CHAPTER-I

INTRODUCTION

1.1 General Background

Nepal lies between two giants of Asia: India and China. Nepal is bounded on north by China and the east, south and west by India. Nepal is the country of hills and mountains, with an area of 147181 square km. geographically; Nepal lies in 26º21´ to 30º27´ North latitude and 80º4´ to 88º12´ East longitude. The steepest country in the world descends from the heights of Everest to the tiger-prowling jungles below. The most beautiful country, discover the world of mountain, river, jungle and culture in the world of Nepal.

A part from its natural beauty and diversity Nepal has been known for developing country. Agriculture is the backbone of the Nepalese economy means of livelihood for the majority of population and the main source of gross domestic production, income and employment generation. Agriculture has been playing a key role in Nepalese economy where more than 70% of the economically active population is estimated to be involved in agriculture. But non agricultural sector has also significant contribution in the national economy. Economic growth of the country has not improved substantially over time to overtake population growth. As the current population growth is 1.92% per annum, the gain achieved by development activities has been over shadowed by growing population. Little over half of the population of working age reported usually economically active in 2001. Population census 2011 reports that 41.3 percent are unemployed. Contribution of non-agricultural activities is gradually increasing in the gross domestic product (GDP).

Nepal is poor in mineral resources but very rich in huge potential for hydroelectric power. It has 2.275% of the world water resources. Nepal has 44000 MW economically exploitable hydropower potential. Nepal's water resources are its foremost natural endowment. Due to abundance of huge water resources Nepal can be self sufficient in power sector. For this NEA can contribute much more to the upliftment of the country if planed, organized, developed and motivated properly.

1.2 Background of the study

Today's era is the era of industrialization and globalization. We cannot think of industrialization and globalization in the absence of energy. Energy has very close relationship with every activities of human relationship. Human life becomes very much difficult and impossible without energy since energy has got the place of basic needs of human beings. There are various forms of energy out of which electricity is one of important ones. Hydroelectricity has become the backbone for the development of energy in the developing countries like Nepal.

Nepal electricity authority an "A" class organization of government of Nepal, has been established aiming at providing electricity service to all the citizens of federal democratic Nepal. It is established of 1St Bhadra 2042 on the basis of Nepal electricity Act 2041. It has got the responsibility of supplying electricity making its production, transmission and distribution reliable and convenient.

The production and use of electricity started from the reigm of primenister Sri 3 Chandra shamser. According to history, the production of hydroelectricity started in 1968 B.S. establishing the first Asian hydropower project in Pharping, Kathmandu. That project was named Chandrajyoti. The electricity which was produced only for the sake of the

then rulers has become one of the necessary things for the common people.

The production of electricity which was started in 1968 B.S. with the capacity of 500 KW has now become 689.355MW. There is possibility of producing 83,000MW electricity from about 6,000 rivers in Nepal. Out of 83,000 MW 42,000 MW electricity can be produced technically as well as economically. But the use of candle, Kerosene lamp, etc. shows the reality that the area of the production of electricity has not been developed yet.

Though electricity was taken only for the light in the past, it has now become an important and necessary infrastructure in each and every activity of human life. All the sectors like industries, business, occupation, irrigation, drinking water supply, office, transport, science and technology, etc cannot run in the absence of electricity.

So, electric energy has become one o0f the important vehicles for the development. Hydroelectricity is one of the productions from the natural resource of Nepal and it seems to play the role to develop the whole Nepal into new, prosperous, and modern Nepal. Though we find development of electricity in priority in every plan of the government, we are facing the problem of power cut nowadays .So, the government; NEA and other concerned authorities should think once again to rid people of the problem of power cut.

Nepal Electricity Authority has got the responsibility of providing electricity in a regular, reliable and convenient way in some few years by preparing a national policy on the basis of past success, failure and experience.

First of all, it is necessary to understand what electricity is. Electricity has been defined in NEA act 2041, Electricity act 2049 and Electricity theft control act 2058. On the basis of these definitions, we can say that the electricity is the electric energy produced by water, mineral, oil, coal, gas, solar energy, wind energy, atomic energy, etc. But hydroelectricity is the electric energy produced only by water.

1.3 Statement of problem

Nepal is a land locked country. Being a land locked country here are so many rivers from mountain to Hill (plane). The total capacity that Nepalese water resources can contribute to hydroelectricity is 83,000 MW and total economically feasible hydro power potential to the content of 42,000 MW but unfortunately we are only generating 689 MW at present.

Profit is not happened, it is managed. Likewise profitable plant is not happened, it is managed. Cost minimization helps to create profitable plant. For cost minimization cost is segregated (allocated) as fixed and variable. Fixed cost can be reduced using maximally and variable cost can be reduced reducing leakage. Here are so many CVP analyses for other companies but we can’t get the analysis of Nepal electricity Authority. Nepal Electricity authority generates electricity through its self plan, private company, and thermal plan. So, BEP is not calculated till now. The Nepal Electricity authority is also facing supply leakage problem. To reduce such leakage, to get Break even point analysis is necessary.

1.4 Objectives of the study

The main objective of this study is to examine cost volume profit analysis of NEA. To achieve this objective the following sub objectives have been set.

- To analyze fix and variable cost of NEA.
- To analyze Cost Volume Profit Analysis of Nepal Electricity Authority.
- To analyze sensitivity of profit with respect to electricity availability and sales.

1.5 Significance of the study

The present work is the study of the practices of cost- volume profit analysis in NEA. This study will be significant in the following ways.

- This study gives proper knowledge about fixed and variable cost of Nepal Electricity Authority. So it gives information's for cost management.
- It helps to determine break even point in term of price.
- It helps in identifying the effect of changes in price, cost and volume of profit analyzing sensitivity.
- The best alternatives can be selected bye decision makers to improve price and sales volume.
- Analysis of electricity supply problem will be useful to reduce lickage electricity supply. It is also useful for future researchers (Student).

1.6 Limitations of the study

The following factors have limited the scope of this study.

- The study will be based on 2007 to 2011fiscal year.

- The dates will be collected from Nepal Electricity Authority annual report and internet.
- All Cost will be allocated fixed and variable to analyze nature of the cost

1.7 Organization of the study:

The research work will be organized in the following structure

1. Introduction: - This chapter includes the background of the study, statement of problem, objectives, significance, limitation and organization of the study.
2. Review of Literature: - This chapter will include review of former studies.
3. Research Methodology: - Secondary data will be collected from annual report of NEA. Accounting formulae of CVP analysis and tools will be used. For the sensitivity analysis percentage bar diagram, trend line method will be used.
4. Data Presentation and analysis: - Five year income statement and total electricity unit collected in those years will be presented in this chapter. Percentage bar diagram, trend line will be used for to analyze data. Break even analysis is done with analysising fixed, variable cost and margin of safety.
5. Summary, Conclusion and recommendation: - Summary and conclusions of the study and future suggestions will be included in this chapter.

CHAPTER–II

REVIEW OF LITERATURE

2.1 Concept of Profit

Generally profit is known as the part of income of the firms. Profit is the motivating force in the business. Success of business depends on profit. Profit promises to provide satisfaction to consumer. We can simply define the word 'profit' as the primary measurement of success of management effective in business enterprise. In other words, profit means the excess of total revenue over total cost of production. Usually, profits do not happen, they are managed or produced.

Management thinks of profit as a expression of the goals it has set for the firm, a measure of performance for the achievement of its health, growth and continuity of the company (Lynch and Williamson 1995, p 100). Profit is the main test of the individual firm's performance. In other words, it is the acid test of business. Profit is a primary objective of a business.

Economic theories on may be put in three broad categories: the first theory looks upon profit as the reward for bearing risks: the second views profits as the consequence of friction and imperfection in the competitive adjustment of the economy to dynamic change: the third sees profit as the reward for successful innovation (Dean, 1982, p 6). Profit is a yardstick of management's ability to co- ordinate, plan act in the interest of the consumer. No business sustains if there is regular loss, profit is essential for each enterprise.

Thus, it is quite obvious that profit is obtained by subtracting the cost from the revenues and it is also the rewards for taking risks. Profit plays a vital role, not only managerial decision but in the general life standard of human beings. Therefore management should continuously evaluate efficiency of its company in terms of profit.

2.2 Concept of Planning

The word 'planning' states thinking and deciding what ought to be done in advance is also a process of developing enterprise's objective and selecting future course of action to accomplish them.

Planning is a hard task because it involves the ability to think to periodic, to analyze and to come to decide to control the action of its personnel and to cope with complex dynamic fluid environment. They bridge the gap between, where they are and where they want to go (Memoria, 1990: p 36). His statement obviously shows that planning as a complex and hard job and as a tool of developing and getting organizational objectives.

Planning consists of the following steps (Scott: 1993: p 152):

- Recognizing and making a tentative statement of the problem:
- Collection and classifying relevant facts.
- Evaluating pros and cons associated with these course and
- Selecting the course of action (the plan)

Planning means setting of goals for the firm, considering various ways of meeting those goals and picking out what appears to be best way to meet those goals (Lynch and Williamson: 1995 p 18). In planning, the management is concurred with lying down objective and determining the

courses of action to be followed out of the several alternatives available to meet those objectives.

Planning is the process of developing enterprise objectives and selecting future course of action to accomplish them. It includes (Welsch, et. Al, 1999:p 3).

- Establishing enterprising objectives.
- Developing premises about the environment in which they are to be accomplished.
- Selecting a course of action for accomplishing the objectives.
- Initiating activities necessary to translate plans into action
- Current re- planning to current deficiencies.

Planning is essential to accomplish goals. It reduces uncertainty and provides effective direction to the employees by determining the course of action in advance.

The planning process of an enterprise would generally involve four fundamental steps (Pandey, 1985: p 556):

- Establishing the objectives
- Determining the short-range objectives or goals.
- Developing strategies
- Formulating profit plan or budgets

Planning involves selecting mission and objectives and the action to achievement them it required decision making that is choosing among alternative future courses of action (Koontz, et.al, 1999, p 45).
Thus Planning establishes the objectives, goals, strategies, polices and standards of enterprises. Past is the father of present is a guild for future.

Therefore, planning for future needs proper guidance to be taken from past event and adequateness should be made of present event.

2.3 Concept of control

Once the planning is determined, it must be carried out under control. Controlling shares management activity and for this, managers compare actual performance and find out the deviations taking remedial steps to remove the deviations. Immediate action should be taken remove the deviation to make and improvement in the performance because promptness is the essence of an effective of an effective control;

Controlling is the measurement and correction of performance in order to make sure those enterprise objectives and the plans devised to attain them are accomplish (koontz Heinz 1999:p 45)

Controlling means evaluating the firms activities against the plan and deciding what should be done if plan is not being followed (Lynch & Williamson, 1995: p 18)

Control is the process of ensuring that actual activities confirm to planned activities control help in correction. Therefore, planning and controlling are the major functions of management. According to Welsch, controlling involves.

- Establishing goals and standards
- Comparing measured performance against the established goals and standards
- Reinforcing successes and correcting shortcomings.

Control provides timely information that may prompt the revision of goals.

The propose of control is achieved with setting standards, comparing predicated and actual result against these standard, and taking corrective actions.

Planning and controlling are interdependent and thus closely related with each other because a manager can not control unless he has planned a course of action for affective and smooth managerial behavior into proper profit and progress on behalf of company, firm or enterprise. Under this condition to be applied, both planning and controlling are mutually inseparable.

2.4 Meaning and Definition of Profit Planning

Profit planning is one of the most important managerial functions. Profit planning is merely a tool of management, which is used to and control business operation interaction.

When a management plans, profit for a specific period of time that is known as profit planning. Every firm has to make a plan of profit if it has to survive and grow in the business line or business world in future.

The phrase, “comprehensive profit planning and control” is a new term in the language of business but it is not a new concept in the management. Commonly, Comprehensive profit planning and control have been identified as a way of managing. The term, “comprehensive” means the application of the board concept of profit planning and control to all phases of operations in an enterprise and the application of a total system approach.

Profit planning is the process of determining the required amount of profit from each principal unit of business. A profit plan is an advanced decision of accepts achievement best on must efficient operation standards of in prospect of time. It is established against which actual accomplishment regurely is compared.

Profit planning is the estimation and predetermination of revenues and expense that estimates how much income will be generated and how it should be spent in order to meet investment and profit requirement. In case of institutional operation, it presents a plan for spending income in a manner that does not result in a lost (Nimemeirer and Schmidgall, 1984: p 133). Explaining the use of profit plans and budget, they further mention that once it is develop, managers know that when actual expenses exceed budget limitation, there may be problems. The profit plan tells managers how much money remains to be spent in each expense category. Profit plans are also used to develop new budgets.

Profit planning or budgeting is a forward planning and involves the preparation in advanced of the quantitative as well as financial statements to indicate the intension of management in respect of the various aspects of the business. Profit planning, in fact, is as managerial technique and it is a written plan in which all aspects of business operation with respect of definite future period are included. It is a formal statement of policy, plan, objectives and goal established by the top management in respect of sum future period. Profit planning is a predetermined detailed plan of action developed and distributed as a guide to current operations and as a partial basis for the subsequent evaluation of performance. Thus, we can say that profit planning is a tool, which may be used by the management

in planning the future course of action and in controlling actual performance (Gupta, 1992: p 521).

Profit planning is a systematic and formal means of decision- making and attaining organizational objectives and goals at a specific future period of time by the application of diversified managerial tools for utilization of available resources at a reasonable manner.

To plan profit intelligently, Lynch suggests that a management need to know (Lynch and Williamson, 1995: p 100)

- The economic characteristics of the forms operation,
- The nature of the market for its product,
- The nature and severity of its competitions
- The cost of its factor of production: (the material, The Labor, The Productive capacity, The capital)

The sound and intelligent planning of profit, cost and sales are important in the age of rapid technological change.

