made in the form of long range projection that compete an economic situation with a minimum of five year into the future with present circumstances or with those of the relevant past. The prospects a picture that has some empirical foundation, sought is reasonable statement of the most probable outcome of an explicit combination of assumptions. Sometimes these assumptions are varied to yield a range of possible result. Typically, long-range aggregate projections have been set in a gross national production framework. Once an appraisal has been made of the growth potential of the aggregate economy, consideration may be given first to the magnitude of future industry sales by product or services line as well as total.

The purpose of long-range projection is to give a rough picture of future prospects, long range aggregate projection have been set in a gross national product frame work. Long range forecast may indicate the volume of investment necessary in plant and equipment.

### **2.4.3 Planning Verses Forecasting**

Sales planning and forecasting often are confused. Although related, they have distinctly different purposes. A forecast is not a plan; rather it is a statement and or a quantified assessment of future conditions about a particular subject (e.g. sales revenue) 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 into 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 judgements about such related items as sales volume, prices, sales efforts, production and financing (Welsch et. al.; 1992: 172).

The distinction between forecasting and planning is not an easy; forecasting is our best thinking about what will happen to us in the future. In forecasting we define situations and recognize problems and opportunities. In planning we develop our objectives in practical detail and we correspondingly develop schemes of action to achieve these achieves the objectives. Many companies prepare and use forecast but do not have disciplined planning procedures other companies have planning without using such procedures. Actually forecasting is important part of the total planning procedure.

## **2.5 Budgets and Budgeting**

### **2.5.1 Budget**

A budget is a comprehensive and co-ordinated plan expressed in the financial terms, for the operation and utilization of resources of an enterprise for some specific period in future (Pandey; 1993: 465). Budgeting is an amalgamation of managerial techniques

and approaches where as the budget is financial expressions for certain period for certain field, it is more numerical rather than theoretical. A budget is a predetermined statement of management policy during a given period, which provides a standard for comparison with the results actually achieved.

A budget is the plan of the firm's expectations in the future as stated previously, planning involves the control and main pulsation of relevant variables controllable and non controllable; and reduces the impact of uncertainty. A budget expresses the plan in formally and helps to realise the firm's expectation. It is a comprehensive plan in the sense that all activities and operations are considered when it is prepared as a whole. Budgets are indeed prepared for various segments of the enterprises but they are the components of the total of the master budget (Pandey; 1993: 466).

A budget is the monetary or quantitative expansion of business plans and policies to be pursued in the future period procedures for planning, coordination and control of business concern. Many types of budgets are in use today in business. Among them main budget are (a) expenses budget (b) profit budget (c) financial budget and (d) capital expenditure budget. The profit budget is used to plan of profit and to control actual performance. The financial budgets concerned with expenditures for fixed assets.

### **2.5.2 Budgeting**

Budgeting as a tool of planning is closely related to the broader system of planning in an organization. Planning involves the specification of the basic objectives that the organization will peruse and fundamental policies that will guide it. Generally, budgeting may be taken as the action as controlling tools of overall management and with support to later argument, the concept of budgetary control should make clear as far.

The objective of budgetary control and standard costing is to enable management to conduct business in the most efficient manner. For this purpose, it must show where and to what extent profit or losses and why not they are being realized. The system should supply the answer to the 'why' and 'how' of management. Let's then first set out, what management wants to know? (Management sometimes have to be educated

before), what management should, how and what management wants to know? Coincide (Welsch et. al.; 1992: 466).

Management is the process of getting things done through others in the same way budgetary control is not possible by owner of the concern. There should be various personnel. The personnel will have clear responsibility those occupy different levels or position of the firm. For budgetary control purpose the suitable information will be analysed or summarized according to the use to which it is to be put. All information should show, what's as command with what should be": in other words, actual as compared with budget (standard). This undoubtedly the most useful information can be given to the management.

In conclusion, the budget involves the statement of plan, the coordination of these plans in to well-balanced programmes and the stable watching of actual operations to ensure that they are kept in line with the predetermined plan. In this way, limits are set expenditure, standard of performance are established, and forward thinking is more an essential part of business management. Care must be taken, however not to fall in to the error of regarding the budget as an end in itself. It is a means to an end. It is not a method a business management, but an aid to clear thinking and its fundamental object is to enable considered intention to be substitute for opportunism in management (Willsmore; 1971: 9).

### **2.5.3 Objectives of Budget and Budgeting**

The basic objective of the budget is to ensure the planned profit of the concern. So, it is considered as tools of planning and controlling of profits. One of the primary objective of an annual budgets to measure the profit expectation for the next fiscal year with due regard to all the circumstances favourable and unfavourable. That can influence of the trading prospects. There are four basic objective of budget.

- i. A plan setting out the proposals and decisions of those running the organization.
- ii. To forecast of the results expected.
- iii. An authorization, the instrument where by supreme governing body sanctions the raising the revenue or incurring the expenditure.

- iv. A yardstick of what expenditure or revenue ought to be if the organization is working efficiently.

The purpose of budgeting in the context of an annual budget is to projects as accountably as possible the sales, incomes expenditures and profit for ensuring year. This is the principle objectives and all other requirements of budgeting system from it.

#### **2.5.4 Budgetary Control**

Budgetary control is the process of determining various budgeted figures for the enterprise for the future period than campaign the budgeted figures with the actual performance for calculating variance. Budgetary control is a system of controlling cost that includes the preparation of budgets coordinating the departments and establishing responsibilities, company actual perform with the budget and outing upon results to achieve maximum profitability.

Budgetary control involves (i) the budget is set by preparing budgets, (ii) the business is divided into various responsibility centres for preparing various budgets, (iii) the actual figures are recorded, (iv) the budgeted and actual figures are compared for studying the performance of different cost centres, and (v) if actual performance less than the budgeted norms a remedial action is taken immediately.

### **2.6 Concept of Surplus and Case for Profitability**

#### **2.6.1 Concept of Surplus and Generation of Surplus**

The term 'surplus' refers to the balance of earning expected to be available with an enterprise after providing for its working expenses, interest payment and various provision for liability. In other words, surplus is the amount of resources left with an enterprises to be retained in the enterprise for future growth and expansion or to be distributed to the owners of enterprise as dividend or for both purpose. Although profit is an absolute concept and profitability is a relative concept for the purpose of the analysis, the researcher use the term 'profit' and 'profitability' interchangeable refers to generation of surplus.

##### **2.6.1.1 Need and Essence of Surplus Generation**



Surplus generation for public enterprises is an important as well as essential due to the following reasons:

- a. The evaluation of public enterprise performance in financial terms would be facilitated.
- b. The enterprises would be less dependent upon public money and as result they could plan their productive programme independently.
- c. A prescribed minimum rate of return would help their expansion, diversity and growth.

#### **2.6.1.2 Case for Profitability**

An underdeveloped country is generally characterized by scarce national resources, that is financial, natural, human, technological etc. and the available resources too are left utilized, underutilized or mix-utilized. In other words due to low income, low saving and low investment, the rate of capital formation is became quite low in an under-developed country. Thus, public enterprises have to play a more position and promising role in nation's economic development.

In the developing countries, governments expect the public enterprise to yield resources for financing not only the latter's own expansion but also for financing the national plans. Infact, the increasing obligations of the enterprises in mobilizing additional plan resources have been widely and increasingly recognized in the plan documents of developing countries. This has been accepted in Nepal too since the formation of the second plan in 1962.

Some economists like I.M.D. little and Roy Harrod are in favour of earning a large amount of profit as possible. Little suggests that profit be used partly for expansion and partly for workers welfare and partly for augmenting the national revenues. Sir Roy Horrod went to extent of expressing the view'.....that the nationalized industry be told in future, they will have to find all their capital requirement by internal finance (Nation Planning Commission, Three Year Plan; 1962: 29).

One of the main reason for creating public enterprise in the under developed countries is to raise the internal resources by way of retained earning and dividend payments. In

Nepal too, Government of Nepal has deliberately envisaged the public enterprise as the instrument of mobilizing resources in the country. This objectives has been explicitly mentioned in various plan documents of the country since the formulation of the second plan in 1962. Further GON has issued a circular to all the public enterprises in June. 1980 to earn a certain rate of return of their capital employed. Earning, a fair rate of return on assets is, therefore, one of the desiderata of public enterprises in Nepal.

If public enterprises are not dependent on the government for their expansion, they can maintain independence and initiative to a great extent. Other wise, uncertainty with change in politics and political pressures may come into play. These factors have played some role in the U.S.A. Where public enterprises are subjected to annual public enterprises are subjected to annual public appropriation, the dependence on state subsidies has increased the degree of government control over the public enterprises in France. However, giving subsidies and grants to a public enterprises a mixed economy like Nepal where the private enterprises also operate side by side is morally unjust and economically unsound. It simply helps to conceal their inefficiency and financial in-discipline, entailing a direct burden on the tax payers.

Thus, in the context of Nepal where public enterprises have been established with explicit objective of generating surplus for further economic development, earning surplus is compatible with the national economic goals. The government should decide the amount of surpluses to be generated by each enterprise taking into consideration the nature of market in which the particular public enterprise is operating, its surplus generating potentiality, national objectives, enterprise constraint, etc. Thus, a part of the general profit they will go to the treasury of HMG/Nepal by way of dividend payment that is meant for future economic growth of the country and balance is apportioned for various reserve fund and retained earnings. The amount apportioned could be used any time for investment, expansion and improvement of the enterprises (Pathak; 1983: 41).

## **2.6.2 Concept of Profitability Ratio**

Profitability is a measure of efficiency and the search for it provides an incentive to achieve efficiency (Khan & Jain; 1998: 136). The ratios measure overall efficiency of management as the return generated on sale and investment. It is also a control measure of the earning power of a firm as well as operating efficiency.

Profitability ratios essentially relate to the profit earned by a firm during a particular period to various parameters like sales, shareholders equity, Capital employed and total assets. Western and Brigham express their view, "Profitability is net result of a large number of policies and decisions. The ratio examine of thus for reveal some interesting things about the way the firm operates but the profitability ratio give final answers about how effectively the firm is being managed (Weston & Brigham; 1978: 140).

Profitability ratios are designed to provide answers to such as (i) is the profit earned by the firm adequate? (ii) What rate of return does it represent? (iii) What is the rate of profit for various divisions and segment of the firm? (iv) what is the earning per share ? (v) what amount was paid in dividends (vi) what is the rate of return to equity holder ? so on (Khan & Jain; 1998: 136). The profitability ratio is calculated to measure the operative efficiency of the company. Besides, management, creditors and owner of the company are also interested in the profitability ratio of the firm (Pandey; 1993: 116).

The profitability ratios are two types, those showing profitability in relation to sales and those showing profitability in relation to investment. Together these ratio indicate the firm's efficiency of operation (Van Hore; 1999: 77). The ratios can be determined on the basis either of sales or investment. The more important profitability ratio in relation to sales are gross profit margin, net profit margin, return on fixed assets, return on total assets return and capital employed. An introduction of the ratios is given below.

#### **a. Gross Profit Margin (GPM)**

Gross profit margin ratio refers the percentage relationship between gross profit and sales. Gross profit means the excess amount of sales over cost of good sold. Van Horne

viewed, "this ratio tells us the profit of the firm relative to sales after we deduct the cost of producing the good sold. It indicates the efficiency of operation as well as how product is priced" (Van Horne; 1996: 772). It is calculated by following formula.

$$\text{Gross Profit Margin} = \frac{\text{Gross Profit}}{\text{Sales}} \times 100\%$$

A high ratio of gross profit margin is a sign of good management. It means the firm is able to produce its products relatively at low cost and to sale relatively at higher price and vice-versa. So higher ratio is favourable to the firm.

### **b. Net Profit Margin (NPM)**

Net profit margin measures the percentage of each sales dollar left after all expenses, including taxes have been deducted (Gitman; 1988: 108). It is that ratio, which measures the relationship between net profit and sales of a firm. It is computed by dividing net profit after tax by net sales.

$$\text{Net Profit Margin} = \frac{\text{Nep Profit After Tax}}{\text{Sale}} \times 100\%$$

The net profit margin tells us the relative efficiency of the firm after taking into account all expenses and income taxes but not extra ordinary charges. A higher the ratio is preferable to a firm. Such firm will be able to accelerate its profit at faster rate than the firm with lower net profit margin.

### **c. Return on Assets (ROA)**

Return on assets ratio measures the net profit after tax against the amount invested in the assets. Van Horne viewed, "when we multiply the assets turnover of the firm by the net profit margin, we obtain the return on assets ratio or earning power on total asset" (Van Horne; 1996: 174). The statement can be written in the following formulas.

$$\begin{aligned} \text{Return on Assets} &= \text{Assets Turnover Ratio} \times \text{Net Profit Margin} \\ &= \frac{\text{Net Profit After Tax}}{\text{Total Assets}} \times 100\% \end{aligned}$$

Return on assets is also calculated on the basis of fixed assets, it is called return on fixed assets (ROFA). ROFA is calculated by the following formula.

$$\text{Return on Fixed Assets} = \frac{\text{Net Profit After Tax}}{\text{Fixed Assets}} \times 100\%$$

The ratios judge effectiveness in using the 'pool' of funds which is useful to measure the profitability of all the financial resources in the firm's assets.

#### **d. Return on Capital Employed (ROCE)**

The term capital employed refers to long-term fund supplied by the creditors and owners of the firm. Return on capital employed is the relationship between net profits after tax to the total capital employed. The ratio measures the overall effectiveness of management in earning profit from using total capital. It can be calculated by dividing net profit after tax by total capital employed.

$$\text{Return on Capital Employed (ROCF)} = \frac{\text{Net Profit After Tax}}{\text{Total Capital Employed}}$$

The ratio is most important because it reflects the overall efficiency with which capital is used. It is a helpful tool for making capital budgeting decisions. Higher the ratio is favourable to the firm and vice-versa.

### **2.6.3 Concept of Solvency Ratio**

Solvency ratio refers that ratio which reveals the liquidity position of the concern. It shows the financial standing of the concern. Solvency ratios are calculated to judge the financial position of the firm from short-term solvency view point as well as long-term. Generally short-term solvency ratios are current ratio and quick ratio. Similarly long-term solvency ratio is debt equity ratio.

#### **a. Current Ratio**

One of the most general and most frequently used the ratio is called current ratio. It is a measure of short-term liquidity and it is calculated by dividing the firm's current assets by current liabilities (Gitman; 1988: 96). Current assets normally include cash, marketable securities, prepaid and advance expenses, accounts receivable, and inventories. Current liabilities consist of account payable, short-term notes payable,

current maturates of long-term debt, accrual income taxes and other accrued expenses. The higher the current ratio is favourable to the firm. Although, there is no hard and fast rule conventionally a current ratio 2:1 is considered satisfactory. The ratio is calculated by following formula.