Modern Profit planning encourages action and recognizes the divisional and development autonomy and responsibility of managers, motivation them to strive for attainment of the corporate goal (Matz and Curry, 1992: p 406).

Profit planning is especially effective in enabling middle management to help plan profit and controls costs.

Profit planning is a technique of preparing and using operating plan for the propose of achieving the maximum profit or, a profit target set by management. Such a planning may be done for a short period or for a long period (Pandey, 1995: p 329).

Profit planning is preplanning what to do in term of choosing and optimum profit course of action from among several alternatives.

Profit planning is management's primary tool to accomplish its objectives, because it (Noll and Radetsky : Vol .XLV:p 36).

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- Provides a disciplined approach to the solution of business problems.
- Develops throughout the organization an atmosphere of profit-mindedness, encouraging an attitude of coat-consciousness and minimum assets utilization.
- Coordinates the operating plans of the diverse segments of the business into a single, comprehensive plan.
- Encourages a high standard of performance by stimulating competition, providing a sense of urgency and serving as an incentive to perform more effectively.
- Affords the opportunity to appraise systematically every facet of the business as well as examine and restate periodically its basic policies and guiding principles.
- Aids in directing capital and effort into the most profitable channels.
- Provides yardsticks or standards to measure performance and gauge the managerial judgment and ability of the individual executive.

Profit planning represents an overall plan of operations, covers a definite period of time and formulates the planning decisions of management. It consists of the operating budget, the financial budget and the appropriation budget (Kulkarni, 1992: p 10).

Profit planning thus becomes a well throughout operational plan with its financial implications expressed as both long and short range profit plans

in the form of financial statements, including balance sheet, income statements and cash and working capital projections.

Profit planning is now an important responsibility of the finance managers or the chief executive has the ultimate responsibility for profit planning and control program. Welsch suggests that “A comprehensive profit planning and control (CPPC) as a systematic and formalized approach for performing significant phases of the management planning and control functions.”

Long- range profit is a systematic and formalized process for purposefully directing and controlling future operations with a view to achieving desired objectives for periods extending beyond one year. And the success of each enterprise in realizing its optimum profit is determined by the extent, to which it attains its objectives, develops coordinated plans to realize them and exercises control of its entire process constitutes a budgetary planning and control program (Kulkarni, 1992: p 315).

According to Welsch, the three most relevant aspects of PPC concepts are:

- PPC requires major planning Decision by management.
- PPC entails pervasive management control activities and,
- PPC recognizes many of the critical behavioral implications throughout the organization.

In the same way, comprehensive profit planning and control (PPC) specially involves:

- Development and application of broad and long range objectives of the enterprises,
- Specification of enterprise goals,
- Development of a strategic long-range profit plan in broad terms.
- Specification of a tactical short of periodic performance reports detailed by assigned responsibilities (division, department, projects),
- Establishment of a system of periodic performance reports detailed by assigned responsibilities, and
- Development of follow- up procedures.

In the opinion of J.Batty, when dealing the question of profit planning. It is usual to consider (Batty, 1982: p 322).

- The variety to be produced (the product mix).
- The volume of output in terms of numbers of product or other units.
- The cost to be incurred.
- The prices to be charged.

The aim of profit planning should be to ensure an adequate return on capital employed and financial stability. Therefore, profit planning includes a complete financial and operational plan for all phases and facets of the business.

A profit plan is a comprehensive statement of intentions, expressed in financial terms, for the operations of the firm for a short period. It is a plan of the firm’s expectations and is used as a basis for measuring and

controlling the actual performance of managers and their units (Pandey, 1999: p 257).

Thus, profit planning is used for development and acceptance of objectives and goals and moving an organization efficiently to achieve those objectives and goals. Profit planning is developed to meet the objective of effective performance of the management process.

Profit planning is an integral part of the management; by the help of it any enterprise should earn realistic profit return on investment. It is a financial and narrative expression of the expected results from the planning decision. By using profit- planning technique, one can easily achieve the desired goals. Profit plan is flexible and depends upon the size and nature of the firms.

2.5 Components of Profit planning and Control

Components of PPC are bones of an enterprise, which help it operate properly, efficiently and effectively. The components of PPC as stated by Welsch Glenn A. are thus (Welsch, 1979: p 74).

A. the Substantive plan

- Broad objectives of the enterprise
- Specified enterprise goals
- Enterprise strategies
- Executive management planning instruction

B. The financial plan

i. Strategic long-range profit plan

- Sale, cost and profit projections,
- Major projects and capital additions,

- Cash flow and financing
- Personnel requirements

ii. Tactical Short- range (annual) Profit Plan:

a. Operating plan

- Planned income statement
- Sales plan
- Production for merchandise purchases plan
- Administrative expense budget
- Appropriation- type budge

b. Financial Position Plan (Planned Balance Sheet)

- Assets
- Liabilities
- Owner's equity

c. Variable Expenses Budgets: (Output expense formula)

d. Supplementary Data: (C.V.P., Ratio Analysis)

e. Performance Reports

f. Follow- up, Corrective Action, and Preplanning Reports

2.6 The basic Elements of Profit Planning and Control

The Basic elements of profit planning and control are as follows (Welsch, 1999: p 73)

Comprehensive and Co- ordinates Plan:

The profit planning considers al activities and operations of an organization. The budgets prepared by different departments inside an organization are to be complied or co-ordinate and it is done by profit planning. So, before preparing a profit planning, firstly all the

departments have to be complied and the budget is known as comprehensive budget or profit planning.

Expressed in Financial Terms:

All activities covered by budget are related with funds. Therefore, the budget has to be expressed in money units. (i.e. in Rupees, Dollars and Pounds etc).

Plan for Operational Resources and Expenses:

It is a plan for the firm's operating and resources of budget in a mechanism to plan for the firm's all operations or activities. The two aspects of every operation are revenue and expenses. The budgets must plan for and quality revenue and expenses related to specific operation. Planning should not be done for revenue and expenses only. The plan should be for carry out the operations. The planning for resources will include planning assets and source of funds.

Future plan:

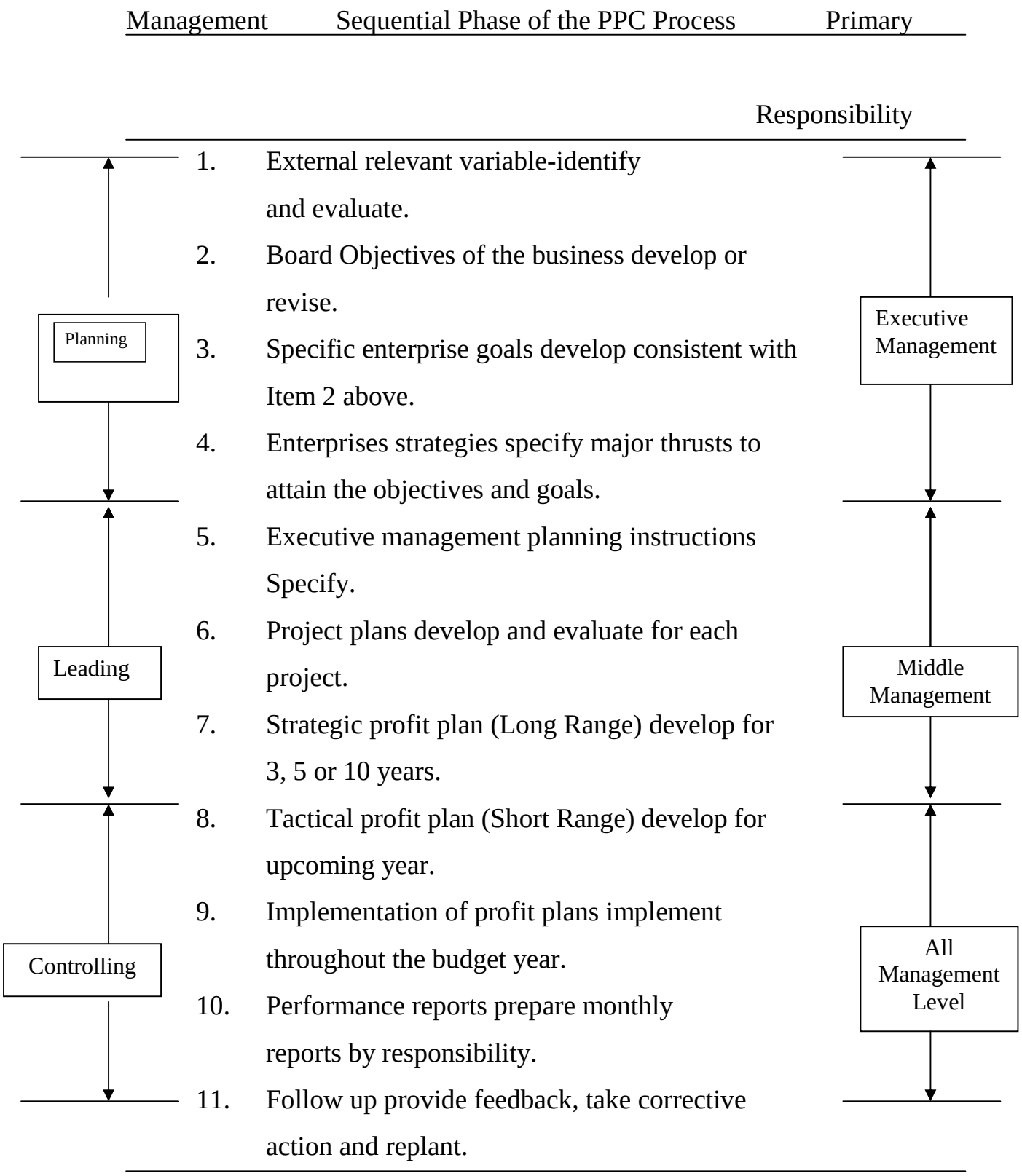
Time dimensions must be added to a budget. A budget is meaningful only when it is related to a specific time. The budget estimates will be relevant only for some specific period.

2.7 The Profit Planning and Control Process

A profit planning and control program includes more than the traditional idea of a period or master budget. Rather, it encompasses the application of a number of related management concepts through a variety of approaches, techniques, and sequential steps. The term comprehensive means the application of the broad concept of profit planning and control to all phases of operations in an enterprise and the application of a total system approach. The major process of profit planning and control are as:

- Identification and evaluation of external variables.
- Development of the board objectives of the enterprise.
- Development of the specific goals for the enterprise.
- Development and evaluation of company strategies.
- Executive management planning institutions.
- Preparation and evaluation of project plans.
- Development and approval of strategic and tactical plan.
- Implementation of profit plan.
- Use of periodic performance reports.
- Use of flexible expenses budget.
- Implementation o follow-up.

An overview of Profit Planning and Control Process (Welsch, Hilton and Gordon, 1999: p 73-74).



1. Identification and Evaluation of External Variables

The variable identification phase of the PPC process focuses on identifying and evaluating the effects of the external variables. As the management panning focuses on the best possible manipulation of controllable and non- controllable variables, these variables are considered are separately. This is done in order to minimize the potential unfavorable impacts.

A particularly significant phase of this analysis includes the evaluation of the present strength and weakness of the enterprise. Planning must start with and objective and realistic understanding of the present status of products, services, markets, profits and returns on investments, cash flow, availability of capabilities, and the competence of both management and non management because deficiencies and inefficiencies are frequently difficult to identify and evaluate objectively by those directly involved. The comprehensive PPC approach is based on the expectation that these significant aspects of operations will be critically analyzed and evaluate periodically in an orderly manner.

2. Development of the Board Objectives of Enterprise

In this phase of the PPC process, the executive management should express the mission, vision and ethical character of the enterprise. Its purpose is to provide identity, continuity of purpose and definition. However the statement of broad objectives normally should not specify the quantitative goals. Rather, it should be a narrative expression of the purpose, objectives and philosophical character of the business. It should be signed for wide dissemination and should be believable, which means, in the long run the company’s actions must be in harmony with the statement.

3. Development of Specific Goals for the Enterprise

This phase provides both narrative and quantitative goals that are definite and measurable. These are specific goals that relate to the enterprise as a whole and to the major responsibility centers. Executive management should exercise leadership in this planning phase so that there will be a realistic and clearly articulated framework within which operations will be conducted toward common goals. This statement of specific goals should define such operational goals as expansion or contraction of products and service lines, geographical areas, share of the market by major products and service lines, growth trends, production goals, profit goals, profit margins, return on investment, and cash flow. When the goals are specific they could offer basis for performance measurement (Johnson et.al, 1997).

4. Development and Evaluation of company strategies

The purpose of developing and disseminating enterprise strategies (long term or short term) is to find the best alternatives for attaining the planned broad objectives and specific goals. Strategies focus on ‘how’, therefore they outline a plan of action for the enterprise. Executive management must be creative and directly involved in the development of new strategies and in the adaptation of currently ongoing strategies in harmony with the relevant variables with which management must cope. While developing the basic enterprise, the executive must focus on identification of the critical area that influences the long-range success of the enterprise. Critical areas should be pinpointed concern to executive management, periodic reassessment of the strategies is essential in the light of a careful analysis of all relevant variables and their probable future impact on the enterprise (Johnson et.al, 1997).

6. **Executive management Planning Instruction**

Apart from tactical planning and strategic planning, the concept of profit planning and control covers a systematic and integrated approach to project planning. Project plans encompass such items as plans for improvement of present products, new and expanded physical facilities, and entrance into new industries, exist from products and industries, new technology and other major activities that can be separately identified for planning purposes.

The nature of projects is such that they must be planned as separate units. In planning for a project, the time span considered must normally be the anticipated life span of the project. Projects approved must then be timed into the strategic and tactical profit plans. In addition to any ongoing projects, management should encourage on a continuing basis project proposal from any source within the enterprise. Consistent with this approach, during the formal planning cycle, management must evaluate and decide upon the plan status or each project in process and select any new projects to be initiated during time dimensions covered by the upcoming strategic and tactical profit plans.

7. Development and Approval of Strategic and Tactical Profit Plans

Strategic or long-range plan and the tactical or short-range profit plan are usually developed at the same time. It is generally seen that the executive management develops the strategic and tactical profit plans but the backlash of this practice is that denies the full participation by middle managers in the planning process. And this can give rise to unfavorable behavioral effects.

So here we assume a participatory and the managers of each responsibility centers have received instructions of the executive

management. Now the manager of each responsibility center will immediately initiate activities within their responsibility center to develop a strategic long-range profit plan and in harmony with the long- range plan, a tactical short- range profit plan. However a certain format and procedural instructions should be provided by a centralized source to establish the general format, amount of detail and other relevant procedural and format requirement essential for aggregation of the plans of the responsibility centers into the overall profit plans.

After the completion of the two profits plans the approval must be initiated. This process involves approval, disapproval or revision based on action by executive management or presentation and justification by the managers of the responsibility centers to the next higher level of authority.

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8. Implementation of Profit Plans

Once the plans are developed and approved, they need to be implemented in such a way that leads the subordinates in attaining enterprise objectives and goals, strategies, and policies be communicated and understood by subordinates. There are many facets involved in management leadership. However, a comprehensive profit planning and control program may aid substantially in performing this function. Plans, strategies, and policies

developed through significant participation establish the foundation for effective communication.

The plans should have been developed with the managerial conviction that they are going to be met or exceeded in all major resects. If these principles are effective in the development process, the various executive and supervisors will have a clear understanding of their responsibilities and the expected level of performance, which will ultimately lead to effective implementation of profit plans (Khan and jain, 2008)

9. Use of periodic performance

Performance reports are those reports that show actual results, planned results and variations between those two, to be analyzed to take necessary corrective measures in the future. These performance reports are prepared by the accounting department on a monthly basis however some special performance reports are prepared whenever needed.

A clear distinction must be made between external and internal financial reports. Internal reports can be further classified as (a) statistical reports that give the basic quantitative internal statistics about the operations of the enterprise; (b) special managerial reports about nonrecurring and special problems; and (c) periodic performance reports. The latter reports focus on dynamic and continuous control tailored to the assigned managerial responsibilities. These reports are primarily repetitive, short-term reports developed for each of the responsibility centers, which are essential for effective control.

10. Use of Flexible Expenses Budget

Flexible budget is completely different from the profit plan but It is used as a complimentary to the profit plan. Flexible budget gives realistic information about expenses that make it possible to compute budget amounts for various output volumes or rates of activity in each responsibility center. To do this, the flexible budget provides a formula for each responsibility center. Each formula includes a constant expenses factor and a variable expense rate. To apply this concept in a department, each expense must be classified into one of the three categories: (a) Fixed expense, (b) Variable expense, and (c) Semi- variable expense. In this case of a fixed expense the variable rate is zero and in the case of a variable expense, the constant factor is zero, and in the case of semi-variable expenses, there is a value for both the constant factor and the variable rate. (Khan and jain, 2008).

Flexible expense budget formulas can be used in two phase of the PPC process. They can be used in performance control reports and in developing the tactical profit plan. If the flexible expense formulas are developed concurrently with the strategic and tactical profit plan. This is done by multiplying the planned output or activity of each responsibility center by the related variable expenses rate for each center and then adding any fixed cost for the center.

Flexible expenses budget are usually constructed early in the budget-planning period because, as indicated, they provide cost data for the tactical plan.

11. Implementation of Follow-up

To determine whether things are going on as per plans, a continuous follow up action is important. Because performance reports are based on assigned responsibilities, they are the basis for effective follow-up actions. It is important to distinguish between the causes and results of that. The performance variations are the results and the management must determine the underlying cause. Analysis to determine the underlying causes of both favorable and unfavorable performance variances, after identifying the basic causes, as opposed to the results, an alternative for corrective action must be selected and the corrective actions be must be selected and the corrective actions be identified and this is helpful for improving efficiency and for developing positive rainforests to the less successful operations and employees. This is called 'transference of success" (Stevenson, 1992).

And finally there should be a special follow up to the prior follow up actions to determine the effectiveness of prior corrective actions to provide a basis for improving future planning can control procedures.

2.8 Analysis of Cost Volume Profit Variables

2.8.1 Sales Plan

Sales planning process is a necessary part of PPC because it provides for the basic management decision about marketing and b. Based on those decision, it is an originated approach for developing a comprehensive sales plan. If the sales plan is not realistic most if not all, of the other parts of the overall profit plan also are not realistic. Therefore, if the management believes that a realistic, sales plan cannot be developed, there is little justification for PPC, and despite the views of a particular management, such a conclusion may be an implicit, admission of

incompetence. Simply, if it is really impossible to assess the future revenue potential of a business, there would be little incentive for investment in the business initially or for continuation of it except for purely speculative ventures that most managers and investors prefer to avoid (Welsch, et.al, 1999).

A comprehensive sales plan includes separating, but related, plans the strategic and the tactical sales plans. A comprehensive sales plan incorporates such management decisions about planned volume (units or jobs) of goods and services, prices, promotion and selling efforts.

The primary purposes of a sales plan are a. to reduce uncertainty about future revenue. b. to provide necessary information for developing other elements of a comprehensive profit plan, and d. to facilitate management's control of sales activities (Welsch, et.al, 1999).

2.8.2 Cost Plan

Generally cost plan refers to the plan for variable cost, fixed cost, mixed costs and jumped cost.

Variable cost is that cost which is directly affected by change in the activity level. If the activity level or production level increases, then the variable cost also increases and vice versa if decreases. Change in variable cost effects to P/V ratio, BEP and net income. When variable cost increase: Net income P/V ratio and margin of safety will decrease but it helps to increase BEP.

Fixed cost remains constant in total amount despite the changes in the level of activities. This is the fixed cost remains unchanged in total as the activities level various. When other factors remain unchanged, the

changes in fixed cost effects to BEP and net income. When increase the fixed cost: increase the volume of BEP and decrease the net income or vice- versa. Fixed costs are also called capacity cost.

Expenditures that cannot be categorized as purely fixed or variable is termed as mixed cost or semi- variable cost. Mixed cost contains both variable and fixed cost elements. (Khan and Jain, 2008).

Repair and maintenance, supervision, telephone cost, electricity change are some example of mixed costs. It should be operated from the variable from the variable and fixed cost elements as the function of profit planning, cost control and decision- making.

Some costs remain fixed over a wide range of activity, but jump to a different amount for activity levels outside that range. Such costs are called jumping costs or step fixed cost or moving fixed cost or ladder fixed costs.

2.9 Purpose of CVP Analysis

Cost volume profit analysis helps management in a number of ways. The following purposes are served by it (Dangol, 2004).

a. Calculation of profit resulting from a budgeted sales volume.
b. Calculation of sales volume to break- even.
c. Calculation of sales volume to produce desired profit.
d. Effect or changes on price, costs and profits.
e. Determination of new break- even point for changes in cost and selling price.
f. Measurement of effect of changes in profit factors.
g. Choosing the most profitable alternatives.

h. Determining the optimum sales mix.
i. Determination of capacity and equipment selection.
j. Long term Decision on continuance of products.
k. Make or buy decisions on sub-assemble or part.
l. To contemplate the increase or decrease in profits due to the change in method of production, etc.

2.10 Application of CVP Analysis in Profit Planning and Control

Cost-volume –profit analysis is an important tool for profit planning. It has been defined as a managerial tool showing the relationship among cost selling price, profit and volume capacity. CVP analysis can be applied in the following respects (Dangol, 2004):-

a. It helps in fixation of selling price.
b. It is helpful in cost control.
c. It also assists the management in understanding the behaviors of cost and helps in budgetary control.
d. It helps in determining the level of output where all the costs can be met.
e. It assists the management in profit planning.
f. It also assists the management in performance evaluation for the purpose of management control.
g. It helps very much in making managerial decisions such as make or buy a part, drop or continue a department or product line, accept or reject a special order, selection of a profitable product mix etc.

2.11 Approaches to Cost- Volume-Profit Analysis

The CVP relationships can be analyzed through different approaches, which area:

i. Contribution margin approach.

ii. Formula (Equation) approach.

iii. The graphic (Break even chart) approach.

2.11.1 Contribution Margin Approach

Contribution margin is difference between the sales revenue and variable cost of production. Contribution margin consists the fixed cost and profit i.e. contribution margin is the amount that contribute the coverage of all fixed costs and to the generation of profit.

The contribution margin income approach to cost volume profit analysis allows the preparation of pro-forma statesmen from the available information. BEP and other required CVP relationship can be explained through a contribution margin statement whose philosophy is all fixed cost are period cost that should be deducted from the contribution margin of the same period only the variable costs vary proportionally to the level of output or sales.

It can be expressed as:

Contribution margin =Sales – Variable Cost

Contribution margin = Fixed Cost + Profit

Contribution margin is usually expressed as a percentage sale, which is known as contribution margin ratio or profit volume ratio. That is:

$$\text{CM Ratio or PV ratio} = \frac{\text{Contribution Margin}}{\text{Sales}} = 1 - \frac{\text{Variable Cost}}{\text{Selling Price}}$$

2.11.2 Formula Approach

The most popularity practice approach to the break- even point and cost volume profit analysis is the formula, also known as the equation. It is

particularly because the equation provides the most general and the easiest to remember-approach uses an algebraic equation to calculate the break-even point. The answers provided by solving the equation may sometimes, need to be rounded to whole numbers of units or lot sizes. The rounding of break even points is always done upward because this will provide a small profit rather than the small loss that would be shown from rounding down (Raiborn, Barfield and Kinney, 1993).

The calculation in the equation approach is similar to that of the contribution margin statement approach. The equation is merely a restatement of the other.

BE sales values = FC +VC± Profit

BE Sales Units *SPPU = FC + (BE Sales units *VCPU) ± 0

Contribution Margin Approach	Symbol or Equation
Sales volume (Units)	Q
Selling Price Per Units	P
Sales Revenue (Rs.)	Q×P
Less, Variable Costs	Q×VCPU
Contribution Margin	Q×P - Q×VCPU
Less: Fixed Costs	FC
Net Profit	Q×P – Q×VCPU - FC

Therefore, BE Sales Value = FC + VC ± Profit

BE Sales Units × SPPU = FC + (BE Sales Units × VCPU) ± Profit

2.11.3 The Graphic Approach to CVP Analysis

A break-even chart is used to graphically depict the relationship among revenues, variable cost, fixed costs and profit (or losses). The no profit,

no loss point (the break even point) is located at the point where the total cost and total revenue lines cross, Below this point, the firm losses, and above this point, the firm earns profit (Bajracharya, et.alv, 2004: p 231-232).

In the graph given below the fixed costs remain constant within the relevant range the fixed cost curve is parallel to ‘OX’ axis. Variable cost slope downward from the origin to right but the slope depends on variable cost ratio. The total costs curve parallels the variable cost curve. So the angle ‘O’ equals the angle ‘V’, it is because Total Cost = Total fixed Costs plus total variable costs at volume ‘Q’.

Mjn

Total Costs = TFC + Q×VCPU

At volume ‘Q+n’

Total Costs = TFC+(Q+n)×VCPU

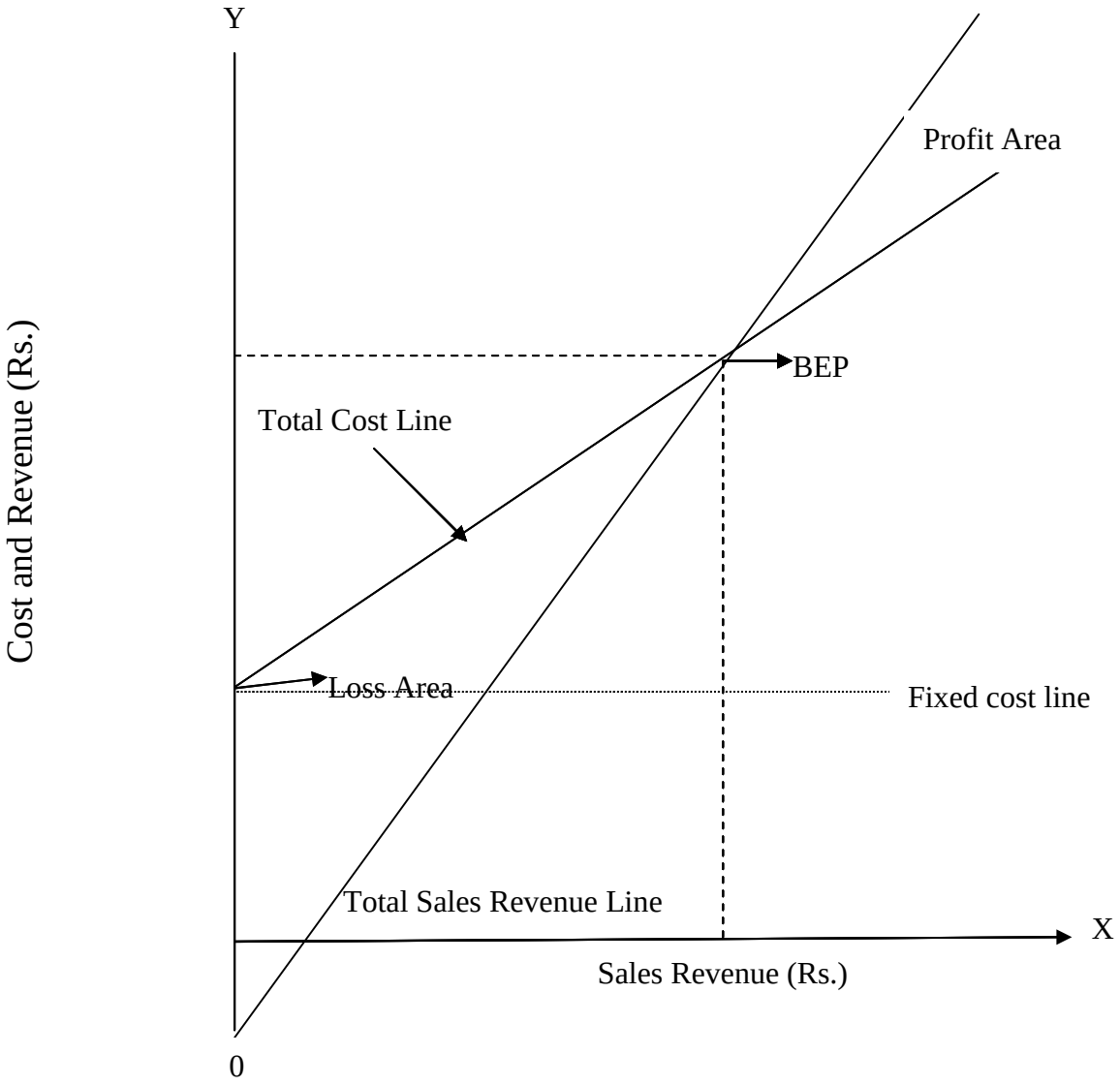
ΔTotal Costs = O+n×VCPU

ΔTotal Costs =Δ Variable Costs

That’s why the slope of the total cost curve equals the slope of variable cost curve.