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

### **b. Quick Ratio**

Quick ratio is ratio of liquid assets to current liabilities. Liquid assets are those assets, which are readily converted into cash. It includes cash balances, bill receivable, sundry debtors and short-term investment. Inventory and prepaid expenses are not included in liquid assets because the emphasis is on the ready availability of cash in case of liquid assets. It is also known as acid test or liquid ratio. Quick ratio is a measure of liquidity. It is calculated by the firm's current assets minus inventory by current liability. It can be calculated by using following formula.

$$\begin{aligned} \text{Quick Ratio} &= \frac{\text{Quick Asset}}{\text{Current Liability}} \\ &= \frac{\text{Current Assets} - \text{Inventory} - \text{Prepaied Expenses}}{\text{Current Liability}} \end{aligned}$$

Generally, a quick ratio, 1:1 is considered to represent a satisfactory current condition. But the standard for the quick ratio depends upon the types of the business firm.

### **c. Debt Equity Ratio**

The relationship between creditors' fund and owners' fund is a popular measure of the long-term financial solvency of a firm. The relationship is shown by the debt equity ratio. This ratio indicates the relative claims of borrower and owners against the firm's assets. Gitman viewed, "the debt equity ratio indicates the relationship between the long-term fund provided by creditors and those provided by the firm's owner (Gitman; 1988: 103). According to Van Horne, the debt to net worth ratio is computed by simply dividing total debt of the firm (including current liability) by shareholder's equity (Van Horne; 1996: 767). The ratio is calculated by the following formula.

$$\begin{aligned} \text{Debt Equity Ratio} &= \frac{\text{Long Term Debt}}{\text{Shareholder's Equity}} \\ &= \frac{\text{Total Debt}}{\text{Shareholder's Equity}} \end{aligned}$$

The ratio computes on the basis of book-value, it is some time useful to calculate this ratio using market value. A high debt equity ratio shows that the claim of creditors is greater than those of owners. It is risky to the creditor. So, creditors always want a low debt-equity ratio. High the ratio is unfavourable to creditors as well as business point of view. It is an important tool of financial analysis to appraise the financial structure of a firm. It is useful to creditor, owners of the firm and the firm itself.

#### **2.6.4 Concept of Efficiency Ratio**

As efficiency ratio may be defined as a test of the relationship between sales and various types of assets of a firm. By depending upon the various assets there are various types of activity ratio. Efficiency ratios indicate how effectively the company is using its asset. It is also known as activity ratio or turnover ratio. Efficiency ratios are concerned with measuring the efficiency in operating as well as assets management (Khan & Jain; 1997: 149). It is used to measure the speed with which various account are converted into sales or cash. The ratios involve a relationship between sales and various assets (like inventory, receivable, fixed asset, total assets etc.). Inventory turnover ratio, total assets turnover ratio, debtor turnover ratio, capital employed turnover ratio are the more important and widely used as the efficiency ratio.

##### **a. Inventory Turnover Ratio**

Inventory turnover ratio indicates the number of times inventory is replaced during the year. The ratio shows how rapidly the inventory is turning in to receivable through sales. It calculated by sales divided by inventory. In other word, it measures the relationship between good, sold and the inventory level. The ratio can be computed by following to different approaches.

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

$$\text{ii) Inventory Turnover Ratio} = \frac{\text{Sales}}{\text{Closing Inventory}}$$

The ratio is a most important tool of inventory management. So, it is also known as stock turnover ratio. It shows the efficiency of inventory management of a business firm. A higher the ratio is better than a lower the ratio. Higher the ratio indicates the better efficiency of the inventory management of the firm.

### **b. Debtors Turnover Ratio**

Every business firms cannot always sell their products in cash. They should have to sell their product on credit that is known as debtors or bill receivable which is current assets of the firm. The debtor's turnover ratio is a test of liquidity of debtors of the firm. It is also known as receivable turnover ratio. The ratio is very closely related with the average collection period. It shows how rapidly debtors are converted into cash. It shows the relationship between sales and debtors of the firm. It is calculated by dividing credit sales with debtors of the firm.

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

To solve the problem arising out of the non-availability of the information in respect of credit sales and debtors, the following alternative approach is used.

$$\text{Debtor Turnover Ratio} = \frac{\text{Total Sales}}{\text{Closing Debtor}}$$

Closing balance of debtors generally, the higher is preferable to the business firm which shows the better the trade credit management and vice-versa.

### **c. Assets Turnover Ratio**

Assets turnover ratio is the relationship between sale and various types of assets (like fixed assets, current assets, total assets etc.). It shows the firm's earning power with utilization of the various types of assets. It is also known as investment turnover



ratio. Depending upon the different concept of assets, there are following types of this ratio.

The first assets turnover ratio is total assets turnover ratio which is calculated by dividing sales with total tangible assets (Gitman; 1988: 100).

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

Total assets turnover ratio indicates the efficiency with which the firm uses all assets to generate sales. The higher the ratio shows more efficiently its assets have been used and vice-versa.

The second types of assets turnover ratio is fixed assets turnover ratio, which is calculated by dividing sales by net fixed assets.

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

Fixed assets turnover ratio is the relationship between sales and net fixed assets of the firm. It measures the efficiency with which the firm has been using its fixed assets to generate sales. A third type of assets turnover ratio is current assets turnover ratio which is the relationship between current asset and sales. It is calculated by dividing sales by current assets.

$$\text{Current Assets Turnover Ratio} = \frac{\text{Sales}}{\text{Current Assets}}$$

Assets turnover ratios express the number of times assets (fixed, current & total) are being turnover in a stipulated period of time. The ratio is an important in cases of manufacturing as well as trading concern. Generally higher the assets turnover ratios (fixed assets turnover ratio, current assets turnover ratio and total assets turnover

ratio) is favourable to the firm. In using the assets turnover ratio, one point must be carefully kept in mind, the concept of assets (fixed asset and total assets) turnover are net of depreciation.

#### **D. Capital Employed Turnover Ratio**

Capital employed means those noncurrent liabilities including owner's equity. It is also defined as permanent capital or long-term fund. Capital employed turnover ratio refers the relationship between sales and capital employed. It can be calculated by dividing sales by capital employed.

$$\text{Capital Employed Turnover Ratio} = \frac{\text{sales}}{\text{Capital Employed}}$$

Capital employed turnover ratio expresses the number of times capital employed is being turnover in a stipulated period of time. It measures the ability of generating sales per dollar of long-term investment. Higher ratio is favourable to the firm and vice-versa.

## **2.7 Review of Previous Study**

### **2.7.1 Books**

**R. H. Garrison (2000)** “*Managerial Accounting*” A budget is the detail plan outlining the acquisition and use of financial and other resources over some given time period. It represents the plan for the future expressed in formal quantities terms. The act of preparing budget is called budgeting. The uses of budget to control firm’s activities are known as budgetary control.

**Khan and Jain (2000)** “*Managerial Accounting*” Budgeting as a tool of planning is closely related to the broader system of planning in an organizations. Planning involves the specification of the basic objectives that the organizations will pursue and the fundamental policies that will guide it.

**Singh M. Y, Ojha.P. K and Acharya C (2004)** “*Cost and Management Accounting*” Profit is the primary measure of business success in any economy. Usually, profits do not just happen. Profits are managed. The effective operation of a business concern, resulting in an excess of income over expenditure fully depends upon as to what extent the management follows proper planning, effective co-ordination and dynamic control. This requires that management must plan for future financial and physical requirements for maintaining productivity and profitability of the business concern. The procedure for preparing a plan in respect of future financial and physical requirements is generally called ‘budgeting’. The primary purpose of budgeting in a business is to increase the chances of making profits.

A budget is a written plan for the future. The managers of firms which use budgets are forced to plan ahead. Thus these firms tend to do well because they anticipate problems before they occur. A firm without financial goals may find it difficult to make proper decisions. A firm with specific goals in the form of a budget can control its costs by setting guidelines for spending money for unnecessary items because they know that all the costs incurred will be compared to those provided in the budget. If actual costs exceed the budgeted costs, an explanation will be required. Frequently exceeding the budget may even become a ground for dismissal. A budget helps to motivate employees to do a good job. This is particularly true when employees help in setting up the budget. A complete budget for a firm is often called the master budget. The master budget consists of many functional budgets. These budgets include a sales budget, a production budget, a purchase budget, an expense budget, an equipment purchase budget and a cash budget. Once all of these budgets are completed, the master budget for the entire firm is prepared.

The main aim of budgeting is to present a future forecast, numerically expressed in an appropriate format so that proper control in profits and cost centres could be established. As the size of organization grows, the importance of budgeting becomes inevitable. A budget must be prepared in advance of commencing operations, stating what and how things are to be done. A budget covers a definite period of time, usually one year. It is a tool of planning, direction, coordination and control.

### **Outline of the components budgeting**

#### **Strategic Plan**

- a) Setting broad objectives of the enterprise.

- b) Defining specific enterprise goals.
- c) Formulating enterprise strategies.
- d) Circulating management's planning instructions.

### **The Financial Plan**

- a) Long-term financial plan
- b) Short term annual budgets

### **Objectives of Budget**

The main objective of a business firm is to make an excess of revenue over expenses so as to maximize profits. But it is not a matter of a dream or chance. There are no magic formulas for boosting the figure of profit overnight. Budgeting, if followed properly, can increase the chances of making profits within the given environment.

The objectives of budgets can be summarized in the following points.

- To provide a realistic estimate of income and expenses for a period and of the financial position at the close of the period, detailed by areas of management responsibility.
- To provide a coordinated plan of action which is designed to achieve the estimates reflected in the budget.
- To provide a comparison of actual results with those budgeted and an analysis and interpretation of deviations by areas of responsibility to indicate course of corrective actions and to lead to improvement in future plans.
- To provide a guide for management decisions in adjusting plans and objectives if there is an uncontrollable change in conditions.
- To provide a ready basis for making forecasts during the budget period to guide management in making day to day decisions.

### **Functions of a Budget**

In any organization irrespective of its type and size, budgeting function is inevitable. Budgets are so pervasive that they apply to all kinds of organizations. Indeed, controllership functions cover at least two areas of economic information. The first is to keep records of business transactions which ultimately yields financial statements including the income

statement, the statement of retained earnings the balance sheet and cash flow statements. These are statutory for providing information to stockholders, creditors, supplier and government.

The second main controllership function is budget preparation. Budgets cover the following major activities of the management process

- Planning
- Communication
- Coordination
- controls

### **2.7.2 Journal and Articles**

**Acharya,(1999)**,in an article "*Dursanchar Ko Bartaman Awastha ra Nijikaran*" suggested to utilize its fund rather than accept high interest bearing loans for capital investment, since the rate of earning in liquid fund is less than the rate of interest it pays for the loan.

**Acharya,(2000)**, in an article "*Profitability Structure of NTC*" suggested to utilize its internal resource. He writes "It has become possible to maximize profit utilizing internal resources with minimum cost. In other hand, liquidity position of the corporation is quite high as it keeps capacity to pay of whole debt at once if the circumstances so required. Keeping in view the increasing services it can be expected that the further profitability trend will get improve furthermore in comparison to current trend provided the revenue structure from national and international service remain within a certain limit at unchanged tariff situation."

**Pokhrel,(2005)**, in article "*Revenue Collection in Nepal Telecom and strengthening it in future*" shows Nepal telecom standard cash collection/revenue ratio has been taken as 98% through some portion of cash collection during the year may pertain to previous years. But the result shows the actual cash/revenue percentage fluctuated from the standard.

**Poudel,(2010),** *"Sana tatha kutir udhyog ko arthik byawasthapan"* reveals that cottage and small industries department has big amount of expenses as uncertified which shows lack of responsibility in financial aspect by the public enterprises.

The above review of various journal and articles related to working capital and cash management reveals the poor management of working capital in Nepalese PE's.

There are some research works made on the topic of profit planning in Nepalese context and the same are relevant to review here in this section.

### **2.7.3 Thesis**

**Chand Prakash Bahadur (2004)** submitted a dissertation in the topic, *"Profit Planning in Herbs Production and Processing Company Limited"* to the faculty of management central department T.U. in the course of practical fulfilment of MBS.

The data were collected from both primary and secondary sources. The period covered was for five years from FY 1998/1999 to 2003/04. The basic objective of this research paper is to examine what extent the company is applying comprehensive profit planning system The main and sub-objective of this research were:

- a. To identify the profit planning process adopted by HPPCL.
- b. To assess the BEP analysis of HPPCL.
- c. To recommend the step to be taken to improve the profit planning process.

Findings can be briefly enumerated in the following points:

- There is conflict between profit and social goal.
- Due to the lack of entrepreneurship HPPCL is not operated on commercial basis.
- All the department are not delegated authority and create new ideas to formulate various policies.
- HPPCL adopting traditional pricing policy that is cost plus pricing. Sometime some products are priced below the cost due to the government circulation.
- HPPCL has lack of budgeting exports and formulated on traditional adhoc basic.

- HPPCL is seriously suffering from excessive fixed cost and non-manufacturing expenses.
- Unrealistic sales forecasts etc.

**Bhata Krishna Dev (2005)**, submitted a dissertation on the topic "*Profit Planning in Royal Drugs Limited*" this research was mainly concerned with the current practice of profit planning and examines that to what extent the RDL is apply profit planning system Primary as well as secondary data have been used in the research reporters. The main objectives of work were:

- a. To analyze the various functional budgets that is prepared in public enterprise of Royal Drugs Limited.
- b. To sketch the trend of profit or loss.
- c. To evaluate the variance between budgeted and actual of the enterprise.
- d. To examine practice and effectiveness of profit planning.

Major finding of research are:

- Objective of RDL are not clear, whatever it aims to minimize profits or to maximize social service is not clearly distinguished.
- There is a lack of entrepreneur ship and business in the operation of the enterprise.
- Authority and responsibilities are not clear among the department management and working managers.
- There is a more conflict and lack of co-ordination between departments.
- Responsibility counters to control of cost are not clearly defined.
- Internal and external variables providing opportunities threats and strengths and weaknesses are not identified.

**Mishra Sagar (2006)**, a significant contribution on the topic "*Profit Planning in Tokla Tea Estate (TTE)*".

The data were collected from both primary and secondary sources. The basic objectives of this research paper are to examine how far the different functional

budgets are being applied as a tool of profit planning in the estate. Regarding the basic objective, other sub objectives are:

- a. To interpret the trend of profit/loss and cost of the company in the light of profit plan.
- b. To identify the sales plan for the company in the high of strategic and tactical sales plan.
- c. To analyze the production plan and actual production trend of the company.
- d. To review the Tokla tea estate's profit planning on the basis of overall managerial budgeting.

Major finding of the study can be enumerated in the following points:

- Inadequate evaluation of relevant internal and external variables.
- Problems of maintaining the quality of the products.
- Inadequate profit and productively due to lack of skilled manpower, excessive fixed cost and inventory.
- Unrealistic sales for casts etc.

**K.C. keshab Bahadur (2007)**, conducted a research on the topic, "*Profit planning in Nepal Electricity Authority and Nepal telecom*", this research work is basically concerned is to highlight the current practice of profit planning and its effectiveness in the company's other specified objective are:

- a. To examine the present profit planning premises adopted by the companies.
- b. To analysis the difference between budgets and actual achievement of the companies.
- c. To point out suitable suggestion and recommendation. To conduct this research, both primary and secondary source of data have been used. The time period was five years in this study. The following findings or recommendations.