Figure 2.1:

Graphical Approach to CVP



The above graph clearly shows that if the company can reach the point of BEP it can generate sufficient revenues to cover all its operating expenses. At this point, the total revenue equal the total cost. Here, the revenue curve breaks up (interacts) the total cost curve, that's why this point is called Break Even Point. In short, break even point is that point where, total sales revenue =total costs.

2.11.3.1 Application of Break – Even Analysis

Break-Even concept can be used to formulate policies in a business enterprise. Some of these applications are (Maheshwari, 2000: p 182):

- Determination of profit at different levels of sales and margin of safety.
- To find the level of output to get the desired profit.
- Effect of price reduction on sales volume and changes in sales mix.
- Effect of fixed cost or variable cost changes on sales volume.
- Selection of most profitable alternative, make or buy decisions and drop and / or add decisions.

2.11.3.2 Assumptions of Break-Even Analysis

Contribution analysis and break-even analysis are based on a specific set of assumptions that should be clearly understood. These underlying assumptions are (Maheshwari,2000: p 182-183):

- All cost can be classified into two parts, fixed cost and variable cost. There is no cost other than fixed and variable.
- There is a relevant range of validity (activity) for using the results of the analysis and sales price does not change as units of sales change.
- There is only one product or in case of multiple products, the sales mix among the products remain constant.
- Basic management policy about operation will not change materially in short run.
- The general price level (inflation/deflation) will remains essentially unchanged in the sort run.

If any of the above assumptions were changed, revised budget would be needed for a new analysis.

2.11.3.3 Limitations of Break-Even Analysis

Break-even analysis is many business situations can be used for effective decision-making, but there are many shortcomings or limitations in its analysis and interpretations. Some of these can be listed as (Maheshwari, 2000: p 183-184):

- The assumptions of producer's market phenomenon not hold good for all types of commodities.
- The fixed costs may not remain constant as well as the variable costs may not vary in fixed proportions at different levels of output.
- With variation in the prices of the items of services, which also depend on the factors, affecting its demand and supply will certainly affect demand of the commodity. This phenomenon is not covered in break-even analysis.
- Identification of fixed and variable costs involved in production process is very complicated. A shift in product mix changes the break-even point.
- Customers many be given certain discount on purchase to promote sales. This revenue may not be given certain discount on purchase sales. This revenue may not be perfectly variable with level of sales output.

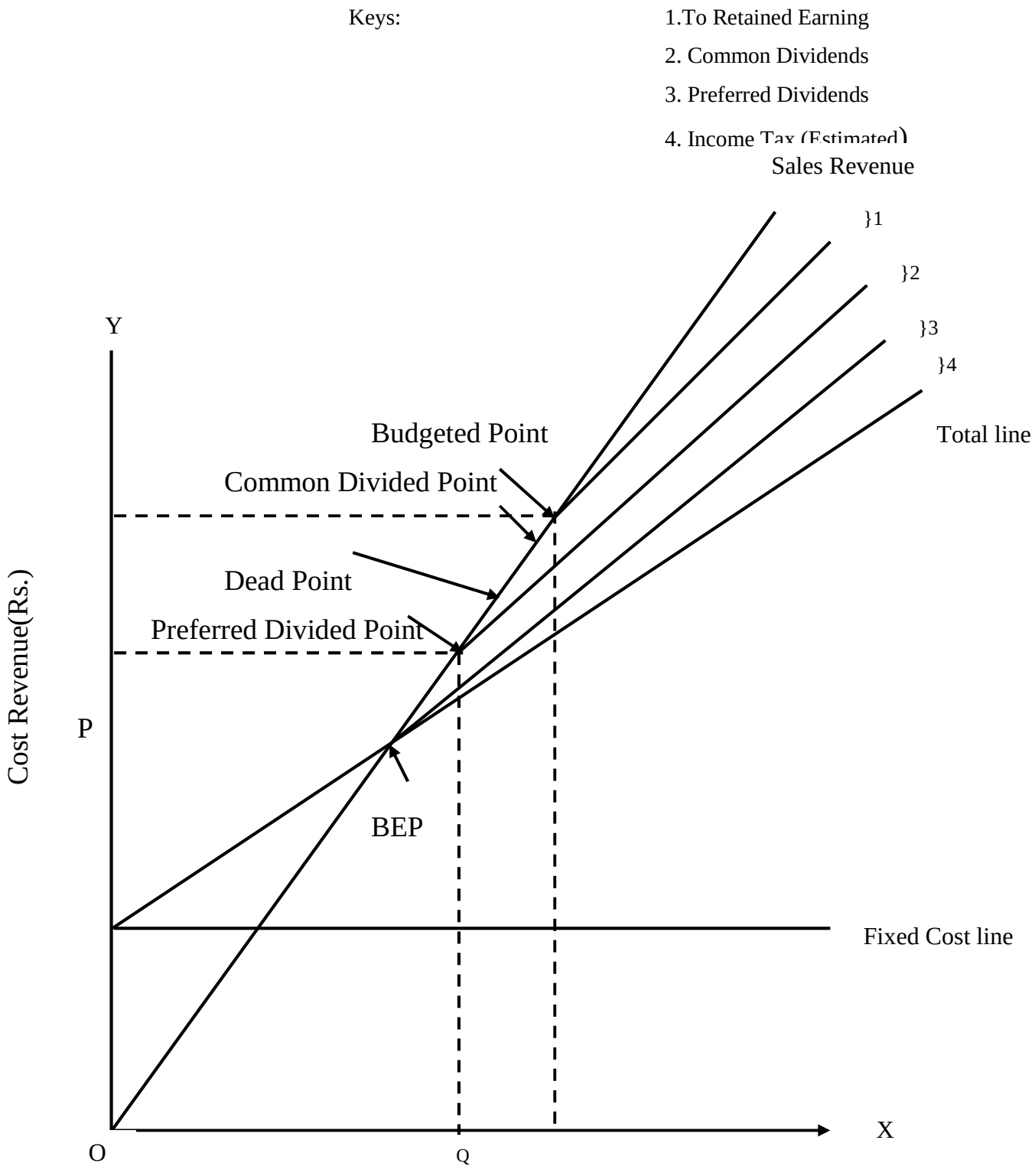
2.12 Economic Characteristics of Cost-Volume-Profit Analysis

Where cost-volume-profit analysis is reasonably accurate, they can help management decision-making. Essentially, CVP analysis offers greater insight into the economic characteristics of a company and may be used to determine the approximate effect of various alternatives. CVP analysis is based on estimates, however, the arithmetical manipulations generally involve average, and hence, the results should never be interpreted as precise. Rather, the analysis many be characterized approximately as a

'slide-rule' approach that may used to develop and test, with a minimum of effort, the approximate effect on costs and profits of several types of management decisions (Wealch, 1979: p 467-468).

Figure 2.2:

Economic Characteristics of Cost-Volume-Profit Analysis



Above break-even chart with economically indicates few of the economic characteristics of a business, which are (Welch, 1979: p 468):

- Fixed costs, variable costs and total costs at varying volumes.
- The profit and loss potential, before and after income taxes, at varying volumes.
- The margin of safety-the relationship of budget-volume to break-even volume.
- The break-even point.
- The preferred dividend or danger point-the point below, which preferred dividends are not, earned.
- The deal point-the point where management earns only the 'going' rate on the investment.
- The common dividend or unhealthy point-the point below which earning are insufficient to pay preferred dividends and the expected dividend on the common stock.

All these points, and as others, can be computed if data are developed for cost-volume-profit purposes.

2.13 Margin of Safety

Margin of safety is the excess of budgeted or actual sales over the break-even sales volume. In other words, it is the difference between the budgeted or actual sales revenue and the break-even sales revenue. It is the position above the break-even point. It is gives management a feel for how close projected operations are to be organization's break-even point. Managers often consider the size of the company's margin of safety when making the chance for the company to earn profit (i.e. larger the margin

of safety, safer the company). A high margin of safety is particularly significant in times of depression when the demand for the company or firm's product is falling. A how margin of safety may result for a firm which has a low contribution ratio. When both the margin of safety and P/V ratio are low, management should think of the possibilities of increase the selling price, provided it does not adversely affective volume or reducing variables costs by brining improvement in the manufacturing process. Margin of safety can be ascertained by using the following formula (Munanukarmi, 2003: p 127).

Margin of safety = (Actual Sales Value – Break-even sales value)

$$= \frac{\text{Profit}}{\text{Profit - Volume Ratio}} \text{ (In Amount)}$$

$$= \frac{\text{Profit}}{\text{Unit Contribution Margin}} \text{ (In Units)}$$

The relation between margin of safety and actual sales in known as margin of safety ratio, which is determined as follows (Munankarmi, 2003: p 127).

$$\text{Margin of Safety Ratio} = \frac{\text{Actual Sales - Break - Even Sales}}{\text{Actual Sales}}$$

The following steps are needed to rectify margin of safety:

- With increasing selling price.
- With increasing sales volume, if the capacity of fixed cost is not fully utilized.
- With reducing fixed cost if possible.
- With reducing variable cost (with reducing the cost of raw materials. Wages and other direct cost).
- With substituting product line by more profitable one.

2.14 Cost-Volume-Profit Analysis for a Multi-Product Firm

The relative proportion of sales of product is called the sales mix or the product mix. In the case of a multi-product firm, the contribution for each product can be found out by deducting its variable costs from sales revenue. The break-even point for each product can be calculated only if the total fixed costs of the firm are distributed and fixed cost for each product is known. The firm's overall break-even point can be calculated by dividing the total fixed costs by the contribution ratio for the firm. The multi-product firm P/V ratio will be the weighted average of the P/V ratios for the entire product, the weights being the relative proportion of each product's sales. The P/V ratio for the multi-product firm can also be calculated by dividing the total contribution from all products by total sales.

A change in the product mix will not affect the firm's break-even point and profit if each product has the same P/V ratio. However, a change in product mix will change the break-even point and profit when products have unequal P/V ratios (Maheshwari, 2000: p 187).

2.15 Break-Even Point for Multi-Product Company/Firm

In multi-product firm we have to calculate the BEP in aggregate. The sales mix is used to compute a weighed average unit contribution. This is the average of the several product unit contribution margin weighted by the relative sales proportion of each product.

Sales mix can be defined as the relative combination of two or more products represented in total. It is not only the sales revenue that makes profit. The proportion of the sales contributed by different products generally changes the amount of profit. Managers try to achieve that

combination or mix that will yield the greatest amount of profit, if a company sell more than one product, these may not be equally profitable. So the company's profit will depend upon the ratio of each product's sales to total sales revenue. Profit large promotion of total sales than if sales consist mostly of low margin items. Changes in sales can cause great variations in a company's profit. A shift to low margin can cause the total profit to decrease even though total sales increase. On the contrary, a shift in the sales mix from low margin item to high margin items can cause the reverse effect total profit may increase even though total sales decrease (Bajracharya,et.al,2004: p 260).

Following procedures are followed to calculate BEP for sales mix or multi-product (Munankarmi, 2003: p 137).

- Calculate contribution margin or profit-volume ratio for each product.
- Calculate proportion of sales mix in units or values as follows:

$$\text{Sales Mix} = \frac{\text{Individual Products Sales Units or Value}}{\text{Total of all Products Sales Units or Value}}$$

- Calculated Weighted Average for all products as follows:

Weighted Average = [Sales Mix (units)×Units Contribution Margin]

= [Sales Mix (value)×P/V Ratio]

- Calculate Break-Even Point (BEP)

$$\text{Break-Even Point} = \frac{\text{Fixed Cost}}{\text{Weighted Average}}$$

2.16 Cost-Volume-Profit Analysis and Limiting Factors

CVP analysis is helpful in profit planning and a company will be able to produce any number of outputs, number of outputs of its choice (desires). But in real word it is not possible, because of some critical factors like

finishing machine or raw material or labor. There critical factors in the CVP analysis are known as constraint.