Findings:

- Specific goals and objectives are not conveyed to lower level of staff and it denotes the absence of MBO principle of management.



- There is lack of proper coordination between the various responsible departments.
- There is no cost classification system. Overhead are not classified systematically and it creates problem of analyze its expenses properly.
- Absence of skilled and purely academic manpower in budgeting section, the company has unable to prepare systematic future plan.
- There is no arrangement of any accounting and management planning training by the company.
- Actual sales are very below than budgeted sales.
- There is a lack of entrepreneurship in the operation of the company.
- The companies are suffering from low contribution margin and high fixed cost.

**Sharma N (2009)** “*Revenue Planning & Management of Manufacturing Public Enterprises: (A case study of Singh Durbar Vaidya Khana Vikas Samiti);*” An unpublished master level thesis submmited to Central Department of Management, Faculty of Management T.U. The following major findings and recommendations.

The main objectives of this study are:

1. To analysis the actual sales and budgeted sales.
2. To examine revenue generate by SDVKVS.
3. To recommendation and suggestion for SDVKVS.

The findings of this study are:

1. SDVKVS has adopted only product/categorized budget. But it has not adopted practice of preparing monthly budget.
2. There is no surprise sale.
3. There are no actual bad debts shown in an account.
4. In the calculation of profit volume ratio, it has shown that its fixed cost is high.
5. The pricing policy needs revision and adjustment of pricing policy organization is not fare.

**Bhatta Gunaker (2010)**, had made research on “*Profit planning a case study of Nepal Electricity Authority;*” an unpublished master level thesis submmited to Central Department of Management, Faculty of Management T.U. Following are the major finding and recommendation

- Operating profit of NEA is in negative figure. The authority has shown profit after the transfer from evaluation surplus.
- The authority fails to maintain its periodic performance report systematically. Goal and objective are limited only to the high ranking officials.
- Specific goal and objective are not conveyed to lower level staff and it denotes the absence of MBO principal of management.
- Achievements of the authority are more variable than budgeted.
- Even the authority is not less from the last few years; the profit is shown only after the transfer from evaluation surplus.

Recommendations:

- NEA should improve coordination between various directorates.
- NEA should develop efficient system of profit collection.
- Budget centres should be regularly monitored.
- Leverage of the electricity should be controlled by improving meter reading and meter connection system.

## **2.8 Research Gap**

All the studies mentioned above about profit planning and controls are basically related with the profit planning system of Nepalese business enterprises. These studies have pointed out the similarities findings. The conclusion of those researchers is that there is no proper planning and control system in Nepalese proposes enterprises. Therefore this study is designed to highlight the comprehensive budget process and its impact on profitability. Previous study has not been yet made emphasizing the effect of budgeting and profit planning on the profitability. This research work covers time period of ten years for the propose of trend analysis.

# **CHAPTER III**

## **RESEARCH METHODOLOGY**

This chapter stands for the overall approach to the research process, systematic framework of research plan and scheme. Especially this chapter has focused on research design, nature and sources of data, sample, population and tools for analysis etc.

### **3.1 Research Design**

This research can preferably be said descriptive and explanatory as its attempts to describe and explore various aspects and dimensions of profit planning in NEA. This study is quantitative since the quantitative data have extensively employed. Trends of sales, production and profitability, planning methods and practices, financial relationship among financial variables etc. are the main issues to be dealt throughout the research. The data collected using the different methods are tabulated and analyzed using different financial and statistical tools to find out real condition of profit planning in NEA.

### **3.2 Nature and Sources of Data**

The data upon which this study is made are basically secondary in nature. The secondary data have been collected from financial statements, annual reports, and other published and unpublished official records of concerned company. All the collected data and information have been properly arranged, synthesized, tabulated and calculated to arrive at the realistic analytical steps.

### **3.3 Sample**

This study specially focuses upon profit planning of NEA. Following are the years and total number of observations employed here in this study. This study consists of the data of 10 years from 2001 to 2010.

### **3.4 Research Variables**

The research variables of this study are mainly sales, cost of sales, profit and loss, cash flow, capital expenditure, fixed assets and total assets etc.

### **3.5 Tools for Analysis**

Both of financial and statistical tools have been employed here in this research work.

#### **3.5.1 Financial Tools**

##### **1. Financial Ratio Analysis**

Financial ratio is an arithmetical relationship between two or more financial variables. Company's short-term and long-term solvency position, assets and debt management, and profitability have been measured through following ratios.

##### **Current Ratio**

Current ratio measures the company's ability to pay its short-term obligations when they become due.

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

##### **Quick Ratio**

Quick ratio measures, like current ratio, short term solvency position of the company but with relying on sales of inventories.

$$\text{Quick Ratio} = \frac{\text{CA} - \text{Inventories}}{\text{Current Liabilities}}$$

##### **Inventory Turnover Ratio**

This ratio helps to assess the velocity of company's inventories to turn out into sales.

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

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

Total assets turnover indicates how effectively the assets are utilized to generate sales revenue.

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

### **Fixed Assets Turnover Ratio**

This ratio measures the extent of efficient utilization of fixed assets to generate sales revenue of the company.

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

### **Gross Profit Margin**

Gross profit margin indicates how cost effective a company is to get its operating profit.

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

### **Net Profit Margin**

Net profit margin is the profit per Rs. sales indicating the overall cost effectiveness of a company.

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

### **Return on Assets**

Return on assets measures how efficient the firm is in order to manage its total assets and to generate profit.

$$\text{Return on Assets} = \frac{\text{Net Profit}}{\text{Total Assets}}$$

### **Return on Capital Employed**

Return on capital employed is a ratio that denotes return per Rs. of capital employed.

$$\text{Return on Capital Employed} = \frac{\text{Net Profit}}{\text{Capital Employed}}$$

### **Debt Ratio**

Debt ratio is the portion of debt capital that is employed to finance its total assets.

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

### **Debt/Equity Ratio**

It is the relationship of borrowed fund and owner's capital.

$$\text{Debt-Equity Ratio} = \frac{\text{Debt}}{\text{Equity}}$$

### 3.5.2 Statistical Tools

**i. Coefficient of Variation (CV)**

Coefficient of variation measures the standard deviation (S.D.) per unit average of the given variable. Unlike standard deviation, it is the relative measure of dispersion.

**ii. Co-efficient of Determination (R<sup>2</sup>)**

R<sup>2</sup> explains the ability of independent variable to predict the change in dependent variable.

**iii. Standard Deviation (S.D.)**

S.D. measures the extent of dispersion of observed variables from the average. This tool helps to recognize volatility of variable within a given time periods.

**iv. F-test**

To test the significance of regression model, f-test is utilized. F-test facilitates to identify whether the model is significant or not.

**v. t-test**

t-test is applied as a tool to determine the explaining power of independent variable. While t-value is significant, the variable under consideration can best explain the variation in dependent variable.

**vi. Simple Linear Regression Model**

Regression is the statistical tool that is used to determine the statistical relationship between two (or more) variables and to make estimation (or production) of one variable on the basis of the other variable. The equation of simple linear regression model is  $y = a + bx$ . The variable to predict is called the dependent variable and the variable on which the prediction is based is called the independent variable.

**vii. Discriminate Analysis**

Discriminate analysis is developed by Altman and is also called Altman model. This model can be employed to discriminate whether or not a company is considered likely to fail in the near future. Analysis of each of the individual

ratios sometimes be confusing and to avoid this z-score model developed by Altman is employed. Z-score above 2.99 represents healthy firm. Z-score below 1.81 always represents unhealthy firms. Z-score between these two represent area of gray.

Z-score is calculated utilizing the equation (Van Horne; 1997:206)

$$Z = 1.2 x_1 + 1.4 x_2 + 3.3 x_3 + 0.6 x_4 + 1.0 x_5$$

Where,

$x_1$  = Net working capital to total assets (NWC/TA)

$x_2$  = Current asset to current liabilities (CA/CL)

$x_3$  = Net profit to total assets (NP/TA)

$x_4$  = Net profit to sales (NP/Sales)

$x_5$  = Sales to total assets (Sales/TA)

#### **viii. Percentage of sales method**

It is emphasized to forecasting firm's two key financial statements: balance sheet and income statement as these provide a good picture of the firm's operations.

It has seen that sales to assets turnover is an important control variable and reflects a fundamentally important proposition in planning – that the volume of firm's sales is a good predictor of the required investment in assets.

The percent of sales method provides a practical method of forecasting financial statement. There is a basic logic behind sales and the behaviour of individual asset items. For example, in order to make sales, a firm must have an investment in plant and equipment to produce goods. Inventories of work-in-progress and finished goods are needed to make sales when sales are made, there is usually an interval before payments are received.

This results in the generation of debtors or accounts receivable. Note that investments in fixed assets and inventories lead sales, while investment in receivables lags sales. With sales fluctuations, these lead and lag relationships result in complex patterns that are understood only when the underlying logic of the relationships is kept in mind.

## CHAPTER IV

### PRESENTATION AND ANALYSIS OF DATA

This chapter stands for presenting and analysing data to explore the solutions of the problems mentioned previously. For analysis purpose, various statistical and accounting tools have been employed as per necessary. Profit planning and its various dimensions like financial budgets and practices, trends of profitability and assets management, variance of budgeted and actual plan, relationship of financial variables etc. are the main issues to be dealt here in this chapter.

#### 4.1 Production and Sales Plan

Sales plan is the basic plan at which other plans depend. Table 4.1 presents budgeted sales and actual sales of NEA over the study periods.

**Table 4.1**  
**Target and Actual Sales**

*(Amount in Rs. Million)*

| <b>Year</b> | <b>Budgeted sales</b> | <b>Actual sales</b> | <b>Budgeted to actual sales</b> |
|-------------|-----------------------|---------------------|---------------------------------|
| 2001        | 5396.70               | 2931.49             | 54.32                           |
| 2002        | 6856.00               | 4976.08             | 72.58                           |
| 2003        | 8160.80               | 5150.28             | 63.11                           |
| 2004        | 9476.20               | 6762.22             | 71.36                           |
| 2005        | 11012.60              | 6520.56             | 59.21                           |
| 2006        | 11874.70              | 7047.63             | 59.35                           |
| 2007        | 12605.20              | 11025.14            | 87.47                           |
| 2008        | 13331.90              | 8196.45             | 61.48                           |
| 2009        | 14449.00              | 8233.04             | 56.98                           |
| 2010        | 15405.03              | 11624.64            | 75.46                           |
| Mean        | 10856.81              | 7246.75             | 66.13                           |
| SD          | 3313.73               | 2672.73             | 10.32                           |
| CV          | 0.31                  | 0.37                |                                 |

*Source: Annual Report, NEA*

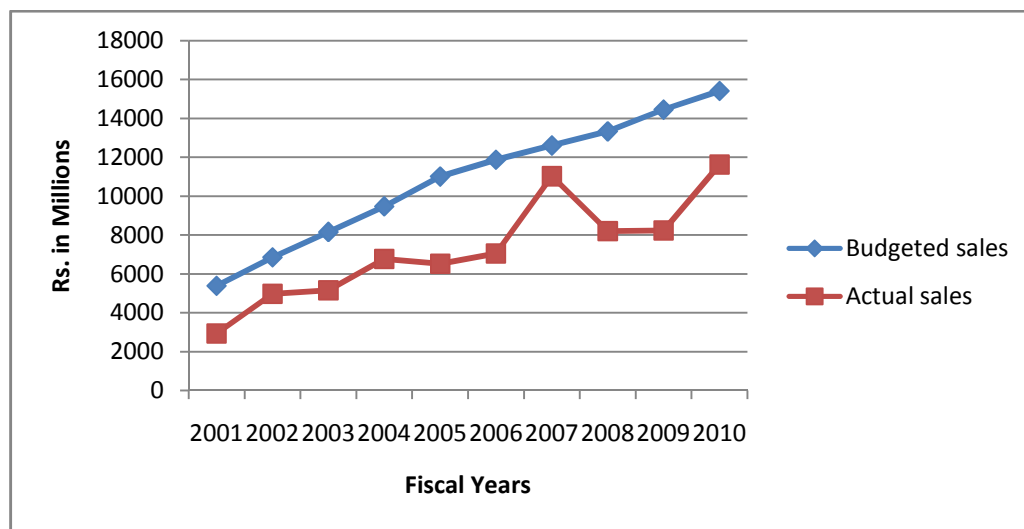
To identify the sales trend of past and to forecast the future trend historical actual sales figures have been presented against the budgeted sales figures. The enterprises' average percentage sales achievement against target sales is 66.13 percent for all the study period. Observing year wise sales, highest sales achievement was recorded at



87.47 percent in the year 2007. On the other hand the lowest sales achievement is 54 percent in 2001. Observing the variation in budgeted and actual sales of NEA as measured by coefficient of variation (CV) budgeted sales varies more than the actual sales of the enterprises and the CV of actual sales is 0.31 as against the CV of 0.37 of budgeted sales.

Comparison of actual and budgeted sales figures reveals that there are considerable gap between budgeted and actual sales. Moreover the gap happened to be inconsistent. Such huge gap must be addressed through the coordination and integration of efforts of all the branches and departments.

**Figure 4.1**  
**Target and Budgeted Sales**



Above figure shows that gap between budget and achievement is high. This high deviation creates difficulty to forecast sales.

As indicated by the trend, standard deviation and C.V., the company's budgeted sales fluctuate more than actual sales. On the other way budgeted sales is more inconsistent. The increase and decrease of sales for the periods seem to be unpredictable due to the lack of clear policies and program of the NEA.

#### **4.1.1 Sales Forecasting**

Regression analysis represents a more general method of forecasting sales and is said fewer subjects to potential pitfalls relative to the other statistical methods. So regression equations are developed to forecast sales for coming year.

### **i. Regression Equation of Actual Sales on Budgeted Sales**

A regression model is developed taking actual sales (AS) as dependent variable and budgeted sales (BS) as independent variable. Detailed regression results are presented in following table.

**Table 4.2**  
**Regression Results**

| Model                      | a      | b <sub>1</sub>                 | R <sup>2</sup> | R     | F     | F-sig. |
|----------------------------|--------|--------------------------------|----------------|-------|-------|--------|
| AS = a + b <sub>1</sub> BS | 570.92 | 0.72<br>(-.6127.041)<br>[0.01] | 0.795          | 0.892 | 49.58 | 0.01   |

*Sources: Appendix-1*

Coefficient of determination, R<sup>2</sup> of this model is 0.795 that indicates that 79.5 percent variation of actual sales can be explained by the regression line. Regression coefficient, b<sub>1</sub> indicates that for every Rs. change in budgeted sales, actual sales will change by Rs. 0.72. F-value of the model and t-value of regression coefficient are both significant at 1 percent level of significance. Thus the independent variables do the best job of explaining the variation in dependent variables. There seems strong positive correlation of the budgeted and actual sales.