2.17 CVP Analysis with a Single Constraint

Scarce resource should be efficiently allocated in order to maximize the contribution margin particular simple and instructive situation arises when there is only one constraining resource. This can occur if the firm's products are all produced on a single machine and output in limited by hours available on this machine. In the same way single resource constraint arise. If the firm's products are all produced with only one material and output is limited by quantity available for that material. When there is a constraint for a scarce resource to have alternative uses, the contribution per unit should be calculated for each of these uses. Then, the available capacity for such resource should be allocated to the alternative uses on the basis of contribution per scarce resource (Munakarmi, 2003: p 146).

2.18 CVP Analysis with Multiple Constraints

Where more than one scarce resource exists, the optimum production program cannot be established by simple process supplied in single resource constraint. Under the circumstances simple allocation of resource or the basis of contribution margin per units is neither feasible nor desirable. Contribution margin per unit of scarce resources may be different scarce resources may be the ranking of product; because production processes are affected by many constraints factors rather than single constraint. In such situation, Linear Programming technique may be used to optimize product mix. The linear programming formulation is required to determine a production plan that maximizes contribution for the product mix. Linear Programming is a mathematical technique, which

shows how to arrive at the optimum results, allocation of available resources in a meaningful manner. It is basically concerned with the problem of allocating limit resources among competitive activities in an optimal manner. It is a technique to optimize the allocation the allocation of scarce resources in product mix problems which provides a valuable extension to cost-volume-profit analysis (Munankarmi, 2003: p 148).

2.19 Assumptions Underlying CVP Analysis

Break- even analysis is the most useful technique of profit planning and control. It is a device to explain the relationship between cost, volume and profit. The discussion of the CVP analysis (or break-even analysis) so far is based on the following assumptions (Pandey, 1994: p 241).

- Cost segregation: the total costs can be separated into fixed and variable components. Constant fixed cost is the total fixed cost that remains unchanged with changes in sales volume. Constant unit variable cost is the variable cost per unit is constant and total variable cost changes in direct proportion to the sales volume.
- Constant selling price: the selling price per unit remains the constant; that is , it does not changes with volume or because of other factors.
- Constant sales mix: the firm manufactures only one product or if there are multiple products, the sales mix does not change.
- Synchronized production and sales: production and sales are synchronized, that is, inventories remain the same.

2.20 Limitations of CVP Analysis

Assumptions limit the utility and general applicability of the CVP analysis. Therefore, the analysis should recognize these limitations and

adjust data, wherever possible, to get meaningful results. The CVP analysis suffers from the following limitations (Pandey, 1999: p 214).

- It is difficult to separate costs into fixed and variable components.
- It is not correct to assume that total fixed cost would remain unchanged over the entire range of volume.
- It is difficult to use the break-even analysis for a multi product firm.
- The break-even analysis is a short run concept and has a limited use in long range planning.
- The break-even analysis is static tool.

2.21 Special Problems in Cost-Volume-Profit Analysis

Cost-volume-profit analysis are applied to individual products or parts of a business and all the products or activities combined. In the latter case, there are three special problems may be encountered (Welsch, Hilton and Gordon, 2001: p 513-518)

The Activity Base:

When two or more products or activities are combined for break-even analysis, the activity base is usually in amount. Production unit is used for single product. The activity base must be in additive units using a common denominator of volume or output in multiple products. Therefore, for the company as a whole, net sales amount are usually the only satisfactory common denominator because manufacturing, selling and administrative activities are expressed in combination.

The Change in Inventory:

Usually the budgeted changes in inventories (i.e. finished goods and work-in-process) are immaterial in amount and thus may be disregarded

in cost-volume-profit analysis. On the other hand, when the change budgeted inventory is significant; it should be included in the analysis. Including the effect of inventory changes in cost-volume-profit analysis requires subjective judgement about what management might do (about making inventory changes) at different volume levels and the conceptual precision that is desired. Management considers two practical approaches or policies in inventory changes often used: (a) Disregard the inventory changes (b) Include the inventory changes.

The Non-operating Incomes and Expenses:

Non-operating income (gains) and expenses (losses) and extra ordinary gains and losses, if material in amount, cause another problem in CVP analysis. The basic issue is whether they should be included or excluded. Extra-ordinary gains and losses are non- recurring and unusual; therefore, they should be excluded. Non-operating incomes and expenses are recurring but they are not related to ongoing operations. Management consider the policy may be to: (a) Include the non-operating incomes and expenses (b) Exclude the non-operating incomes and expenses.

2.22 Risk Measurement: The Operating Leverage

Operating leverage is a measure of the extent to which fixed costs are being used in organization. The relationship if company's variable and fixed cost is reflected in its operating leverage. Generally highly labour intensive organizations have high variable costs and low fixed costs and this has low operating leverage and relatively low break-even point. Conversely, organizations that are highly capital intensive have a cost structure that includes low variable and high fixed costs, which reflects high operating leverage with high break-even point. It shows that fixed costs higher the operating leverage has direct relationship. Higher the

amount of fixed costs higher the operating leverage and break-even point and vice versa. In other words, the firm with relatively high operating leverage has proportionally high fixed expenses; the firm with relatively high operating leverage has proportionally high fixed expenses; the firm with relatively high operating leverage has proportionally high fixed expenses; the firm's break-even point will be relatively high. The operating leverage factor is determined as under (Munankarmi, 2003:p145):

$$\text{Degree of Operating Leverage} = \frac{\text{Contribution Margin}}{\text{Net Income (EBIT)}}$$

2.23 Sensitivity Analysis

Sensitivity Analysis is the measurement of elasticity of the change in cost, volume and profit factors or break-even point or given profit. The strategist should focus more on the factor, which is more sensitive or responsive for profit. To measure the sensitivity of cost-volume profit factors one can see the impact of certain percentage or amount change in volume, price or cost factors on net profit. In other words, sensitivity analysis is the measurement of responsiveness in outcome with the changes in determinant variable. We know that the goal of a business enterprise is to maximize profit. Profit is the excess of revenues over the total costs.

Net Profit = Total sales revenues = Total costs

= Sales Units×SPPU – Sales Units ×VCPU – Fixed cost - Taxes

So that, Profit =F (Sales Volume, selling Price, VC, FC, Taxes etc)

Means, Profit are the function, Price, VC, FC, taxes and so on.

But none of the factors remain unchanged; sometimes the manager can intentionally change the price and cost as a part of strategic decisions. But the strategy should focus more on the factor, which is more sensitive or responsive for profit. Therefore, to measure the sensitivity of cost-volume-profit factors, we can see the impact of certain percentage or amount change in volume, price or cost factors on net profit (Bajracharya et.al,2004).

2.24 Review of the Related Studies

There are few research paper concerning cost-volume-profit analysis has been conducted. Most of the researches in are in the area of the profit planning and control. Very few dissertations have been submitted related to cost-volume-profit analysis. Out of the previous research studies only one research is conducted to analyze the cost-volume-profit of private review enterprise and the study is limited by various constraints. Therefore, this study is attempted to review the previous research work on profit planning and control as well as management accounting. As CVP is one of the tools PPC, the previous studies related to PPC are reviewed.

Mr. Gunakar Bhatta (1998) has conducted a research in the topic "Profit planning in Nepal Electricity Authority". He has tried to examine whether the NEA is applying profit-planning system properly or not and analyze if there is any drawback in profit planning system of the authority.

The time period covered by this research was five years from FY 2049/50 to FY 2053/54. The data and other necessary information was collected

by using secondary as well as primary sources of data. In this research Mr. Bhatta pointed out various finding and recommendations.

Finding: Some remarkable finding was as follows:

1. The NEA has high amount of fixed costs and the interest payable on long term loans every year comprises the considerable portion of fixed cost.
2. Electricity leakage, theft and wastage are on of the remarkable problem of NEA and it is reducing the profit earning capacity of the authority.

3. Over head budget is not prepared in scientific and systematic way. All expenses are shown under only one overhead budget named as “Operation and maintained expenditure budget”.
4. There is the absence of effective utilization of assets. In comparison with the amount tied up in total assets, assets turnover ratio is poor.
5. NEA prepares both long term and short term profit plans, but long-term profit plan is confined only to the top-level executives.
6. Cost volume profit relationships are not considered while developing the sales plan and pricing strategy.
7. There are no clear-cut boundaries to separate cost into fixed and variable. The cost classification is no scientific and systematic.
8. Management is in the lack of adequate knowledge about the profit planning, corporate planning, corporate planning, participative management, evaluation of broad and long-range objectives and coordination system in the organization.

Recommendation: Some remarkable were as follows:

1. NEA must restructure its capital structure and should emphasize the internal financing to minimize the burden of high interest in long-term loans. For this, it can issue shares and can refund the debt.
2. Leakage of electricity should be controlled. For this, meter reading and meter joining system should be improved. The most important aspect is to motivate its employees engaged in transmission and distribution line to control the leakage.
3. NEA should develop its overhead budget in a well-classified and scientific way.
4. There should be proper coordination between various directorates of the authority in regard of budget formulation and implementation of the budget.
5. Cost volume profit relationship should be considered while formulating profit plan and the authority should be accustomed with flexible budget system.
6. Cost should be clearly identified as fixed and variable.
7. NEA should improve co-ordination between various directorates.
8. Regular inspection and monitoring of budget centre should be under taken by the centre level.

Mr. Dinesh Kumar Uprety (1998) has conducted a research in the topic "An analysis profitability performance of NEA" .In term of profitability and rate of return on the basis of selective financial tools. Mr. Upreti has pointed out various finding and recommendations.

Finding: Some remarkable findings were as follows:

1. NEA is not successful over the study period to earn a fair rate of return from its operation. Net profits are negative in some year. The causes of this low profitability are huge amount of operations expenditure and general expenditures.
2. The efficient utilization of fixed and other assets of NEA has become a major cause for its low profitability. The investment in assets has almost only 9 times increased than the initial position. This indicates that NEA's management has become failure to properly utilize its assets.
3. The amount of capital in the form of equity and long term liability has shown the tendency of annual increase. The funds are tied up in account variable, advance recoverable and inventory which are not productive.

Recommendations: Some remarkable recommendations were as follows:

1. To achieve target growth rate in sales revenue, NEA should make realistic forecasts.
2. The authority should maintain its periodic performance report systematically and variance analysis should be effective to NEA.
3. The authority should reduce the maintenance and operation expenditure to maximize its operating profit. For this purpose cost control program can be done and alternative for the replacement of long-term loan should be decreased.

Mr. Yam Bahadur Limbu (1999) has conducted a research in the topic "An Analysis of Revenue collection of NEA". This research of Mr. Limbu was mainly centered with identify the weakness and strength of current strategies of revenue collection of NEA.

The time period covered by this research was ten years form FY 1987/88 to FY 1996/97. The data and other necessary information's were collected by using primary as well as secondary sources of data. Mr. Limbu has pointed out various findings and recommendations in his research.

Findings: Some remarkable findings were as follows:

1. The revenue is increasing, both total and average revenue are fluctuated.
2. NEA is not generating proper revenue due to losses of power in generation, transmission and distribution sector.
3. Per staff power production and annual sales of the staff of hydropower sector in Nepal found to be the least out of all countries of Asia.
4. It is observed that NEA is seriously suffering to control operating cost mainly the FY 1989 to FY 1993 indicated to high operating cost which was above the scales revenue which shows NEA was not able to apply effective management in controlling operating expenses.
5. NEA could not maintain its stability in revenue collection due to lack of proper revenue, collection strategies, active internal management policy and effective government policy.
6. Leakage of power is high due to technical or others reasons which has been affecting on operational and financial sectors of NEA.

Recommendations: Some remarkable recommendations are follows:

1. The revenue is more fluctuated year by year which should be considered by NEA to make it stable increment.

2. NEA should give adequate emphasis for the improvement of efficient revenue collection system.
3. NEA should properly manage the operating as well as non-operating expenditures.
4. The revenue section should build up a management information system to help top- level management to take timely and appropriate action.

Mr. Gogindar Goet (1999) has conducted a research on the topic "Revenue planning and management in Nepal: A Case study of Nepal Electricity Authority" .This research of Mr. Goet mainly centered with the revenue management and planning process in NEA.

The time period covered by this research was five years from FY 1993/94 to 1997/98. From this research was based on secondary of data. In this research Mr. Goet has pointed out various findings and recommendations.

Findings: Some remarkable findings were as follows:

1. NEA has not considered major demand determinants of electricity such as family income, price of electricity, connection charges, cost of alternative, and cost of auto generation and reliability of NEA service.
2. NEA has not adopted practice of preparing monthly budget.
3. The revenues plans prepared by the branches and sub-branches are not used to prepared central revenue plan.
4. Meter readers are not rotated and there is no surprise meter reading.
5. A large number of customers have been charged only the minimum charges due to the absence of actual meter reading.
6. Operating cost of NEA consists huge amount of fixed costs.

7. Operating cost increasing rapidly than production capacity, sales unit and sales revenue.

Recommendations: Some remarkable recommendations were as follows:

1. NEA planners should be properly trained about budgeting and revenue planning
2. NEA should consider determinants such as family income, price of electricity, connection charges, cost of alternative available, cost f self-generation of electricity and reliability of NEA service while forecasting demand.
3. NEA should start the practice of preparing monthly budget for sales revenue.
4. While preparing central budget of NEA, it should take into account all the suggestions made by branches and sub-branches.
5. The meter reader should be periodically rotated between various areas and NEA should obtain surprise meter readings.
6. Billing should be based on actual meter reading.
7. NEA should reduce its huge amount of fixed cost resulting from over, staffing, fuel, and other overheads.
8. NEA should set clear-cut boundaries about fixed and variable cost.
9. Price cost volume profit relationship should be considered while formulating the revenue plan.