For forecasting purpose, regression equation is AS = a + b<sub>1</sub> BS. Now, assume that a budgeted sale for coming year is Rs. 18500. So actual sales would come to be:

$$AS = 570.92 + 0.72 \times B.S.$$

or, AS = 570.92 + 0.72 × 18500 = Rs. 23289.29 million

### **ii. Time Series Analysis**

In this, time factor is taken as independent variable whereas actual sales are taken as dependent variable.

**Table 4.3**  
**Regression Results**

| Model                     | a       | b <sub>1</sub>                | R <sup>2</sup> | F      | F-sign. |
|---------------------------|---------|-------------------------------|----------------|--------|---------|
| BS = a + b <sub>1</sub> t | 4879.14 | 1086.85<br>(17.232)<br>[0.01] | 0.986          | 567.25 | 0.01    |

*Sources: Appendix-I*

Above table shows the regression of actual sales on time factor. Coefficient of determination, R<sup>2</sup> is 0.986 showing and it is the proportion of variation in the dependent variable explained by the regression model. Value of regression coefficient, b<sub>1</sub> is positive. It indicates that sales increases for each of the subsequent periods.

To forecast regression by the way of time series, Regression equation is BS = a + b<sub>1</sub> × t or BS = 44879.14+ 1086.85 × t. Since sales are to be forecasted for 11<sup>th</sup> year, forecasted sales would be as: BS = 44879.14+ 1086.85 × 11 = Rs. 16834.48 million.

Observing the f-values and t-value regression of time series equation is more relevant than equation of actual sales on budgeted sales. It is because f-value and t value for the latter model are highly significant.

Annual sales report by consumer group is presented below.

**Table 4.4**  
**Sales Report by Consumer Group**

*(Amount in Rs. 'million)*

| Category                    | Year |      |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|------|------|
|                             | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
| Domestic                    | 2056 | 2622 | 3161 | 3641 | 4250 | 4579 | 5080 | 5405 | 6021 | 6396 |
| Non commercial              | 420  | 527  | 836  | 722  | 784  | 816  | 947  | 882  | 940  | 1013 |
| Commercial                  | 516  | 662  | 556  | 819  | 895  | 986  | 1015 | 1118 | 1288 | 1448 |
| Industrial                  | 1994 | 2430 | 2869 | 3397 | 3831 | 4282 | 4089 | 4326 | 4337 | 5081 |
| Water supply and irrigation | 78   | 96   | 121  | 139  | 149  | 155  | 240  | 198  | 214  | 213  |
| Street light                | 111  | 150  | 176  | 201  | 247  | 330  | 315  | 422  | 455  | 487  |
| Temporary supply            | 7    | 13   | 7    | 4    | 5    | 3    | 6    | 11   | 17   | 9    |
| Transport                   | 9    | 18   | 28   | 28   | 29   | 29   | 30   | 30   | 32   | 31   |

|                                |             |             |             |             |              |              |              |              |              |              |
|--------------------------------|-------------|-------------|-------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Temple                         | 7           | 10          | 11          | 12          | 14           | 21           | 23           | 24           | 26           | 28           |
| Community sales                | 0           | 0           | 0           | 0           | 17           | 20           | 21           | 24           | 54           | 84           |
| Total(Internal sale)           | 5199        | 6528        | 7765        | 8962        | 10204        | 11201        | 11746        | 12416        | 13331        | 14706        |
| Bulk supply(India)             | 198         | 328         | 396         | 514         | 809          | 674          | 573          | 579          | 429          | 370          |
| <b>Gross revenue</b>           | <b>5397</b> | <b>6856</b> | <b>8161</b> | <b>9476</b> | <b>11013</b> | <b>11875</b> | <b>12319</b> | <b>12996</b> | <b>13760</b> | <b>15076</b> |
| Net income from other services | -           | -           | -           | -           | -            | -            | 286          | 336          | 689          | 329          |
| <b>Total revenue</b>           | <b>5397</b> | <b>6856</b> | <b>8161</b> | <b>9476</b> | <b>11013</b> | <b>11875</b> | <b>12605</b> | <b>13332</b> | <b>14449</b> | <b>15405</b> |

Source: Annual Report, NEA

Profit planning is also affected by how sales is distributed among the different segments the enterprises is operating. Table 4.4 shows the sales distribution among different consumer groups along the study periods of 10 years. Main three groups in internal sales are domestic, industrial and commercial. Looking over the trends of the sales of these groups the sales of all the groups have been increasing persistently over the periods. The trend of other sales also shows the same kind of trend over the periods. Following figure presents the sales trend of main three consumer groups.

**Table 4.5**  
**Sales Report by main three Consumer Group**

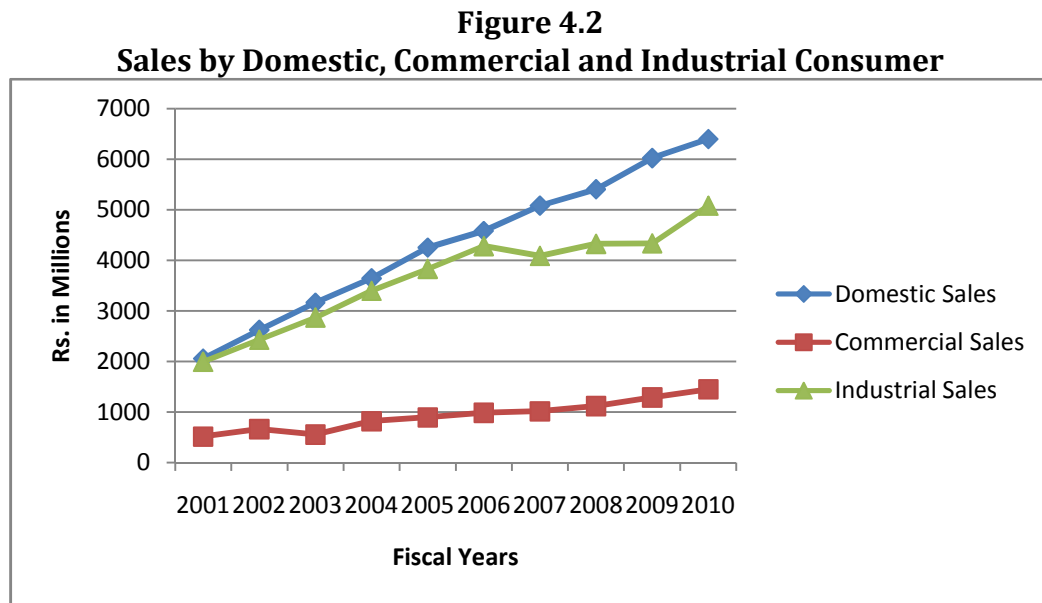
(Amount in Rs. 'million)

| Year | Domestic Sales  | Commercial Sales | Industrial Sales |
|------|-----------------|------------------|------------------|
| 2001 | 2056<br>(38.10) | 516<br>(25.08)   | 1994<br>(36.94)  |
| 2002 | 2622<br>(38.24) | 662<br>(25.23)   | 2430<br>(35.45)  |
| 2003 | 3161<br>(38.74) | 556<br>(17.58)   | 2869<br>(35.16)  |
| 2004 | 3641<br>(38.43) | 819<br>(22.48)   | 3397<br>(35.84)  |
| 2005 | 4250<br>(38.59) | 895<br>(21.06)   | 3831<br>(34.79)  |
| 2006 | 4579<br>(38.56) | 986<br>(21.53)   | 4282<br>(36.06)  |
| 2007 | 5080<br>(40.30) | 1015<br>(19.99)  | 4089<br>(32.44)  |
| 2008 | 5405<br>(40.54) | 1118<br>(20.69)  | 4326<br>(32.45)  |
| 2009 | 6021<br>(41.67) | 1288<br>(21.39)  | 4337<br>(30.02)  |
| 2010 | 6396<br>(41.52) | 1448<br>(22.64)  | 5081<br>(32.98)  |

Source: Annual Report of NEA

Out of total sales for each year domestic sales is higher in comparison to other types of sales. The domestic sales for each year from 2001 to 2010 are ranges from 38.10 percentages to 41.52 percentages out of total sales. The sales for industrial category are ranges from 30.02 to 36.94 percent out of total sales. The same for the commercial category ranges from 17.58 to 25.23 percent out of total sales.

The trend of the sales according these three main consumer categories is also present with the help of following figure:



The trend shows that domestic sales are highest for all the periods followed by industrial sales and commercial sales. Industrial sales however have decreased in year 2007 and 2009. Likewise commercial sales has also decreased in the year 2003 and soared up to Rs.1448 million in the year 2010.

#### 4.2 Growth of consumer

Trend of consumer growth is also an important consideration of profit planning for the NEA. The categories of consumer and their pattern of growth greatly determine the level production, sales and other financial and investment plan of the enterprises. Here, trend of the consumer according their grouping is presented along with the following table and the figure as follows:

**Table 4.6**  
**Growth of consumer**

| Consumer group        | year   |        |        |        |        |         |         |         |         |         |
|-----------------------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|
|                       | 2001   | 2002   | 2003   | 2004   | 2005   | 2006    | 2007    | 2008    | 2009    | 2010    |
| Domestic<br>(%)       | 594    | 643    | 713    | 848    | 930    | 1011    | 1114    | 1227    | 1339    | 1458    |
|                       | 95.36  | 95.45  | 95.62  | 95.93  | 95.87  | 95.90   | 96.02   | 96.07   | 95.81   | 95.66   |
| Non commercial<br>(%) | 7654   | 7815   | 7643   | 8629   | 9722   | 9865    | 9950    | 10010   | 10215   | 10639   |
|                       | 1.23   | 1.16   | 1.02   | 0.98   | 1.00   | 0.94    | 0.86    | 0.78    | 0.73    | 0.70    |
| Commercial<br>(%)     | 2948   | 3096   | 3386   | 3898   | 5317   | 5454    | 6000    | 6170    | 6000    | 6597    |
|                       | 0.47   | 0.46   | 0.45   | 0.44   | 0.55   | 0.52    | 0.52    | 0.48    | 0.43    | 0.43    |
| Industrial<br>(%)     | 14996  | 16179  | 17701  | 18789  | 19833  | 21374   | 22500   | 23020   | 24089   | 25498   |
|                       | 2.41   | 2.40   | 2.37   | 2.12   | 2.04   | 2.03    | 1.94    | 1.80    | 1.72    | 1.67    |
| Others<br>(%)         | 3292   | 3570   | 3950   | 4674   | 5180   | 6518    | 7660    | 10947   | 18251   | 23452   |
|                       | 0.53   | 0.53   | 0.53   | 0.53   | 0.53   | 0.62    | 0.66    | 0.86    | 1.31    | 1.54    |
| Total                 | 622457 | 674073 | 746086 | 884629 | 970705 | 1054029 | 1159949 | 1277541 | 1397907 | 1524703 |

Source: Annual Report, NEA

From the table it is clear that more than 95 percent of consumers are accounted from the domestic group. Industrial consumer for the enterprises is around 2 percent for all the period the second highest number of consumer. Like wise number of consumer as a percentage of total consumers is around one percent for non commercial and other categories of consumers.

The absolute number of consumer for each of categories is increasing over the periods. This spells the future prospects of the enterprises is good.

It is important to note that though domestic consumers are more than 95 percent for all the periods, in terms of sales revenues they occupies only 40 percent of total revenue.

Moreover, consumers in the commercial categories are only around 1 percent however occupies sales revenue of around 23 percent. Like wise, consumers in industrial categories are around 2 percent occupying more than 32 percent of sales for the enterprises.

### 4.3 Trend of Cost of Goods Sold

Production cost is known as cost of goods sold. It is the aggregate of material cost, direct labour cost and factory cost. Cost of goods sold and gross profit has inverse relationship i.e. if cost of goods sold increases gross profit decreases and vice-versa.

Following table shows cost of goods sold and gross profit of NEA.

**Table 4.7**  
**Budgeted Cost of Goods Sold**

*(in Rs. 'million')*

| Year | Sales    | Gross profit | Cost of sales |                     |
|------|----------|--------------|---------------|---------------------|
|      |          |              | Amount        | Percentage of sales |
| 2001 | 5396.70  | 3446.70      | 1950.00       | 36.13               |
| 2002 | 6856.00  | 4665.70      | 2190.30       | 31.95               |
| 2003 | 8160.80  | 3680.10      | 4480.70       | 54.91               |
| 2004 | 9476.20  | 3589.50      | 5886.70       | 62.12               |
| 2005 | 11012.60 | 5664.60      | 5348.00       | 48.56               |
| 2006 | 11874.70 | 5109.30      | 6765.40       | 56.97               |
| 2007 | 12605.20 | 5142.80      | 7462.40       | 59.20               |
| 2008 | 13331.90 | 4999.20      | 8332.70       | 62.50               |
| 2009 | 14449.00 | 5414.44      | 9034.56       | 62.53               |
| 2010 | 15405.03 | 5475.18      | 9929.85       | 64.46               |
| Mean | 10856.81 | 4718.75      | 6138.06       | 53.93               |
| SD   | 3313.73  | 839.10       | 2713.96       | 11.51               |
| CV   | 0.31     | 0.18         | 0.44          | 0.21                |

Cost of goods sold and gross profit show the production efficiency of a firm. Cost of goods sold of the company has increased during the year accompanied by increased sales over the periods.

More of the company's sales is taken away by the cost of production that is in an average of the total sales, cost of goods sold occupies 53.93 percent of total sales. More over the consistency of cost of goods sold as measured by the CV of states that of all the three figures cost of goods sold fluctuates more is due to the fact that CV of cost of sales is higher than that of sales and gross profit.

#### **4.4 Estimation of Cost of Goods Sold**

Regression equation is widely accepted as a best tool to forecast given dependent variable based on the chosen1 independent variable. On this ground, cost of goods sold is estimated using regression analysis. Regression equation is Cost of goods sold (CGS) =  $a + b_1 \times \text{sales}$ . The regression results are portrayed in the table below.

**Table 4.8**  
**Results of Regression of CGS on Sales**

| Regression equation           | A        | $b_1$             | $R^2$ | F       | F-sign. |
|-------------------------------|----------|-------------------|-------|---------|---------|
| CGS = $a + b_1 \text{ sales}$ | -2579.96 | 0.803<br>(14.246) | 0.962 | 202.951 | 0.01    |

|  |  |        |  |  |  |
|--|--|--------|--|--|--|
|  |  | [0.01] |  |  |  |
|--|--|--------|--|--|--|

Sources: Appendix-I

Coefficient of determination,  $R^2$  of the above model is 0.962 indicates that out of total variation in sales, CGS can explain 96.2 percent. Value of regression coefficient,  $b_1$  is 0.803 indicates that for every rupee value change in sales CGS changes by Rs. 0.0.803. The positive sign indicates the positive relationship. This result is significant as t-value is significant at 1 percent level of significance. Likewise this model can best explain the CGS as f-value is also significant at 1 percent level.