Mr. Chiranjibi Acharya (2001) has conducted a research entitled “Profit planning in Nepalese PEs: A Case Study of NEA”. Mr. Acharya mainly focused on the practice and application of detailed and systematic approach of PPC and its effectiveness in NEA.

The study covered only the period of five years from FY 2051/52 to 2055/56. Data and other information's were collected from secondary sources of data. Mr. Acharya pointed out various findings and recommendations.

Findings: Some remarkable findings were as follows:

1. NEA prepares both short-term and long-term profit planning but long-term profit plan is confined only to the top-level executives.
2. The authority is unable to manage its account receivable properly. Amount of accounts receivable in increasing each year.
3. Cost-volume profit relationship is not considered while developing the sale plan and pricing strategy.
4. Strength and weakness are not analyzed in depth by NEA because of the monopoly situation or the absence of competitors and it is not alert toward it possible threats and opportunity.
5. All the expenses such as manufacturing administrative and selling and distribution are not separated systematically. Authority has combined all these expenses together and named it "Operation and Maintenance Expenditure Budget".
6. There is a large amount of cash and bank balance in balance sheet of NEA. It shows the inability of management of NEA because it is lying idle.

Recommendations: Some remarkable recommendations were as follows:

1. NEA should make the effective collection policies for its account receivables. As large amount of account receivable remain to government, semi-government and other public enterprises.
2. NEA should clearly classify as fixed, variable and semi-variable.

3. Even if the authority is operating in monopoly situation, strengths and weakness, threats and opportunity should be properly managed.
4. Overhead cost of NEA is large. It should be reduced and Overhead budget should be separated in systematic and scientific way, production overhead, Administrative overhead and selling and distribution overhead budget should prepared separately.
5. Cost volume profit relationship should be considered while developing the sales plan and price strategy.

Mr. Kamal Raj Joshi (2004) has conducted a research entitled "Revenue Planning and cash management of NEA". This research of Mr. Joshi mainly focused with revenue planning- policies and practices and cash management in NEA.

The time period covered by this research was six years from FY 2054/55 to 2059/60. The data and other necessary information collected from both secondary and primary sources of data. In this research, Mr. Joshi has pointed our various findings and recommendations.

Findings: Some remarkable findings were as follows:

1. NEA has not adopted practice of preparing monthly budget.
2. Numbers of customers are increased year by year, but the actual consumption of electricity could not increase as the ratio of increasing customers.
3. Profitability ratio indicates that the higher operating expenses as a result of operating profit and net profit are not sufficient.
4. NEA is paying a huge amount of cash as interest of long- term loan, because of over loading of debt.

5. Net fixed assets and total assets turnover ratio shows that the huge amount has been invested to purchase fixed and currents assets have not been utilized properly.
6. NEA has not practiced the international accounting standard.
7. The authority does not maintain its periodic performance reports systematically.

Recommendations: Some remarkable recommendations were as follows:

1. NEA should start the practice of preparing monthly budget for sales revenue.
2. Almost 96% of total customers are engaged with domestic category but the actual consumption is not satisfied. So, NEA should be made the effective plan and programmed for increasing consumption rate. For this purpose, NEA can apply the discount policy on consumption rate, low charge at time period consumption. i.e. raining season and winter season consumption.
3. NEA is paying a huge amount as interest on long-term loan, which is not good for authority. So, it should emphasized internal financing to minimize such burden. Therefore, NEA must restructure its capital structure and for this issue the shares and can refund the debt.
4. NEA has invested big amount in fixed assets but its turnover ratio shows the poor utilization of fixed assets. Therefore, NEA should put stress on effective utilization of fixed assets.
5. NEA should prepare the budget based on the principles of programming and performance budgeting is result oriented, it will help NEA to analysis it’s real achievement.

Mr. Ghana Shyam Thapa (2004) has conducted a research on topic "Profit planning in Nepalese public Enterprises: A case study of Nepal Electricity authority". Mr Thapa has concerned his study to examine the present profit planning premises adopted by the NEA.

The time period covered by the research was five year from FY 2055/56 to 2059/60. The necessary information's and data were accumulated from secondary sources of data. In his research Thapa has pointed out various findings and recommendations.

Findings: Some remarkable findings were as follows:

1. NEA prepares both tactical and strategic profit plan but strategic plan is confined only to the top-level executives.
2. Present power distribution system of NEA is not sufficiently efficient. Power loss unit is increasing in each year.
3. NEA is succeeded to achieve break-even point in sales volume.
4. NEA has not utilized its available capacity satisfactorily. NEA can only achieve at BEP at 60 percent capacity utilization. But NEA is running at below 60 percent capacity.
5. There is lack of proper co-ordination between various directorates in regard of the goals, objectives and strategies.
6. Due to the poor assets turnover ratio, it to be said that there is absence of effective utilization of assets.

Recommendations: Some remarkable recommendations were as follows:

1. A systematic approach to comprehensive profit planning and control is essential. To adopt this approach, existing planners should be trained and new planner should be hired. This can contribute to increase the profitability of NEA

2. Amount of electricity loss is increasing each year. NEA should adopt appropriate control measures to reduce such loss.
3. Cost volume profit relationship should be considered while developing the sales plan and pricing strategy.
4. There should be proper capacity management to increase its available capacity utilization.
5. NEA should have proper coordination regarding budget formulation, implementation and evaluation of achievement.
6. NEA should be ready to reduce operating cost up to reasonable extent. The cost reduction is a key measure to increase the volume of profit. Optimum staffing concept should be followed by NEA.
7. NEA should invest the available resources properly. NEA should consider cost benefit ratio in selection of projects.

Mr. Rabin Dahal (2005) had conducted a research on topic "Profit and Planning system and Financial conditions of Nepal Electricity Authority". Mr. Dahal had concerned his study to examine the present comprehensive profit planning system applied in NEA and its effectiveness.

The study covered the time periods of five years from FY 1998/99 to 2002/03. Data and other information have collected from secondary sources of data. In his research Mr. Dahal pointed out various finding and recommendations.

Findings: Some remarkable findings were follows:

1. There is a systematic sales budget and sales performance is satisfactory. The actual sales achievement of NEA is higher than the budgeted sales.

2. Overheads are not classified systematically and it creates problem to analyze it expenses properly.
3. NEA is paying a huge amount of interest every year and it is suffering from high fixed cost.
4. The authority does not maintain its periodic performance report systematically.
5. NEA suffering from remarkable power loss.

Recommendations: Some remarkable recommendations were as follows:

1. NEA is paying a huge amount as interest on long-term loans which is not good for authority. Therefore, NEA must restructure its capital structure and for this it can issue the shares and can refund the debt. It should emphasize internal financing.
2. NEA should clearly the costs as fixed, variable and semi-variable.
3. Cost volume profit relationship should be considered while developing the sales plan and pricing strategy.
4. The installed capacity of NEA should be utilized fully. It automatically reduces the operating cost.
5. Leakage of the electricity should be controlled for this, meter reading and meter- joining system should be improved.
6. Cost control program should be established. It should maintain the discipline of budget.

Mr. Rajendra Gurung(2008) has conducted a research in the topic " Cost Volume profit analysis of public enterprises in Nepal: Comparative analysis between Nepal Telecom and Nepal Electricity Authority: This research of Mr. Gurung was mainly focused with the CVP analysis as major tools of budgeting.

he study covered only the period of five years from FY 2057/58 to 2061/62, data and other information's collected from primary as well as

secondary sources of data. Mr. Gurung has pointed out various findings and recommendations.

Findings: Some remarkable findings were as follows:

1. Increasing cost in each fiscal year in another remarkable point for these enterprises. It has to be adopted the cost control measures.
2. There are no clear-cut boundries to separate cost into fixed and variable. The cost classification is not scientific and systematic.
3. Margin of safety of Nepal Telecom are good where as NEA's in negative.
4. The Top level executive are only involved in planning and decision making but lower level participation is not encouraged.
5. The expenditures ratio of NEA is higher than Nepal Telecom so, profit ratio of NEA is lower than Nepal Telecom.

Recommendations: Some remarkable recommendations were as follows:

1. The income of both enterprises i.e. Nepal Telecom and NEA are increasing trends. Which shows the status of both enterprises are better. But in reality the expenditures of NEA is higher than Nepal Telecom so, NEA should reduce its cost to get more profit in due course.

CHAPTER-III

RESEARCH METHODOLOGY

General Meaning

The systematic and well-origized way for solving the research problem can be referred to as research methodology. The present study has its objectives to analyze, examine and interpret various aspects of research work such as roles, costs and other aspects of cost volume profit analysis, related to effective tool of profit planning. To fulfill the objectives of the study different tools such as Percentage, Bar diagram, Trend line used.

Research Design

The present study consists research design which is analytical and descriptive. It is mainly related with the quantitative plans and accounts of NEA. So, analytical approach has been considerably adopted to present the data. But qualitative aspect of the research such as effectiveness of CVP in NEA, implementing the CVP, views of various manager and personnel and the theoretical prescription is explained in words where necessary.

Period Covered by the study

The period covered by the study is five years for the purpose of cost volume profit analysis. The period covered is from FY 2007 to 2011.

Nature and sources of Data:

To achieve the objective of the study, secondary data has been used in this study.

Secondary data have been collected from the following sources:

a. Annual report and financial statement of the company.
b. Published and unpublished official records.

c. Books, articles, magazines, newsletter etc. published by Nepal Electricity Authority.
d. Previous dissertation and other related document concern with this topic of the study.
e. Related websites.
f. Textbooks etc.

Population and sample

NEA is a sample and population in itself. This study is based on cost-volume-profit analysis of NEA. Therefore, no particular branch or product is taken but the whole is considered for analysis through financial data available.

Analytical Tools used

Data collected from different sources are managed, analyzed and presented in systematic way in proper table and formats. To analyze the collected data, financial and statistical tools like BEP, Bar-diagram, Percentage, CVP analysis, Trend line are used.

Research variables

The research variables used in the present study are sales, costs, profits and loss, BEP, P/V ratio and profit margin.

CHAPTER-IV
DATA PARSENTATION AND ANALYSIS

CVP analysis is a tools of PPC, can be the most important device to utilize the cost with effective and efficient way. Cost control and profit planning are possible with the help of CVP analysis. CVP analysis is also considered as a powerful tool in managerial decision making especially cost control and profit planning. The CVP analysis is a specific way of presenting and studying the inter-relationship between cost, volume and profits.

The researcher has tried to presents and interprets the collected data in systematic manner and presented and tabulated in meaningful ways. For that purpose sales revenue, cost, profit, contribution margin, break even analysis, income statement, sensitivity test etc are done, which are major variables of CVP analysis.

4.1 Analysis of sales revenue and other income of Nepal Electricity Authority

Revenue planning are the necessary components of profit planning and control. It is the first plan or budget to be prepared. All other planning are based on it. Revenue planning provides the basic management decision about marketing and help to develop comprehensive revenue plan. If the revenue profit plan is also not realistic. Revenue of the organization should manage in such a way by which it will increase continuously. Actual sales value means the total monetary value realized by rendering the service in the given financial year of the company. Here, actual sales are that part of revenue which is realized by the operating activities of the

company. The following table shows the actual sales revenue collected by Nepal Electricity Authority for the period of Six year's i. e. F/Y 2006 to 2011.

Table 4.1

Percentage change in Sales revenue and other income with respect to previous year

(In Million)

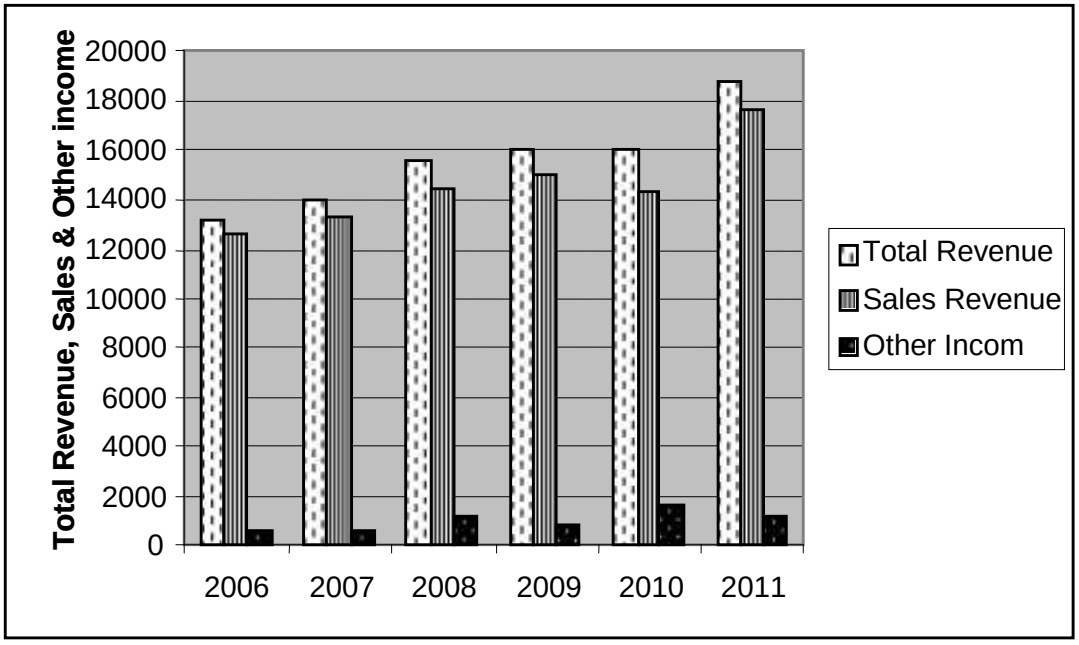
F/Y	Sales (Rs. in Million)	Increase (Decrease)	Other income		Total Revenue	
`			In million	% change	In million	% change
2006	12605.2	-	617.5	-	13222.7	-
2007	13331.9	5.77%	639.9	3.63%	13971.8	5.67%
2008	14449.73	8.38%	1116.61	74.5%	15566.34	11.41%
2009	15041.49	4.09%	934.66	-16.29%	15976.15	2.63%
2010	14405.93	-4.22%	1601.67	71.36%	16007.6	0.2%
2011	17586.91	22.08%	1124.44	-29.8%	18711.35	16.9%

Above table shows that sales are 12605.20, 13331.90, 14440.73, 15041.49, 14405.93, and 17586.91 in 2006, 2007, 2008, 2009, 2010 and 2011 respectively, which is increasing with respective to previous year except in 2009. Percentage increase sales with respective to previous year are 5.77%, 8.38%, 4.09%,-4.22% and 22.08% in 2007, 2008, 2009, 2010 and 2011 respectively. Like wise other incomes are 617.50, 639.90, 1116.61, 934.66, 1601.67 and 1124.44 in 2007, 2008, 2009, 2010 and 2011 respectively. Percentage increase with respective to previous year other incomes are 3.63%m 74.5%, -16.29%, 71.36% and -29.8% respectively. Total revenue are 13222.70, 13971.80, 15566.34, 15976.15,

16007.60 and 18711.35 in 2006, 2007, 2008, 2009, 2010 and 2011 respectively. Percentage increase in total revenue with respect to previous year are 5.67%, 11.41%, 2.63%, 0.2% and 16.9% in 2007, 2008, 2009, 2010 and 2011 respectively.