Since company has estimated to achieve sales revenue Rs.16834.48 million from the analysis of time series. If the sales happen to be true then its cost of goods sold for the year to come would be:

$$\begin{aligned}
 \text{CGS} &= a + b_1 \times \text{sales} \\
 &= -2579.96 + 0.803 \times \text{Sales} \\
 &= -2579.96 + 0.803 \times 16834.48 \\
 &= \text{Rs.}10934.61 \text{ million}
 \end{aligned}$$

#### 4.5 Expenditure Budget of NEA

Profit is certainly a function of expenses. In this regard planning of profit includes plan for expenses also. In planning process, the knowledge of costs for each responsibility centres should be pinpointed. Total costs of the enterprises can be subdivided into following ways:

- a. Generation expenses
- b. Transmission expenses
- c. Distribution expenses
- d. Administrative expenses

Generation expenses are the expenses required to generate electricity and services which also includes purchases of power. A transmission expense is also important expenses of NEA. Likewise cost structure of NEA also includes distribution and administrative expenses. Following table shows how total costs of the enterprises apportioned in different cost centres.

**Table 4.9**



## Expenses of NEA

(In Rs. 'million)

| Year  | Expenses   |              |              |                |
|-------|------------|--------------|--------------|----------------|
|       | Generation | Transmission | Distribution | Administrative |
| 2001  | 1849.32    | 101.18       | 600.26       | 629.24         |
| 2002  | 2068.53    | 121.73       | 711.53       | 703.47         |
| 2003  | 4343.40    | 137.30       | 982.22       | 950.08         |
| 2004  | 5728.70    | 158.00       | 1174.40      | 447.40         |
| 2005  | 5169.40    | 178.60       | 1308.60      | 536.10         |
| 2006  | 6565.90    | 199.50       | 1376.10      | 489.10         |
| 2007  | 7246.50    | 215.90       | 1484.20      | 622.40         |
| 2008  | 8100.60    | 232.10       | 1703.70      | 419.50         |
| 2009  | 8793.68    | 240.88       | 1834.39      | 479.59         |
| 2010  | 9625.57    | 304.28       | 1947.42      | 576.14         |
| Total | 59491.60   | 1889.47      | 13122.82     | 5853.02        |
| Mean  | 5949.16    | 188.95       | 1312.28      | 585.30         |
| SD    | 2654.19    | 62.05        | 454.44       | 156.27         |
| CV    | 0.45       | 0.33         | 0.35         | 0.27           |

Source: Annual Report, NEA

From the above table one can observe that Generation expenses of NEA is more than all other costs averaging to Rs.5949.16 million for over the 10 year periods. This cost is the main cost of the company and covers more than 70 percent of all the costs of the enterprises. Next to this the company's main cost is distribution expenses which averages to Rs. 1312.28 million thousands. Administrative overheads bear its third position in terms of the costs of the company. Likewise transmission expenses of the enterprises are Rs. 188.95 on an average.

Generation expenses of the enterprises are more inconsistent showing CV of 0.45. Followed by distribution expenses (C.V. = 0.35) and transmission expenses (0.33). In an absolute term, generation expenses is dispersed more from its average costs as it has highest S.D. of 2654.19.

### 4.6 Planning for Cash: Analysis of Sources and Use

NEA coordinates cash with total working capital, sale revenue, expenses, investments and liabilities. NEA does not have systematic and scientific practice of planning for cash. It has not developed any systematic cash planning formally. But it is clear that the main source of cash of NEA is cash sales, the main items of cash used are generation expenses, distribution expenses, administrative expenses etc. To analyze the major cash application and sources following cash-flow statement is prepared with the help of balance sheet and income statement of the year.

**Table 4.10**  
**Cash Flow Statement for FY 2008**

| <b>Particular</b>                              | <b>Amount(Rs.)</b> |
|--|--------------------|
| Operating profit ( loss) during current year   | -1312.16           |
| Depreciation                                   | 1920.00            |
| Increase in CA                                 | -1068.49           |
| Increase in CL                                 | 3618.71            |
| <b>A. Cash from operating activities</b>       | <b>3158.06</b>     |
| Cash from Financing activities:                |                    |
| Issue of share                                 | 2032.81            |
| Secured and term loan                          | 5146.03            |
| <b>B. Cash from Financing activities</b>       | <b>7178.84</b>     |
| Investment                                     | -1258.09           |
| Capital work in progress                       | -6785.55           |
| Purchase of plant and equipment                | -2920.00           |
| <b>C. Cash from investing activities</b>       | <b>-10963.64</b>   |
| Cash increase(decrease) during the year(A+B+C) | -626.74            |
| Opening balance of cash                        | 1447.58            |
| <b>Closing Balance of cash</b>                 | <b>820.84</b>      |

From the statement above firm's financing activities is the main source of cash and particularly secured and term loan in the main source of cash. Negative operating profit, investment in current asset constitute cash outflow for the enterprise in the operating activities heading. Cash from operating activities has resulted into positive cash flow due to the fact that the enterprises have higher amount increase in current liabilities.

The company has made investments of Rs. 1258.09 million in the year 2009. Capital work in progress is amounted to Rs.6785.55 million during the period: the main item under investing activities which entitles huge amount of cash outflows for the firm.

During the year company has achieved negative cash change of Rs. 626.74 million thus has achieved ending cash balance of Rs. 820.84 the balance is lower than the previous year balance due to the negative change during the current year.

#### **4.7 Forecasting of Financial Statements: Percentage of Sales Method**

It is emphasized to forecasting firm's two key financial statements: balance sheet and income statement as these provide a good picture of the firm's operations.

It has seen that sales to assets turnover is an important control variable and reflects a fundamentally important proposition in planning – that the volume of firm's sales is a good predictor of the required investment in assets.

The percent of sales method provides a practical method of forecasting financial statement. There is a basic logic behind sales and the behaviour of individual asset items. For example, in order to make sales, a firm must have an investment in plant and equipment to produce goods. Inventories of work-in-progress and finished goods are needed to make sales when sales are made, there is usually an interval before payments are received. This results in the generation of debtors or accounts receivable. Note that investments in fixed assets and inventories lead sales, while investment in receivables lags sales. With sales fluctuations, these lead and lag relationships result in complex patterns that are understood only when the underlying logic of the relationships is kept in mind.

**Table 4.11**  
**Income Statement for the year 2008**

|                          |              |
|--------------------------|--------------|
| Sales Revenue            | Rs. 15405.03 |
| Less: Cost of goods sold | 9929.85      |
| Gross profit             | 5475.18      |
| Less: Operating expenses | 1868.32      |
| Operating profit         | 3606.86      |
| Less: Interest           | 2368.41      |
| Depreciation             | 1920.00      |
| Provision                | 630.61       |
| Net Income               | (1312.16)    |

**Table 4.12**  
**Balance Sheet of NEA for the Year 2008**

| Liabilities and equity | Amount(Rs.) | Assets | Amount(Rs.) |
|------------------------|-------------|--------|-------------|
|                        |             |        |             |

|                                     |                  |                      |                  |
|-------------------------------------|------------------|----------------------|------------------|
| Share capital                       | 28414.99         | Current assets       | 11391.46         |
| Loan                                | 52762.18         | Net fixed assets     | 89826.89         |
| Reserve and Accumulated Profit      | (6114.88)        | Deferred expenditure | 60               |
| Current liabilities                 | 26430.84         | Inter unit balance   | 214.78           |
| <b>Total liabilities and equity</b> | <b>101493.13</b> | <b>Total asset</b>   | <b>101493.13</b> |

To begin with above actual financial statements of NEA are demonstrated. To forecast the company's financial statement for coming year following assumption has been made:

- Company's all the expenses vary directly with sales except interest and provision.
- Forecasted sales as forecasted by the company coming year is Rs. 16834.48 million have been taken as a basis for projection purpose.
- A provision of the company remains unchanged.
- Fixed assets and current assets and inter unit balance vary directly with change in sales and also current liabilities show same type of behaviour. Besides these all the balance-sheet items remain unaffected.
- NEA is operating at full capacity.

Now, given the above assumption forecasting precedes in the following manner:

First: Preparation of forecasted income statement:

**Table 4.13**  
**Proforma Income Statement (Rs. In million)**

|                          |          |
|--------------------------|----------|
| Sales Revenue            | 16834.48 |
| Less: Cost of goods sold | 10851.34 |
| Gross profit             | 5983.14  |
| Less: Operating expenses | 2041.70  |
| Operating profit         | 3941.44  |

|                |           |
|----------------|-----------|
| Less: Interest | 2368.41   |
| Depreciation   | 2098.18   |
| Provision      | 630.16    |
| Net Income     | (1155.76) |

$$\text{Percentage change in sales} = \frac{16834.48 - 15405.03}{15405.03} = 9.28 \text{ percent}$$

Second: Preparation of forecasted balance sheet

**Table 4.14**  
**Proforma Balance Sheet (Rs. In million)**

| <b>Liabilities and equity</b>       | <b>Amount(Rs.)</b> | <b>Assets</b>        | <b>Amount(Rs.)</b> |
|-------------------------------------|--------------------|----------------------|--------------------|
| Share capital                       | 28414.99           | Current assets       | 12448.59           |
| Loan                                | 52762.18           | Net fixed assets     | 98162.83           |
| Reserve and Accumulated Profit      | -7270.64           | Deferred expenditure | 60.00              |
| Current liabilities                 | 28883.62           | Inter unit           | 234.71             |
| External fund needed                | 8115.97            |                      |                    |
| <b>Total liabilities and equity</b> | <b>110906.12</b>   | <b>Total asset</b>   | <b>110906.12</b>   |

Observing the above financial statements it is clear that firms operating profit will increase to Rs. 4941.44 million from base year's operating profit of Rs. 3606.86 given the sales forecasted by the company and above assumptions are valid. Net loss will decrease to Rs.1155.76 million.

From the forecasted balance-sheet of the company it is clear that asset will increase by Rs.9412.99 million and accumulated loss will be Rs.1155.76. This incremental asset and loss are financed spontaneously with current liabilities of Rs. 2452.78, and balance of Rs. 8115.97 should be financed with external funds shown in forecasted balance-sheet as balancing figure.

Here,

$$\begin{aligned}
\text{External fund needed} &= [\text{Increase fixed assets} + \text{Increase current asset including} \\
&\quad \text{interunit balance} + \text{Increased loss}] - \text{Increased Current} \\
&\quad \text{Liabilities} \\
&= [8335.94 + 1077.06 + 1155.76] - 2452.78 \\
&= \text{Rs. } 8115.98
\end{aligned}$$

Thus NEA needs Rs. 10568.76 million to finance incremental assets and losses. Out of these Rs. 2452.78 million will be available to the NEA through incremental current liabilities and the balance it should raise from external source.

#### 4.8 Financial Ratio Analysis

Financial ratio analysis is the arithmetical relationship between two or more variables of financial statements. Information provided by the ratio analysis is very useful to evaluate financial performance of a firm. It communicates the strengths and weaknesses of the firm. It is also useful for initiating effective control of business. This section focuses on the financial performance of the enterprise on terms of liquidity, profitability, turnover, and capital structure.

**Table 4.15**  
**Financial Ratio of NEA**

| Ratio  | 2001  | 2002 | 2003  | 2004  | 2005   | 2006   | 2007   | 2008  | 2009 | 2010  | Mean  |
|--|-------|------|-------|-------|--------|--------|--------|-------|------|-------|-------|
| $\frac{\text{Current Assets}}{\text{Current Liabilities}}$ | 1.06  | 1.05 | 1.03  | 0.73  | 0.62   | 0.54   | 0.49   | 0.45  | 0.45 | 0.43  | 0.69  |
| $\frac{\text{Quick Assets}}{\text{Current Liabilities}}$   | 0.90  | 0.87 | 0.88  | 0.62  | 0.54   | 0.47   | 0.41   | 0.38  | 0.39 | 0.37  | 0.58  |
| $\frac{\text{Sales}}{\text{Total Assets}}$                 | 1.07  | 1.19 | 1.29  | 1.29  | 1.43   | 1.51   | 1.48   | 1.48  | 1.40 | 1.35  | 1.35  |
| $\frac{\text{Net Profit}}{\text{Capital Employed}}$        | 0.00  | 0.00 | 0.00  | -0.02 | -0.04  | -0.03  | -0.02  | -0.02 | 0.00 | -0.02 | -0.01 |
| $\frac{\text{Total Debt}}{\text{Total Assets}}$            | 0.66  | 0.69 | 0.72  | 0.73  | 0.77   | 0.79   | 0.80   | 0.79  | 0.77 | 0.78  | 0.75  |
| $\frac{\text{Net Profit}}{\text{Sales}}$                   | -1.78 | 2.70 | -0.62 | -9.08 | -17.74 | -14.82 | -10.41 | -9.51 | 2.17 | -8.52 | -6.76 |

|                                   |       |      |       |       |       |       |       |       |      |       |       |
|-----------------------------------|-------|------|-------|-------|-------|-------|-------|-------|------|-------|-------|
| <u>Net Profit</u><br>Total Assets | -0.22 | 0.36 | -0.09 | -1.33 | -2.89 | -2.48 | -1.69 | -1.51 | 0.34 | -1.29 | -1.08 |
|-----------------------------------|-------|------|-------|-------|-------|-------|-------|-------|------|-------|-------|

Sources: Appendix-II

From the table above one can observe that the company's liquidity has been deteriorating each year and it has been more serious in the latter years. Current ratio, in an average for the 10 years periods is 0.69. These decreasing current ratios indicate that the company's ability to pay its debts obligation has seriously been injured over the periods. Another measure of liquidity, i.e. Quick ratio of the enterprises is far below then traditional standard of 1:1. Enterprise's position of liquidity, thus, can be said as poor. Total assets turnover of the firm is more or less uniform for all the years averaging to 1.35 times.. The ability of the enterprise's assets to generate sales is not good as the turnover of assets is poor and is also decreasing at latter years. This also indicates the company's inability to manage its assets.

Another dismal aspect of the NEA is to have zero and negative return on capital employed which is -0.01 in an average for the 10 years periods. Net profit margin and total assets turnover give the return on assets if multiplied together. ROA is negative for all the periods. These all the ratio, in absolute term indicates that the NEA is in a difficult verge.

Company employed more of debt capital as indicated by debt- assets ratio. This ratio for the company is also more or less uniform for all the periods and averages to 75 percent. That means consideration for capital restructuring is in a urgent need.

#### **4.9 Discrimination Analysis: Measure of Company's Overall Performance**

Discriminant analysis is developed by Altmand and is also called altman model. This model can be employed to discriminate whether or not a company in consideration likely to fail in the near future. Analysis of each of the individual ratios sometimes is confusing and to avoid this z-score model developed by Altman is employed. Z-score above 2.99 represents healthy firm. Z-score below 1.81 always represents unhealthy firms. Z-score between these two represent area of gray.

Z-score is calculated utilizing the equation:

$$Z = 1.2 x_1 + 1.4 x_2 + 3.3 x_3 + 0.6 x_4 + 1.0 x_5$$

Where,

$x_1$  = Net working capital to total assets (NWC/TA)

$x_2$  = Current asset to current liabilities (CA/CL)

$x_3$  = Net profit to total assets (NP/TA)

$x_4$  = Net profit to sales (NP/Sales)

$x_5$  = Sales to total assets (Sales/TA)

NEA z-score is calculated for each of the 10 years and average of the score is computed in the last row.

**Table 4.16**  
**Calculation of Z-score**

| Year    | NWC/TA    | CA/CL | NP/TA     | NP/S      | S/TA     | Z score   |
|---------|-----------|-------|-----------|-----------|----------|-----------|
| 2001    | 0.006148  | 1.06  | -0.221302 | -1.778865 | 1.067977 | 0.755745  |
| 2002    | 0.00547   | 1.05  | 0.356873  | 2.699825  | 1.190051 | 5.466703  |
| 2003    | 0.003342  | 1.03  | -0.085272 | -0.624939 | 1.292575 | 2.086     |
| 2004    | -0.042877 | 0.73  | -1.329874 | -9.082755 | 1.294209 | -7.580247 |
| 2005    | -0.068791 | 0.62  | -2.886199 | -17.74059 | 1.431978 | -17.94737 |
| 2006    | -0.093914 | 0.54  | -2.484216 | -14.82395 | 1.50629  | -14.93953 |
| 2007    | -0.115251 | 0.49  | -1.685853 | -10.41475 | 1.484432 | -9.785399 |
| 2008    | -0.129411 | 0.45  | -1.510907 | -9.509522 | 1.482096 | -8.730608 |
| 2009    | -0.13574  | 0.45  | 0.341482  | 2.174476  | 1.399694 | 4.301912  |
| 20010   | -0.148181 | 0.43  | -1.292856 | -8.517737 | 1.352331 | -7.599165 |
| Average |           |       |           |           |          | -5.397196 |

NEA if evaluated on the ground of Z score can be regarded as a failure company and could go in insolvency in near future if it were not in a position to improve its profitability, liquidity and turnover. This is because its Z score is -5.40 significantly lower than the standard of 2.99. Lower z-score is mainly due to the losses of the company. So it should initiate different cost-cutting measures so to improve profitability.

#### 4.10 Regression Analysis

Following two regression models are developed and tested to identify what sort of relationship net profit has on costs, sales revenue and level of fixed assets of the enterprises.



Regression equation is:

$$1. \quad NP = a + b_1CS$$

Where,

NP is net profit

CS is Cost of sales

a is regression constant, and

$b_1$  is regression coefficient.

$$2. NP = a + b_1S + b_2FA$$

Where,

NP is net profit

S is Sales

FA is level of fixed assets

a is regression constant, and

$b_1, b_2$  are regression coefficients.

**Table 4.17**  
**Regression Results**

| Equation                     | a       | $b_1$                         | $b_2$                      | $R^2$ | F     | F-sig. |
|------------------------------|---------|-------------------------------|----------------------------|-------|-------|--------|
| 1. $NP = a + b_1 CS$         | -56.54  | -0.123<br>(-1.238)<br>[0.251] | NA                         | 0.161 | 1.533 | 0.05   |
| 2. $NP = a + b_1 S + b_2 FA$ | 634.799 | -0.219<br>(-.964)<br>(0.05)   | 0.016<br>(0.496)<br>(0.05) | 0.232 | 1.056 | 0.05   |

Sources: Appendix-I

Model (1) is regression results of net profit on cost of sales. Value of regression coefficient ( $b_1$ ) is -0.123, which indicates that for every one percentage change in total sales (S), there will be 12.3 percentage changes in Net profits (NP). Negative value of regression coefficient indicates that the relationship of cost of sales and net profit is negative. Coefficient of determination for the model is 0.161, which indicates that out of total change in profit 16.1 percent is explained by independent variable. Observing the test of confirmation of the results by the use of the F- test ratio it is found that the tested value is not significant at 5 percent level of significance and this shows that the model cannot best explain the variation in independent variable. To conclude, increased cost of sales contributes to profit negatively and it spells that the cost management of the company is not effective because increased cost of sales must contribute positively to net profit in order for the cost management to be effective and, here the condition is just opposite.

A coefficient of determination ( $R^2$ ) of model -2 indicates that the model can explain 23.2 percent of total variation in net profits. Model (2) also shows that the value of regression coefficient ( $b_1$ ) for sales is negative indicating negative relation of sales and net profit. More sales results in to less of profit. The relation with fixed assets (FA) is, however, positive indicating positive relations of net profit and fixed assets of the enterprises. Observing the test of confirmation of the results by the use of the F- test ratio it is found that the tested value is not significant at 5 percent level of significance and this shows that the model cannot best explain the variation in independent variable.

To conclude, increased sales revenue contributes to profit negatively and it spells again that the company bears more of cost than what is desirable as per the sales so as to come out with positive profit. However the fixed assets is utilized in the way that increased fixed assets contribute positively to profit and considered to be effective. However this is not a final conclusion as the t value for both the coefficients are insignificant at 5 percent level of significance.

## **Major Findings of the Study**

- A regression model is developed taking actual sales (AS) as dependent variable and budgeted sales (BS) as independent variable for the purpose of forecasting sales for coming year. The sales revenue so forecasted has come to be Rs.23289.29 million likewise time series analysis result of which is statistically more significant gives the forecasted sales as Rs.16834.48 million
- Observing year wise sales, highest budgeted sales to actual sales was recorded at 87.47 percent in the year 2007. On the other hand the ratio is 54 percent in 2001. As indicated by the trend, standard deviation and C.V., the company's budgeted sales fluctuate more than actual sales. On the other way budgeted sales is more inconsistent. The increase and decrease of sales for the periods seem to be unpredictable due to the lack of clear policies and program of the NEA. Comparison of actual and budgeted sales figures reveals that there are considerable gap between budgeted and actual sales. Moreover the gap happened to be inconsistent. Such huge gap must be addressed through the coordination and integration of efforts of all the branches and departments the result in nutshell shows that gap between budget and achievement is high. This high deviation creates difficulty to forecast sales.
- Profit planning is also affected by how sales is distributed among the different segments the enterprises is operating. Analysis of the sales distribution among different consumer groups shows that main three groups in internal sales are domestic, industrial and commercial. Looking over the trends of the sales of these groups the sales of all the groups have been increasing persistently over the periods. The trend of other sales also shows the same kind of trend over the periods. Out of total sales for each year domestic sales is higher in comparison to other types of sales. The domestic sales for each year from 2001 to 2010 are ranges from 38.10 percent to 41.52 percent out of total sales. The sales for industrial category are ranges from 30.02 to 36.94 percent out of total sales. The same for the commercial category ranges from 17.58 to 25.23 percent.
- Analysis of trend and composition of consumer group and growth shows that more than 95 percent of consumers are accounted from the domestic group. Industrial consumer for the enterprises is around 2 percent for all the period

the second highest number of consumer. Likewise number of consumer as a percentage of total consumers is around one percent for non commercial and other categories of consumers. Absolute number of consumer for each of categories is increasing over the periods. This spells the future prospects of the enterprises is good in terms of growing consumer. It is important to note that though domestic consumers are more than 95 percent for all the periods, in terms of sales revenues they occupies only 40 percent of total revenue. Moreover, consumers in the commercial categories are only around 1 percent however occupies sales revenue of around 23 percent. Like wise, consumers in industrial categories are around 2 percent occupying more than 32 percent of sales for the enterprises.

- Analysis of cost of sales shows that more of the company's sales is taken away by the cost of production that is in an average of the total sales, cost of goods sold occupies 53.93 percent of total sales. More over the consistency of cost of goods sold as measured by the CV states that of all the three figures cost of goods sold fluctuates more due to the fact that CV of cost of sales is higher than that of sales and gross profit.
- Analysis of costs of the enterprises shows that main four types of the cost are generation expenses, transmission expenses, distribution expenses, administrative expenses. Generation expenses of NEA are more than all other costs averaging to Rs.5949.16 million for over the 10 year periods. This cost is the main cost of the company and covers more than 70 percent of all the costs of the enterprises. Next to this the company's main cost is distribution expenses which averages to Rs. 1312.28 million thousands. Administrative overheads bear its third position in terms of the costs of the company. Likewise transmission expenses of the enterprises are Rs. 188.95 on an average. Generation expenses of the enterprises are more inconsistent as shown by CV of 0.45. Followed by distribution expenses (C.V. = 0.35) and transmission expenses (0.33). In an absolute term also, generation expenses is dispersed more from its average costs as it has highest S.D. of 2654.19.
- NEA coordinates cash with total working capital, sale revenue, expenses, investments and liabilities. NEA does not have systematic and scientific practice

of planning for cash. It has not developed any systematic cash planning formally. But it is clear that the main source of cash of NEA is cash sales, the main items of cash used are generation expenses, distribution expenses, administrative expenses etc. To analyze the major cash application and sources a cash-flow statement for latest year is prepared. From the statement above firm's financing activities is the main source of cash and particularly secured and term loan in the main source of cash. Negative operating profit, investment in current asset constitute cash outflow for the enterprise in the operating activities heading. Cash from operating activities has resulted into positive cash flow due to the fact that the enterprises have higher amount increase in current liabilities.

- The company has made investments of Rs. 1258.09 million in the year 2010. Capital work in progress is amounted to Rs.6785.55 million during the period: the main item under investing activities which entitles huge amount of cash outflows for the firm. During the year company has achieved negative cash change of Rs. 626.74 million thus has achieved ending cash balance of Rs. 820.84 the balance is lower than the previous year balance due to the negative change during the current year.
- It has seen that sales to assets turnover is an important control variable and reflects a fundamentally important proposition in planning – that the volume of firm's sales is a good predictor of the required investment in assets. In this ground, percent of sales method is employed to come up with forecasted income. Main results of this are that asset will increase by Rs.9412.99 million and accumulated loss will be Rs.1155.76. This incremental asset and loss are financed spontaneously with current liabilities of Rs. 2452.78, and balance of Rs. 8115.97 should be financed with external funds.
- Financial ratio analysis shows that the company's liquidity has been deteriorating each year and it has been more serious in the latter years. Current ratio, in an average for the 10 years periods is 0.69. These decreasing current ratios indicate that the company's ability to pay its debts obligation has seriously been injured over the periods. Another measure of liquidity, i.e. Quick

ratio of the enterprises is far below then traditional standard of 1:1. Enterprise's position of liquidity, thus, can be said as poor. Total assets turnover of the firm is more or less uniform for all the years averaging to 1.35 times. The ability of the enterprise's assets to generate sales is not good as the turnover of assets is poor and is also decreasing at latter years. This also indicates the company's inability to manage its assets.

- Another dismal aspect of the NEA is to have zero and negative return on capital employed which is -0.01 in an average for the 10 years periods. Net profit margin and total assets turnover give the return on assets if multiplied together. ROA is negative for all the periods. These all the ratio, in absolute term indicates that the NEA is in a difficult verge. Company employed more of debt capital as indicated by debt- assets ratio. This ratio for the company is also more or less uniform for all the periods and averages to 75 percent. That means consideration for capital restructuring is in an urgent need.
- NEA if evaluated on the ground of Z score can be regarded as a failure company and could go in insolvency in near future if it were not in a position to improve its profitability, liquidity and turnover. This is because its Z score is -5.40 significantly lower than the standard of 2.99. Lower z-score is mainly due to the losses of the company. So it should initiate different cost-cutting measures so to improve its profitability.
- Regression results of net profit on cost of sales shows that the relationship of cost of sales and net profit is negative. Furthermore increased cost of sales contributes to profit negatively and it spells that the cost management of the company is not effective because increased cost of sales must contribute positively to net profit in order for the cost management to be effective and, here the condition is just opposite.
- Multivariate regression analysis of net profit on sales and fixed assets spells that increased sales revenue contributes to profit negatively and it spells again that the company bears more of cost than what is desirable as per the sales so as to come out with positive profit. However the fixed assets is utilized in the way that increased fixed assets contribute positively to profit and considered to be

effective. However this is not a final conclusion as the t value for both the coefficients are insignificant at 5 percent level of significance.

## **CHAPTER V**

### **SUMMARY, CONCLUSION AND RECOMMENDATIONS**

Sales must be forecasted using the statistical tools with right blend of judgemental forecasting. The increase and decrease of sales for the periods seem to be unpredictable due to the lack of clear policies and program of the NEA. Comparison of actual and budgeted sales figures reveals that there are considerable gap between budgeted and actual sales. This chapter attempts to summarise the whole study. After summarising the study, a conclusive and suggestive framework has been built. The conclusion and suggestion would be great help for the profit planning practitioners and the company. This chapter is divided into three parts namely summary, conclusion and recommendation.

#### **5.1 Summary.**

Chapter one as an entrance step describes about background of the study, statement of the problem, objective, significance, limitation and organization of the study. Main objectives of the study are: to sketch the financial position of the concern and its relation with profit planning, to evaluate the variance between budgeted and actual financial progress of NEA, to find out the relationship among financial and accounting variables those are instrumental particularly in profit planning

The enterprises' average percentage sales achievement against target sales is 66.13 percent for all the study period. Observing year wise sales, highest sales achievement was recorded at 87.47 percent in the year 2006. On the other hand the lowest sales achievement is 54 percent in 1999. As indicated by the trend, standard deviation and C.V., the company's budgeted sales fluctuate more than actual sales. On the other way budgeted sales is more inconsistent. The increase and decrease of sales for the periods seem to be unpredictable due to the lack of clear policies and program of the NEA. Comparison of actual and budgeted sales figures reveals that there are considerable gap between budgeted and actual sales. Moreover the gap happened to be inconsistent. Such huge gap must be addressed through the coordination and integration of efforts of all the branches and departments the result in nutshell shows that gap between budget and achievement is high. This high deviation creates difficult to forecast sales.



A regression model is developed taking actual sales (AS) as dependent variable and budgeted sales (BS) as independent variable for the purpose of forecasting sales for coming year. The sales revenue so forecasted has come to be Rs.23289.29 million likewise time series analysis result of which is statistically more significant gives the forecasted sales as Rs.16834.48 million.

This research paper has tried to examine that to what extent NEA is applying profit-planning system. The practices and effectiveness of profit planning is reviewed in the company with the help of functional and statistical tools. Data collected from several sources are analysed employing the financial and statistical tools. Statistical tools include percentage, mean, standard deviation, regression analysis etc. whereas financial tools include financial ratio analysis and Z-score analysis etc.

Profit planning is also affected by how sales is distributed among the different segments the enterprises is operating. Analysis of the sales distribution among different consumer groups shows that main three groups in internal sales are domestic, industrial and commercial. Looking over the trends of the sales of these groups the sales of all the groups have been increasing persistently over the periods. The trend of other sales also shows the same kind of trend over the periods. Out of total sales for each year domestic sales is higher in comparison to other types of sales. The domestic sales for each year from 1999 to 2008 are ranges from 38.10 percent to 41.52 percent out of total sales. The sales for industrial category are ranges from 30.02 to 36.94 percent out of total sales. The same for the commercial category ranges from 17.58 to 25.23 percent.