Figure no. 4.1

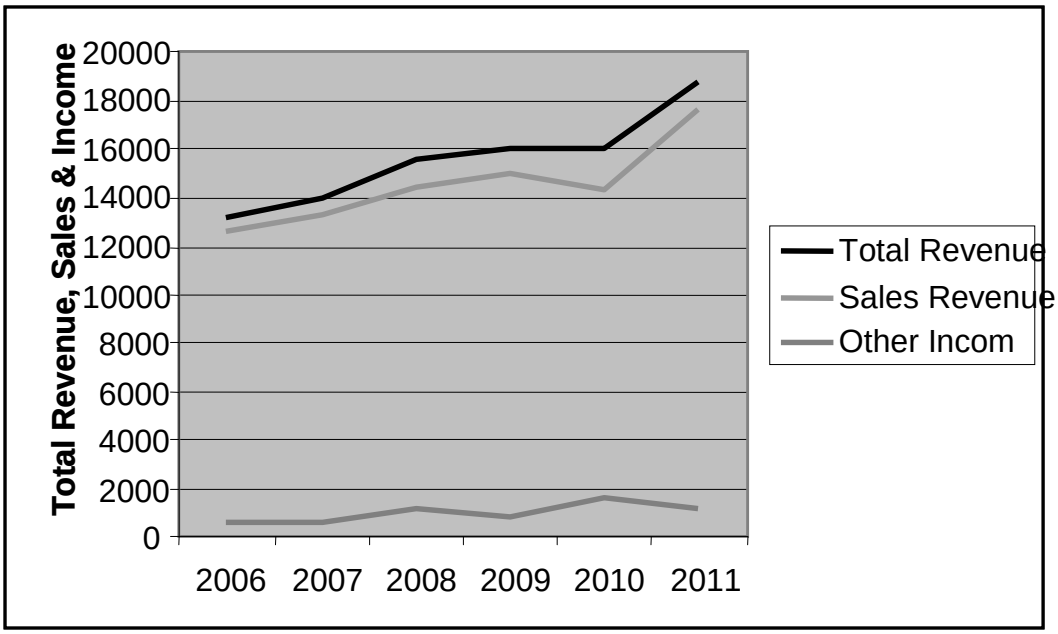
Sales Revenue, other income and Total Revenue in bar diagram.



Above bar diagram shows that total revenues are increasing every year with respect to previous year. Sales revenues are increasing every year with respect to previous year except in 2010. Other incomes are also increasing with respect to previous year except in 2009 and 2011.

Figure no 4.2

Sales Revenue, other income and Total revenue is Trend line.



Above trend line shows that total revenue and is increasing trend. Sales revenues are increasing trend except in 2010. Other incomes are also increasing with respect to previous year except in 2009 and 2011.

4.2 Cost plan of Nepal Electricity Authority

Cost planning and controlling should not focus only one decreasing future costs or expenses but also need to focus on efficient and better utilization of limited resources. It should also focus the relationship between cost and benefits derived from those costs organization has to bear various types of costs, like variable cost, fixed cost or semi variable cost. Variable cost can be controlled. So it is also called controllable cost. But fixed cost cannot be controlled, so it is called uncontrollable cost. For operation of business cost is required but it should control to earn profit. For the cost volume profit analysis cost should be segregated. Variable cost and fixed cost is very much necessary to find for CVP analysis. Every organization has to determine the level of BEP to protect the

business. Break- even point is the level of activity where the total cost equal to total sales. NEA did not practiced CVP analysis; therefore NEA does not have segregated the cost into fixed and variable.

Following are the category of cost incurred in NEA

1 Generation cost
2 Transmission cost
3 Distribution expenses
4 Royalty
5 Power purchase cost
6 Administrative expensive
7 Interest
8 Depreciation
9 Defined over venue expenditure written off.

4.2.1 Variable cost Analysis

Variable costs are those cost which varies in direct proportion to change in level of activity of output but per unit variable cost is constant. The variable cost is presented as follows.

Table 4.2

Variable Cost Table

(In Million)

Year / Detail	2007	2008	2009	2010	2011
Generation	811.12	855.64	979.76	1119.7	1823.22
Power Purchase	6391.95	6967.57	7437.04	7691.28	9078.76
Royalty	897.5	970.46	839.18	796.12	888.08
Transmission	232.13	240.88	274.85	328.16	345.16
Total Variable Cost	8332.7	9034.55	530.83	9935.27	12135.22
% Change with respect to previous year	-	8.42%	5.5%	4.24%	22.14%

Above table shows that total variable costs are increasing each year are 8332.7, 9034.55, 9530.83, 9935.27 and 12135.22 in 2007, 2008, 2009, 2010 and 2011 respectively. Percentage increases in total variable cost are 8.42%, 5.5%, 4.24% and 22.14% in 2008, 2009, 2010 and 2011 respectively. In 2009 and 2010 variable cost increase in decreasing Ratio and 2011 increase in increasing ratio. Less variable cost indicates high risk project and high variable cost indicate low risk.

4.2.2 Fixed Cost Analysis

The fixed cost remain unchanged in total despite the change in output level with in year, the fixed cost on per unit basis decreases as the level of activity increases and vise versa. Fixed cost in total may very for different fiscal year. The fixed cost is presented in table below.

Table 4.3

Fixed Cost Table

(In Million)

Year / Detail	2007	2008	2009	2010	2011
Distribution expenses	1703.70	1834.39	2110.01	2575.09	2867.58
Administrative expenses	419.5	479.59	683.98	651.69	797.98
Interest	3050.9	2385.41	2274.37	2492.55	3204.00
Depreciation	1816.9	1856.47	1895.17	2361.20	2498.26
Profit/ loss in foreign exchange	42.7	(493.39)	484.10	813.96	809.23
Street light due written off	-	-	-	863.00	-
provision of losses on property, plant & equipment	65	60	60	-	-
Provisions (including employee retirement benefits)	-	-	1354	1246	1550
Deferred revenue expenditure written off	105.4	42.56	108.51	96.68	150
Total fixed cost	7204.10	6165.03	8970.14	11100.17	11877.05
Increase in respect to previous year	-	(14.42%)	45.50%	23.75%	7%

Above table shows that total fixed cost are 7204.10, 6165.03, 8970.14. 11100.17 and 11877.05 in 2007, 2008, 2009, 2010 and 2011 respectively. Total fixed cost decrease in 2008with respect to previous year and remaining years 2009, 2010 and 2011 are increasing with respect to previous year. Percentage increase in fixed cost with respect to previous year are (14.42%), 45.50%, 23.75% and 7% in 2008, 2009, 2010 and 2011 respectively. The greater fixed cost indicated more risky project than lesser fixed cost.

4.2.3 Gross profit Analysis

One of the most common ratio is operational analysis is the calculation of gross profit as a percentage of net sales. A firm should have a reasonable gross profit margin to ensure the adequate coverage for operating expenses of the firm and sufficient return to the owners of the business. Therefore, greater the gross profit margin in the positive aspect of business organization. Gross profit margin expenses the relationship between gross profits and is usually expressed in percentage. The gross profit should be adequate to cover operating expenses and to provide fixed changes to pay dividend and build up reserves. And it is calculated by dividing gross profit by net sales as follows:

$$\text{Gross Profit Margin Ratio} = \frac{\text{Gross Profit}}{\text{sales}}$$

Table 4.4

Sales, variable cost and gross profit ratio of NEA

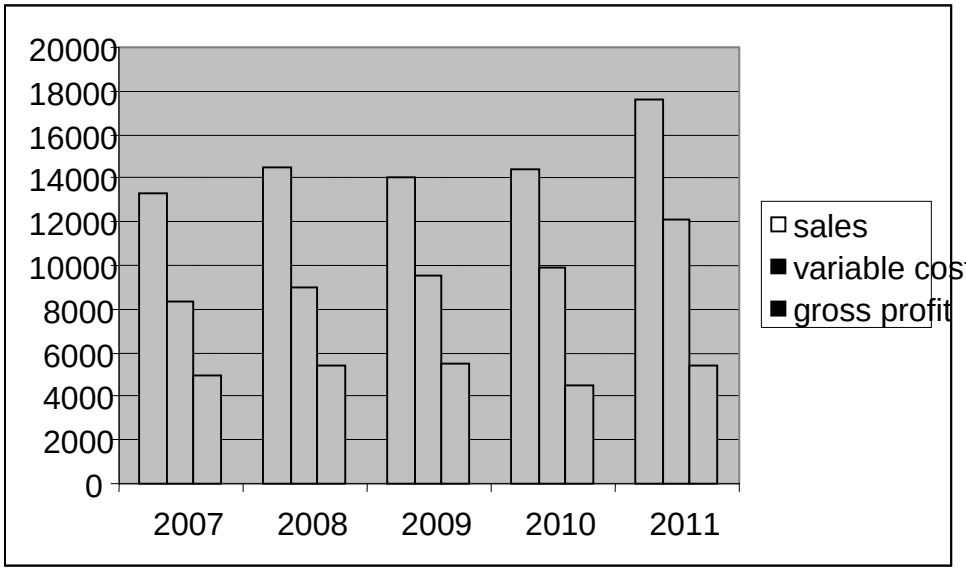
(In Million)

Year	2007	2008	2009	2010	2011
Sales (A)	13331.9	14449.73	14041.49	14405.93	17586.91
Variable cost (B)	8332.70	9034.55	9530.83	9935.27	12135.22
gross profit (A-B)	4999.2	5415.18	5510.66	4470.66	5451.69
Gross Profit	37.50%	37.48%	39.25%	31.03%	31%

Above table shows that Gross profits are 4999.20, 5415.18, 5510.66, 4470.66 and 5451.69 in 2007, 2008, 2009, 2010 and 2011 respectively. Percentage Gross Profit with respect to sales is 37.50%, 37.48%, 39.25%, 31.03% and 31% in 2007, 2008, 2009, 2010 and 2011 respectively.

Figure 4.3

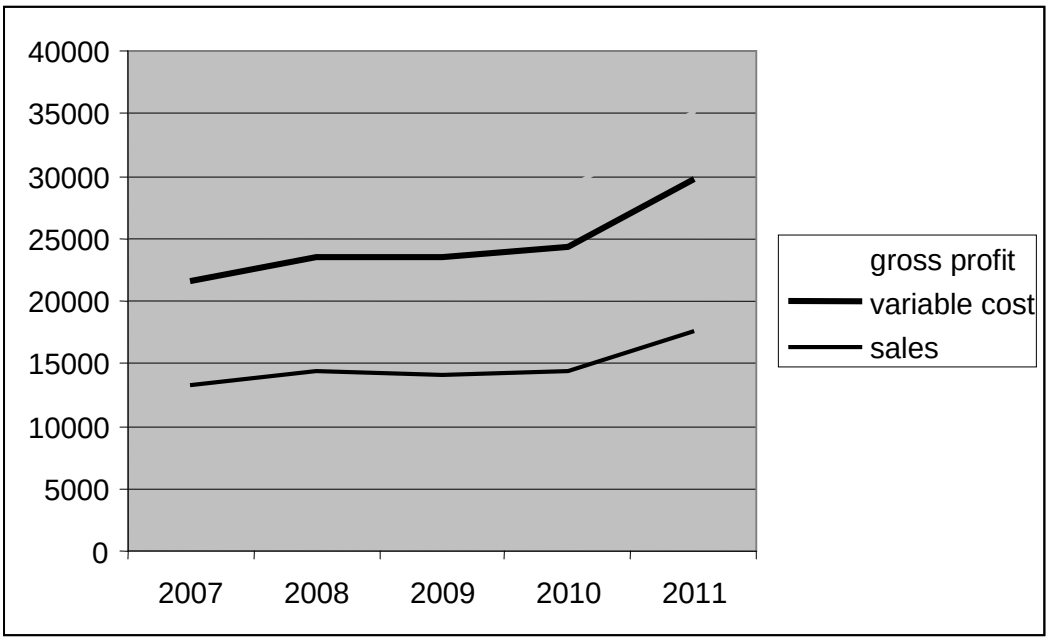
Sales, Variable Cost and Gross Profit in Multiple bar diagram



The above diagram shows sales in increasing with respect to previous year except in 2010 variable cost increasing with respect to previous year. Gross Profit increase in 2008 and 2009 with respect to previous year but in 2010 it is decrease with respect to previous year it is increase in 2011.