Analysis of trend and composition of consumer group and growth shows that more than 95 percent of consumers are accounted from the domestic group. Industrial consumer for the enterprises is around 2 percent for all the period the second highest number of consumer. Likewise number of consumer as a percentage of total consumers is around one percent for non commercial and other categories of consumers. Absolute number of consumer for each of categories is increasing over the periods. This spells the future prospects of the enterprises is good in terms of growing consumer. It is important to note that though domestic consumers are more than 95

percent for all the periods, in terms of sales revenues they occupies only 40 percent of total revenue. Moreover, consumers in the commercial categories are only around 1 percent however occupies sales revenue of around 23 percent. Likewise, consumers in industrial categories are around 2 percent occupying more than 32 percent of sales for the enterprises.

Analysis of cost of sales shows that more of the company's sales is taken away by the cost of production that is in an average of the total sales, cost of goods sold occupies 53.93 percent of total sales. More over the consistency of cost of goods sold as measured by the CV states that of all the three figures cost of goods sold fluctuates more due to the fact that CV of cost of sales is higher than that of sales and gross profit.

Analysis of costs of the enterprises shows that main four types of the cost are generation expenses, transmission expenses, distribution expenses, administrative expenses. Generation expenses of NEA are more than all other costs averaging to Rs.5949.16 million for over the 10 year periods. This cost is the main cost of the company and covers more than 70 percent of all the costs of the enterprises. Next to this the company's main cost is distribution expenses which averages to Rs. 1312.28 million thousands. Administrative overheads bear its third position in terms of the costs of the company. Likewise transmission expenses of the enterprises are Rs. 188.95 on an average. Generation expenses of the enterprises are more inconsistent as shown by CV of 0.45. Followed by distribution expenses (C.V. = 0.35) and transmission expenses (0.33). In an absolute term also, generation expenses is dispersed more from its average costs as it has highest S.D. of 2654.19.

NEA coordinates cash with total working capital, sale revenue, expenses, investments and liabilities. NEA does not have systematic and scientific practice of planning for cash. It has not developed any systematic cash planning formally. But it is clear that the main source of cash of NEA is cash sales, the main items of cash used are generation expenses, distribution expenses, administrative expenses etc. To analyze the major cash application and sources a cash-flow statement for latest year is prepared. From the statement above firm's financing activities is the main source of cash and particularly secured and term loan in the main source of cash. Negative operating profit, investment in current asset constitute cash outflow for the enterprise in the

operating activities heading. Cash from operating activities has resulted into positive cash flow due to the fact that the enterprises have higher amount increase in current liabilities.

The company has made investments of Rs. 1258.09 million in the year 2010. Capital work in progress is amounted to Rs.6785.55 million during the period: the main item under investing activities which entitles huge amount of cash outflows for the firm. During the year company has achieved negative cash change of Rs. 626.74 million thus has achieved ending cash balance of Rs. 820.84 the balance is lower than the previous year balance due to the negative change during the current year.

It has seen that sales to assets turnover is an important control variable and reflects a fundamentally important proposition in planning – that the volume of firm's sales is a good predictor of the required investment in assets. In this ground, percent of sales method is employed to come up with forecasted income. Main results of this are that asset will increase by Rs.9412.99 million and accumulated loss will be Rs.1155.76. This incremental asset and loss are financed spontaneously with current liabilities of Rs. 2452.78, and balance of Rs. 8115.97 should be financed with external funds.

Financial ratio analysis shows that the company's liquidity has been deteriorating each year and it has been more serious in the latter years. Current ratio, in an average for the 10 years periods is 0.69. These decreasing current ratios indicate that the company's ability to pay its debts obligation has seriously been injured over the periods. Another measure of liquidity, i.e. Quick ratio of the enterprises is far below then traditional standard of 1:1. Enterprise's position of liquidity, thus, can be said as poor. Total assets turnover of the firm is more or less uniform for all the years averaging to 1.35 times. The ability of the enterprise's assets to generate sales is not good as the turnover of assets is poor and is also decreasing at latter years. This also indicates the company's inability to manage its assets.

Another dismal aspect of the NEA is to have zero and negative return on capital employed which is -0.01 in an average for the 10 years periods. Net profit margin and total assets turnover give the return on assets if multiplied together. ROA is negative for all the periods. These all the ratio, in absolute term indicates that the NEA is in a

difficult verge. Company employed more of debt capital as indicated by debt- assets ratio. This ratio for the company is also more or less uniform for all the periods and averages to 75 percent. That means consideration for capital restructuring is in an urgent need.

NEA if evaluated on the ground of Z score can be regarded as a failure company and could go in insolvency in near future if it were not in a position to improve its profitability, liquidity and turnover. This is because its Z score is -5.40 significantly lower than the standard of 2.99. Lower z-score is mainly due to the losses of the company. So it should initiate different cost-cutting measures so to improve its profitability.

Regression results of net profit on cost of sales shows that the relationship of cost of sales and net profit is negative. Furthermore increased cost of sales contributes to profit negatively and it spells that the cost management of the company is not effective because increased cost of sales must contribute positively to net profit in order for the cost management to be effective and, here the condition is just opposite.

Multivariate regression analysis of net profit on sales and fixed assets spells that increased sales revenue contributes to profit negatively and it spells again that the company bears more of cost than what is desirable as per the sales so as to come out with positive profit. However the fixed assets is utilized in the way that increased fixed assets contribute positively to profit and considered to be effective. However this is not a final conclusion as the t value for both the coefficients are insignificant at 5 percent level of significance.

## **5.2 Conclusion**

It is important to note that though domestic consumers are more than 95 percent for all the periods, in terms of sales revenues they occupies only 40 percent of total revenue. Moreover, consumers in the commercial categories are only around 1 percent however occupies sales revenue of around 23 percent. Like wise, consumers in industrial categories are around 2 percent occupying more than 32 percent of sales for the enterprises. This shows that more sales revenue of the enterprises is concentrated to less number of consumers. So the enterprises must initiate the campaign to focus to

the less consumer so that more revenue can be generated launching the different incentive plan.

It is seen that secured and term loan is the main source of cash and it is not a favourable condition because any firm must have sufficient cash generated from operation if it wants to be operated from own source of fund. Negative operating profit, investment in current asset constitute major cash outflow for the enterprise which is very dangerous.

Likewise number of consumer as a percentage of total consumers is around one percent for non commercial and other categories of consumers. Absolute number of consumer for each of categories is increasing over the period.

Company has no practice of forecasting sales on the basis of statistical methods rather it forecasts sales on the basis of guess and hunch may result into the irrecoverable error. Likewise what it produces and purchases are highly uncertain to forecast precisely. Sales level is forecasted on the basis of previous years' sales and by judgmental approach.

Analysis of the sales distribution among different consumer provides the fact to conclude that sales of all the groups have been increasing persistently over the periods. Out of total sales for each year domestic sales is higher in comparison to other types of sales.

Analysis of cost of sales shows that more of the company's sales is taken away by the cost of production that is in an average of the total sales, cost of goods sold occupies 53.93 percent of total sales. Enterprises, thus, has failed to initiate different cost reduction strategy.

Financial ratio analysis paves the way to conclude that firm liquidity is deteriorating each year. Moreover the company's profitability has been getting bad each year. Like

wise capital structure of the company is also in a urgent need to be changed as it is not adding value to shareholders.

Z score of NEA is -5.40 and significantly lowers than the standard of 2.99. It tells that the enterprises may bankruptcy in the future if not initiated major changes in the cost and capital structure, sales diversification, effectiveness of service etc.

As shown by the regression analysis increased cost of sales contributes to profit negatively and it spells that the cost management of the company is not effective because increased cost of sales must contribute positively to net profit in order for the cost management to be effective and, here the condition is just opposite. Like wise the net profit on sales and fixed assets spells that increased sales revenue contributes to profit negatively and it spells again that the company bears more of cost than what is desirable as per the sales so as to come out with positive profit.

### **5.3 Recommendation and Suggestions**

On the basis of the whole study following recommendations are relevant to made:

- NEA tends to bear costs without considering the possible effect of such costs may have upon profits. Perhaps it is also a reason why the NEA has been incurring huge losses over the periods. This should be corrected by the practices of total quality management (TQM) and restructuring of the enterprise.
- A main source of cash for NEA is term loan and borrowing. On the other main outflows are for generation, administrative and distribution expenses. In this regard, NEA should maintain cash flow synchronization by which the outflow and inflow timed each other so that the company may not run out of cash.
- As shown from the forecasted financial statements the enterprise will need Rs. 8115.97 as external funds to finance its incremental assets and losses. The enterprise is suggested to raise this amount through the source that does not push the capital structure to a further point of peril. The source must be the one that helps maintain the optimum capital structure of the enterprise.

- Huge gap of actual and budgeted sales must be addressed through the coordinated and integrated efforts of all the branches and departments. Sales must be forecasted using the statistical tools with right blend of judgemental forecasting. Enterprise should also try to estimate its expenditure using the statistical tools to come up with the more reliable forecasting.
- NEA is suggested to maintain its domestic sales and to increase its commercial and industrial sales that help to contribute towards its sales and profitability positively. For this, promotional and incentive package focusing on the commercial and industrial consumer group.
- NEA is recommended to adopt cost reduction techniques like value analysis, Restructuring, training to employees etc. to maximize its profits. Some of the costs like generation expenses, distribution expenses and administrative expenses of the enterprises is very high and have no any impact upon the profit of the enterprise and some time having negative impact upon profit as revealed by this study. Such cost is recommended to minimize initiating various cost cutting measures.
- Liquidity of the enterprise has been deteriorating each year. Proper management of cash, inventory and receivables helps to correct this problem. The turnover of assets also seems to be poor. NEA is suggested to acquire quality assets and to discard obsolete and non earning assets.
- NEA, as shown by Z score, can be regarded as a failure firm and could go in insolvency in near future if it were not in a position to improve its profitability, liquidity and turnover. Lower Z score is mainly due to the continuous losses the enterprise has been facing over its history. So it should initiate different cost-cutting measures so as to improve its profitability.

## APPENDIX I

### ANOVA

| Source of Variation | Sum of Squares  | df       | Mean Sum of Square | F     |
|---------------------|-----------------|----------|--------------------|-------|
| 1. Regression       | 83292101        | 1        | 83292101.46        | 49.58 |
| 2. Error (Residual) | 13439212        | 8        | 1679901.521        |       |
| <b>Total</b>        | <b>96731313</b> | <b>9</b> |                    |       |

### Coefficients

| Source          | Unstandardized Coefficients |            | Standardized Coefficients | t         |
|-----------------|-----------------------------|------------|---------------------------|-----------|
|                 | B                           | Std. Error | Beta                      |           |
| 1.(Constant) BS | -901.412                    | 1473.633   |                           | -6127.041 |
|                 | .918                        | .130       | .928                      |           |

a. Dependent Variable: AS

### ANOVA

| Source of Variation | Sum of Squares  | df       | Mean Sum of Square | F              |
|---------------------|-----------------|----------|--------------------|----------------|
| 1. Regression       | <b>97452889</b> | 1        | 97452888.90        | <b>567.250</b> |
| 2. Error (Residual) | 1374390         | 8        | 171798.713         |                |
| <b>Total</b>        | <b>98827279</b> | <b>9</b> |                    |                |

a. Constant : t

b. Dependent Variable : BS

### Coefficients

| Source | Unstandardized Coefficients |            | Standardized Coefficients | t |
|--------|-----------------------------|------------|---------------------------|---|
|        | B                           | Std. Error | Beta                      |   |



|                |          |         |      |        |
|----------------|----------|---------|------|--------|
| 1.(Constant) t | 4879.127 | 283.148 |      | 17.232 |
|                | 1086.852 | 45.633  | .993 | 23.817 |

a. **Dependent Variable: BS**

### Coefficients

| Source       | Unstandardized Coefficients |            | Standardized Coefficients | t          |
|--------------|-----------------------------|------------|---------------------------|------------|
|              | B                           | Std. Error | Beta                      |            |
| 1.(Constant) | 4879.127                    | 283        |                           | -.6127.041 |
| t            | .918                        | .130       | .928                      |            |

a. **Dependent Variable: AS**

### ANOVA

| Source of Variation | Sum of Squares  | df       | Mean Sum of Square | F              |
|---------------------|-----------------|----------|--------------------|----------------|
| 1. Regression       | <b>63776182</b> | 1        | 63776182.04        | <b>202.951</b> |
| 2.Error (Residual)  | 2513953         | 8        | 314244.082         |                |
| <b>Total</b>        | 66290135        | <b>9</b> |                    |                |

a. Constant : BS

b. Dependent variable: CGS

### Coefficients

| Source       | Unstandardized Coefficients |            | Standardized Coefficients | t      |
|--------------|-----------------------------|------------|---------------------------|--------|
|              | B                           | Std. Error | Beta                      |        |
| 1.(Constant) | -2583.479                   | 637.354    |                           | -4053  |
| BS           | .803                        | 056        | .981                      | 14.246 |

a. **Dependent Variable: CGS**

### ANOVA

| Source of Variation | Sum of Squares | df       | Mean Sum of Square | F     |
|---------------------|----------------|----------|--------------------|-------|
| 1. Regression       | <b>1008130</b> | 1        | 1008130.207        | 1.533 |
| 2.Error (Residual)  | 5259995        | 8        | 657499.320         |       |
| <b>Total</b>        | 66290135       | <b>9</b> |                    |       |

- a. Constant : CGS
- b. Dependent variable: NP

### Coefficients

| Source       | Unstandardized Coefficients |            | Standardized Coefficients | t      |
|--------------|-----------------------------|------------|---------------------------|--------|
|              | B                           | Std. Error | Beta                      |        |
| 1.(Constant) | -54.571                     | 662.901    |                           | -082   |
| CS           | -.123                       | .100       | -401                      | -1.238 |

- a. Dependent Variable: NP

### ANOVA

| Source of Variation | Sum of Squares | df       | Mean Sum of Square | F     |
|---------------------|----------------|----------|--------------------|-------|
| 1. Regression       | <b>1452928</b> | 2        | 726463.970         | 1.056 |
| 2.Error (Residual)  | 4815197        | 7        | 687885.261         |       |
| <b>Total</b>        | 6268125        | <b>9</b> |                    |       |

- a. Constant : FA,BS
- b. Dependent variable: NP

### Coefficients

| Source       | Unstandardized Coefficients |            | Standardized Coefficients | t     |
|--------------|-----------------------------|------------|---------------------------|-------|
|              | B                           | Std. Error | Beta                      |       |
| 1.(Constant) | 634.799                     | 1032.712   |                           | .615  |
| FA,BS        | -219                        | .227       | -.870                     | -.964 |
|              | .016                        | .032       | .449                      | .497  |

- a. Dependent Variable: NP

### 1. Calculation of Regression of Budgeted sales on actual sales

| Year         | Budgeted sales(x) | Actual sales(y) | X <sup>2</sup>    | Y <sup>2</sup>     | XY                 |
|--------------|-------------------|-----------------|-------------------|--------------------|--------------------|
| 2001         | 5396.7            | 2931.49         | 29124370.89       | 8593633.62         | 15820372.08        |
| 2002         | 6856              | 4976.08         | 47004736          | 24761372.17        | 34116004.48        |
| 2003         | 8160.8            | 5150.28         | 66598656.64       | 26525384.08        | 42030405.02        |
| 2004         | 9476.2            | 6762.22         | 89798366.44       | 45727619.33        | 64080149.16        |
| 2005         | 11013             | 6520.56         | 121277358.8       | 42517702.71        | 71808319.06        |
| 2006         | 11875             | 7047.63         | 141008500.1       | 49669088.62        | 83688491.96        |
| 2007         | 12605             | 11025.14        | 158891067         | 121553712          | 138974094.7        |
| 2008         | 13332             | 8196.45         | 177739557.6       | 67181792.6         | 109274251.8        |
| 2009         | 14449             | 8233.04         | 208773601         | 67782947.64        | 118959195          |
| 2010         | 15405             | 11624.64        | 237314949.3       | 135132255.1        | 179077927.9        |
| <b>Total</b> | <b>108568.1</b>   | <b>72467.53</b> | <b>1277531164</b> | <b>589445507.9</b> | <b>857829211.2</b> |

Regression eqn

$$y = a + bx$$

Then the normal eqn for estimating 'a' and 'b' are

$$\sum y = na + b \times \sum x \dots\dots\dots(i)$$

$$\sum xy = a \sum x + b \times \sum x^2 \dots\dots\dots(ii)$$

Putting the values in above normal equations

$$72467.53 = 10a + 108568.13b$$

$$857829211.2 = 108568.13a + 1277531164$$

$$b = 0.72$$

$$a = 570.92$$

$$\text{Correlation (r)} = \frac{n \sum xy - \sum x \times \sum y}{\sqrt{n \sum x^2 - (\sum x)^2} \sqrt{n \sum y^2 - (\sum y)^2}}$$

$$\frac{857829211 - 108568.1 \times 72467.53}{\sqrt{10 \times 1277531164 - (108568.1)^2} \sqrt{10 \times 589445507.9 - 72467.53^2}} = 0.892$$

Coefficient of Determinant (r<sup>2</sup>) = r × r = 0.795

**ii) Calculation of Regression of Budgeted sales on year**

| Year         | Time(x)   | Budgeted sales(y) | X <sup>2</sup> | Y <sup>2</sup>    | XY              |
|--------------|-----------|-------------------|----------------|-------------------|-----------------|
| 2001         | 1         | 5396.7            | 1              | 29124370.89       | 5396.7          |
| 2002         | 2         | 6856              | 4              | 47004736          | 13712           |
| 2003         | 3         | 8160.8            | 9              | 66598656.64       | 24482.4         |
| 2004         | 4         | 9476.2            | 16             | 89798366.44       | 37904.8         |
| 2005         | 5         | 11013             | 25             | 121286169         | 55065           |
| 2006         | 6         | 11875             | 36             | 141015625         | 71250           |
| 2007         | 7         | 12605             | 49             | 158886025         | 88235           |
| 2008         | 8         | 13332             | 64             | 177742224         | 106656          |
| 2009         | 9         | 14449             | 81             | 208773601         | 130041          |
| 2010         | 10        | 15405             | 100            | 237314025         | 154050          |
| <b>Total</b> | <b>55</b> | <b>108568.7</b>   | <b>385</b>     | <b>1277543799</b> | <b>686792.9</b> |

Regression eqn

$$y = a + bx$$

Then the normal eqn for estimating 'a' and 'b' are

$$\sum y = na + b \times \sum x \dots\dots\dots(i)$$

$$\sum xy = a \sum x + b \times \sum x^2 \dots\dots\dots(ii)$$

Putting the values in above normal equations

$$108568.7 = 10a + 55b$$

$$686792.9 = 55a + 385b$$

$$b = 1086.85$$

$$a = 4879.14$$

$$\text{Correlation (r)} = \frac{n \sum xy - \sum x \times \sum y}{\sqrt{n \sum x^2 - (\sum x)^2} \sqrt{n \sum y^2 - (\sum y)^2}}$$

$$\frac{10 \times 686790 - 55 \times 108568.1}{\sqrt{10 \times 385 - (55)^2} \sqrt{10 \times 127731164 - (108568.1)^2}} = 0.993$$

Coefficient of Determinant (r<sup>2</sup>) = r × r = 0.986

**(iii) Calculation of Regression of CGS on Budgeted sales**

| Year  | Sales (X) | Cogs (Y) | X <sup>2</sup> | Y <sup>2</sup> | XY          |
|-------|-----------|----------|----------------|----------------|-------------|
| 2001  | 5396.7    | 1950     | 29124370.89    | 3802500        | 10523565    |
| 2002  | 6856      | 2190.3   | 47004736       | 4797414.09     | 15016696.8  |
| 2003  | 8160.8    | 4480.7   | 66598656.64    | 20076672.49    | 36566096.56 |
| 2004  | 9476.2    | 5886.7   | 89798366.44    | 34653236.89    | 55783546.54 |
| 2005  | 11012.6   | 5348     | 121277358.8    | 28601104       | 58895384.8  |
| 2006  | 11874.7   | 6765.4   | 141008500.1    | 45770637.16    | 80337095.38 |
| 2007  | 12605.2   | 7462.4   | 158891067      | 55687413.76    | 94065044.48 |
| 2008  | 13331.9   | 8332.7   | 177739557.6    | 69433889.29    | 111090723.1 |
| 2009  | 14449     | 9034.6   | 208773601      | 81623274.39    | 130540357.4 |
| 2010  | 15405     | 9929.9   | 237314949.3    | 98601921.02    | 152969637.1 |
| TOTAL | 108568.13 | 61380.61 | 1277531164     | 443048063.1    | 745788147.3 |

Regression eqn

$$y = a + bx$$

Then the normal eqn for estimating 'a' and 'b' are

$$\sum y = na + b \times \sum x \dots\dots\dots(i)$$

$$\sum xy = a \sum x + b \times \sum x^2 \dots\dots\dots(ii)$$

Putting the values in above normal equations

$$61380.61 = 10a + 108568.13b$$

$$745788147.3 = 108568.13a + 127775531164$$

$$b = 0.803$$

$$a = -2579.96$$

$$\text{Correlation (r)} = \frac{n \sum xy - \sum x \times \sum y}{\sqrt{n \sum x^2 - (\sum x)^2} \sqrt{n \sum y^2 - (\sum y)^2}}$$

$$\frac{10 \times 745788147.20 - 108568.1 \times 61380.61}{\sqrt{10 \times 1277531164 - (108568.1)^2} \sqrt{10 \times 443048063.10 - (61380.61)^2}} = 0.981$$

Coefficient of Determinant (r<sup>2</sup>)= r×r= 0.962

#### iv) Calculation of Regression of NP on CGS

| Year         | Cogs(X)        | Np (Y)          | X <sup>2</sup>     | Y <sup>2</sup>     | XY                  |
|--------------|----------------|-----------------|--------------------|--------------------|---------------------|
| 2001         | 1950           | -96             | 3802500            | 9216               | -187200             |
| 2002         | 2190.3         | 185.1           | 4797414.09         | 34262.01           | 405424.53           |
| 2003         | 4480.7         | -51             | 20076672.49        | 2601               | -228515.7           |
| 2004         | 5886.7         | -860.7          | 34653236.89        | 740804.49          | -5066682.69         |
| 2005         | 5348           | -1953.7         | 28601104           | 3816943.69         | -10448387.6         |
| 2006         | 6765.4         | -1760.3         | 45770637.16        | 3098656.09         | -11909133.62        |
| 2007         | 7462.4         | -1312.8         | 55687413.76        | 1723443.84         | -9796638.72         |
| 2008         | 8332.7         | -1267.8         | 69433889.29        | 1607316.84         | -10564197.06        |
| 2009         | 9034.6         | 314.19          | 81623997.16        | 98715.3561         | 2838580.974         |
| 2010         | 9929.9         | -1312.16        | 98602914.01        | 1721763.866        | -13029617.58        |
| <b>Total</b> | <b>61380.7</b> | <b>-8115.17</b> | <b>443049778.9</b> | <b>12853723.18</b> | <b>-57986367.47</b> |

Regression eqn

$$y = a + bx$$

Then the normal eqn for estimating 'a' and 'b' are

$$\sum y = na + b \times \sum x \dots\dots\dots(i)$$

$$\sum xy = a \sum x + b \times \sum x^2 \dots\dots\dots(ii)$$

Putting the values in above normal equations

$$-8115.17 = 10a + 61380.7b$$

$$-57986367.47 = 61380.7a + 443049778.9b$$

$$b = -0.123$$

$$a = -56.54$$

$$\text{Correlation (r)} = \frac{n \sum xy - \sum x \times \sum y}{\sqrt{n \sum x^2 - (\sum x)^2} \sqrt{n \sum y^2 - (\sum y)^2}}$$

$$\frac{10 \times -57986314.43 - 61380.61 \times -8115117}{\sqrt{10 \times 445048063.10 - (61380.61)^2} \sqrt{10 \times 12853723.19 - (-8115.17)^2}} = 0.401$$

$$\text{Coefficient of Determinant (r}^2\text{)} = r \times r = .161$$

| Year  | Np(x1)   | sales(x2) | FA(X3)   | X <sub>1</sub> <sup>2</sup> | X <sub>2</sub> <sup>2</sup> | X <sub>3</sub> <sup>2</sup> | X <sub>1</sub> ×X <sub>2</sub> | X <sub>2</sub> ×X <sub>3</sub> |
|-------|----------|-----------|----------|-----------------------------|-----------------------------|-----------------------------|--------------------------------|--------------------------------|
| 2001  | -96      | 5396.7    | 38326.4  | 9216                        | 29124370.89                 | 1468909871                  | -518083.2                      | 206835867                      |
| 2002  | 185.1    | 6856      | 46106.1  | 34262.01                    | 47004736                    | 2125771535                  | 1269045.6                      | 47004736                       |
| 2003  | -51      | 8160.8    | 53494.9  | 2601                        | 66598656.64                 | 2861700046                  | -416200.8                      | 66598656.64                    |
| 2004  | -860.7   | 9476.2    | 57398.4  | 740804.5                    | 89798366.44                 | 3294577471                  | -8156165.34                    | 89798366.44                    |
| 2005  | -1953.7  | 11013     | 60000.6  | 3816944                     | 121286169                   | 3600075600                  | -21516098.1                    | 121286169                      |
| 2006  | -1760.3  | 11875     | 62976    | 3098656                     | 141015625                   | 3965974057                  | -20903562.5                    | 141015625                      |
| 2007  | -1312.8  | 12605     | 69380    | 1723444                     | 158886025                   | 4813578850                  | -16547844                      | 158886025                      |
| 2008  | -1267.8  | 13332     | 74914.6  | 1607317                     | 177742224                   | 5612194297                  | -16902309.6                    | 177742224                      |
| 2009  | 314.19   | 14449     | 81684.8  | 98715.36                    | 208773601                   | 6672401650                  | 4539731.31                     | 208773601                      |
| 2010  | -1312.2  | 15405     | 90101.7  | 1721869                     | 237314025                   | 8118310937                  | -20214441                      | 237314025                      |
| TOTAL | -8115.21 | 108568.7  | 634383.3 | 12853828                    | 1277543799                  | 4.2533494313                | -99365927.63                   | 1455255295                     |

Multiple regression eqn

$$X_1 = a_1 + b_1 \times X_2 + b_2 \times X_3 \dots \dots \dots (i)$$

Normal eqns.

$$\sum x_1 = n \times a_1 + b_1 \times \sum x_2 + b_2 \times \sum x_3 \dots \dots \dots (ii)$$

$$\sum x_1 \times x_2 = a_1 \times \sum x_2 + b_1 \times \sum x_2^2 + b_2 \times \sum x_2 \times x_3 \dots \dots \dots (iii)$$

$$\sum x_1 \times x_3 = a_1 \times \sum x_3 + b_1 \times \sum x_1 \times x_2 + b_2 \times \sum x_3^2 \dots \dots \dots (iv)$$

$$-8115.17 = 10a_1 + 108568.7 b_1 + 634383.3 b_2 \dots \dots \dots (v)$$

$$-99365927.63 = 108568.7 a_1 + 1277543799 b_1 + 1455255295 b_2 \dots \dots \dots (vi)$$

$$-553981580.6 = 634383.3 a_1 + 99365927.63 b_1 + 1277543799 b_2 \dots \dots \dots (vii)$$

$$b_1 = -0.219$$

$$b_2 = 0.016$$

$$a = 634.79$$

Correlation (r) = 0.481

Coefficient of Determinant (r<sup>2</sup>) = 0.232



## APPENDIX II

### DATA FOR RATIO ANALYSIS

(Rs.million)

| Items               | 2001     | 2002     | 2003     | 2004     | 2005     | 2006     | 2007     | 2008     | 2009     | 2010      |
|---------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| Current Assets      | 5053.20  | 5761.10  | 6313.60  | 7322.00  | 7690.48  | 7883.41  | 8491.60  | 8995.30  | 1032.297 | 11391.46  |
| Current Liabilities | 4786.50  | 5477.40  | 6113.70  | 1009.699 | 1234.700 | 1453.809 | 1746.639 | 1985.419 | 2281.213 | 26430.84  |
| Inventories         | 740.00   | 982.30   | 960.90   | 1058.10  | 1017.22  | 1048.01  | 1372.70  | 1354.80  | 1498.45  | 15184.5   |
| Sales               | 5396.70  | 6856.00  | 8160.80  | 9476.20  | 1101.260 | 1187.470 | 1260.520 | 1333.190 | 1444.900 | 15405.03  |
| QA                  | 4313.20  | 4778.80  | 5352.70  | 6263.90  | 6673.26  | 6835.40  | 7118.90  | 7640.50  | 8824.52  | 9873.01   |
| Total Assets        | 4337.956 | 5186.719 | 5980.846 | 6472.041 | 6769.111 | 7085.939 | 7787.156 | 8390.988 | 9200.774 | 10149.313 |
| Net Profit          | -96.00   | 185.10   | -51.00   | -860.70  | -1953.70 | -1760.30 | -1312.80 | -1267.80 | 314.19   | -1312.16  |
| Capital employed    | 3859.306 | 4638.979 | 5369.476 | 5462.342 | 5534.411 | 5632.130 | 6040.517 | 6405.569 | 6919.561 | 75062.29  |
| LTD                 | 2382.430 | 3015.570 | 3670.750 | 3732.561 | 3963.711 | 4110.314 | 4453.751 | 4648.791 | 4761.615 | 52762.18  |
| Equity              | 1476.876 | 1623.409 | 1698.726 | 1729.781 | 1570.700 | 1521.816 | 1586.766 | 1756.778 | 2157.946 | 22300.11  |
| Total Debt          | 2861.080 | 3563.310 | 4282.120 | 4742.260 | 5198.411 | 5564.123 | 6200.390 | 6634.210 | 7042.828 | 79193.02  |