Figure 4.4

Sales variable cost and Gross Profit in trend line



The above trend line explains sales in increase in trend with respect to previous year expect in 2010, variable cost trend line increase with respect to previous year Gross profit increase in 2008 and 2009 with respect to previous year but in 2010 it is decrease with respect to previous year. It is increase in 2011.

Table 4.5

Income Statement Analysis under Variable Costing

Year / Detail	2007	2008	2009	2010	2011
Sales	13331.90	14449.73	15041.49	14405.93	17586.91
Other income	639.90	1016.61	934.66	1601.67	1124.44
Total Revenue	13971.80	15466.34	5976.15	16007.60	18711.35
Less: Variable	8332.70	9034.55	9530.83	9935.27	12135.22

cost					
Contribution margin	5639.10	6431.79	6445.32	6072.33	6576.13
Less: Total fixed cost	7204.10	6165.03	8970.14	11100.17	11877.05
Net income before tax	(1565)	266.76	(2524.82)	(5027.84)	(5300.92)
Less: Tax	-	73.42	(57.39)	(97.81)	-
Net income after tax	(1565)	193.34	(2467.43)	(4930.03)	(5300.92)

Above table shows that the Nepal electricity Authority's total revenues are 13971.80, 15466.34, 15976.15, 16007.60 and 18711.35 in 2007, 2008, 2009, 2010 and 2011 respectively which are increase every year. There are contribution margin are 5639.10, 6431.79, 6445.32, 6072.33 and 6576.13 in 2007, 2008, 2009, 2010 and 2011 respectively. There are net income before taxes are (1565), 266.76, (2524.82), (5027.84) and (5300.92) in 2007, 2008, 2009, 2010 and 2011 respectively. The Net profit after tax are (1565), 193.34, (2467.43), (4930.03) and (5300.92) in 2007, 2008, 2009, 2010 and 2011 respectively.

4.2.4 Contribution Margin and Contribution Margin Ratio

Contribution margin is the difference between sales amount and variable cost. it is also an amount, which is equal to the sum amount of fixed cost and profit. Contribution margin can be written in the formula form as:

CM = Sales Revenue - Variable costs

While calculating the BEP sales volume and units then it is necessarily to calculate the contribution margin and CM Ratio. Contribution margin

ratio is also known as profit volume ratio. As the contribution margin fluctuates generally, CM ratio also fluctuates. The above maintained topic can detail explained by the following table here.

Table 4.6

Analysis of contribution Margin and Contribution Margin Ratio

(In million)

Year / Detail	2007	2008	2009	2010	2011
Total Revenue	13971.80	15566.34	15976.15	16007.60	18711.35
Variable cost	8332.70	9034.55	9530.83	9935.27	12135.22
Contribution margin	5639.10	6431.79	6445.32	6072.33	6576.13
Contribution margin ratio	0.4036	0.4132	0.4034	0.3793	0.3515

Above table shows that contribution margin ratio of NEA are 0.4036, 0.4132, 0.4034, 0.3793 and 0.3515 in 2007, 2008, 2009, 2010 and 2011 respectively. Higher Contribution Margin Ratio is greater risk and profitability than lower.

4.2.5 Analysis of BEP and Margin of Safety

Break- even analysis is the most widely known form of the cost volume profit analysis. Therefore, cost volume profit analysis is also called break-even analysis.

Break Even point is the level of activity at which total cost equals to total revenue. In other words, break- even point is a point of "no profit no loss ". If the sales or production is higher than the break- even point volume, there will be profit and if the sales or production is less than BEP sales, there will be loss. Break-even point can be determined by using these

methods.

a. Algebraic or Formula Method

b. Graphic or Chart Method

Margin of safety is the difference between the budgeted or actual sales revenue and the break even sales volume. It states the amount by which sales can drop before loss begins to be incurred. Larger margin of safety saves the firm. A high margin of safety is particularly significant in times of depression when the demand for the firm's product is falling. A low margin of safety may result for a firm, which has a low contribution ratio. Margin of safety can be calculated by using the following formula:

Margin of Safety (MOS) = Actual Sales - Break Even Sales

Table 4.7

Analysis of BEP and Margin of Safety

(In million)

Year / **Particulars**	2007	2008	2009	2010	2011
Total Cost	15536.70	15199.58	18500.97	21035.44	24012.27
Actual sales (A)	13971.80	15566.34	15976.15	16007.60	18711.35
Fixed cost (B)	7204.10	6165.03	8970.14	11100.17	11877.05
Contribution margin Ratio (C)	0.4036	0.4132	0.4034	0.3793	0.3515
BEP Volume (B/C) [D]	17849.60	14920.21	22236.34	29264.88	33789.62
Margin of Safety (A-D)	(3877.8)	646.13	(6260.19)	(13257.28)	(15078.27)

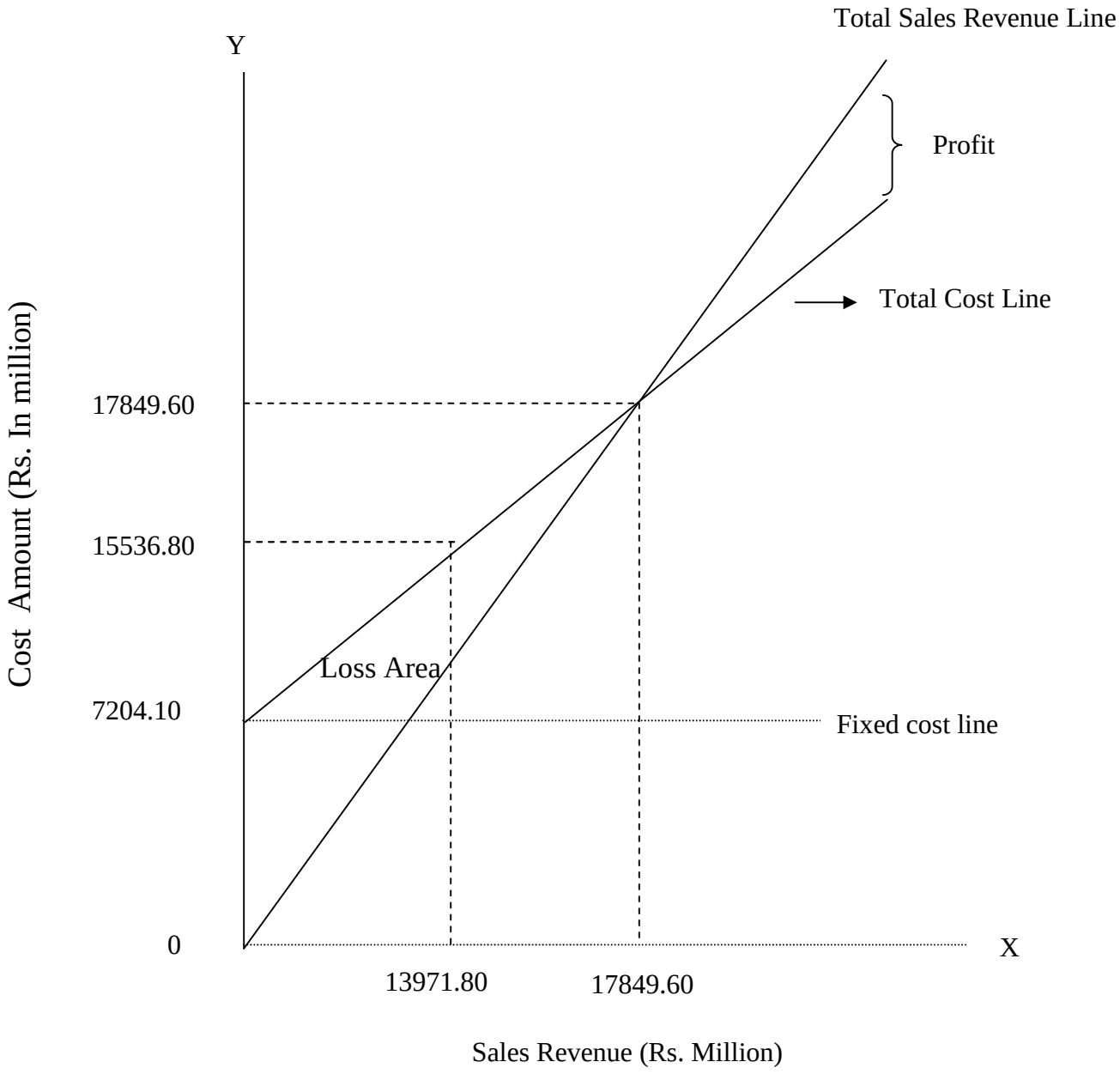
Above table shows that BEP in Rs. are 17849.60, 14920.21, 22236.34, 29264.88 and 33789.62 in 2007, 2008, 2009, 2010 and 2011 respectively.

Margin of safety of NEA are (3877.80), 646.13, (6260.19), (13257.28) and (15078.27) in 2007, 2008, 2009, 2010 and 2011 respectively.

Figure - 4.5

Graphical Representation of BEP (Rs.) for the year 2007

(In Million)



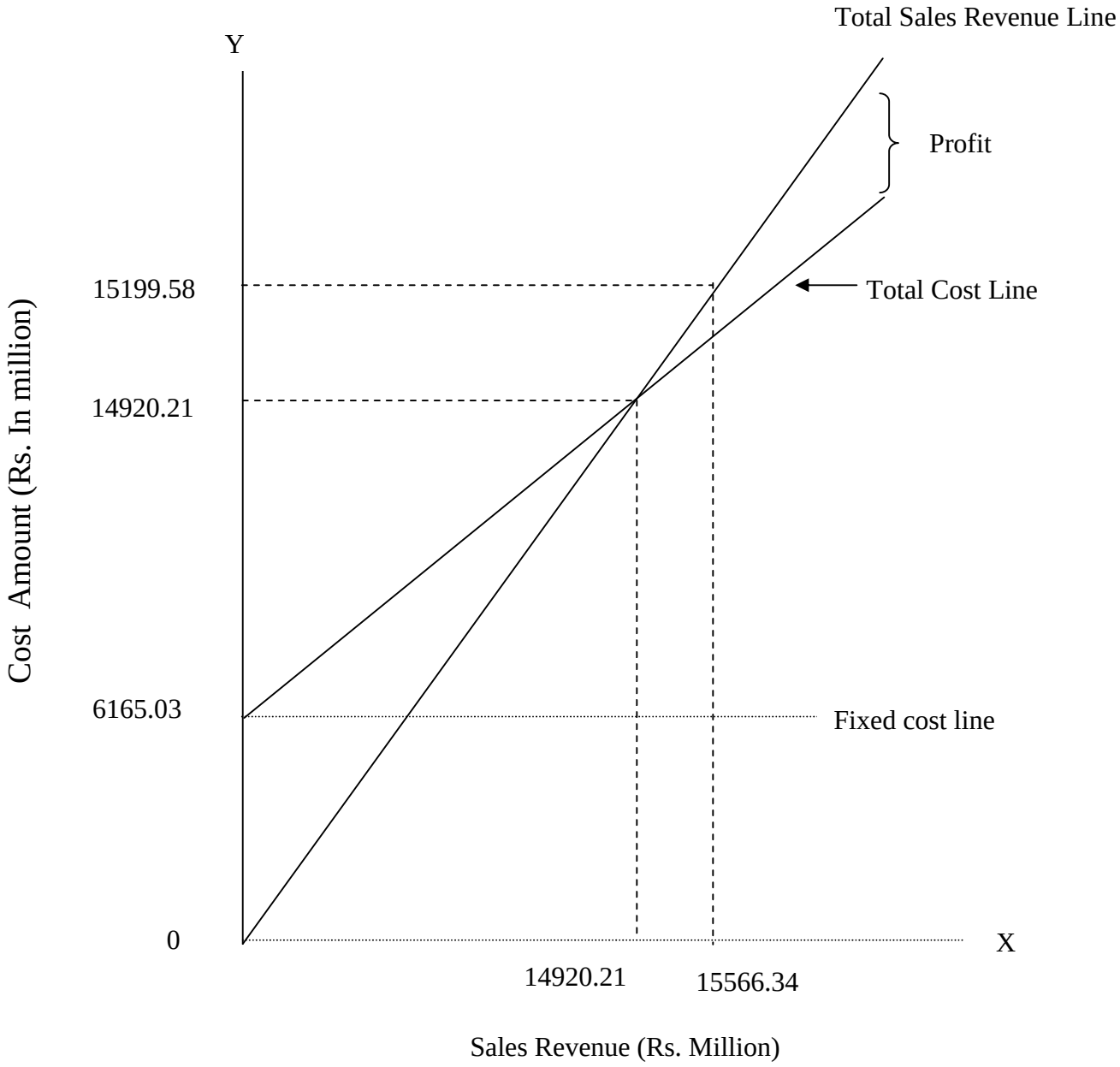
A Simple break even chart of NEA for the fiscal year 2007 is shown in above. In the above chart sales revenue is shown in X-axis and cost amount shown in y-axis in the form of rupees in Million.

From the above chart the total fined cost of the industry for above mentioned time period in Rs. 7204.10. It is parallel to X-axis. Since the variable cost directly varies with unit of production therefore it is sloping upward to right sides. It no production is made then the variable cost is zero but still company should bear the fixed cost Rs. 7204.10 million. But total sales revenue curve originates. From the origin because sales revenue is zero when there are zero volume sales in the market. And as the sales volume increases sales revenue also increases the equilibrium point in the graph where sales revenue curve and total cost curve cross each other total is known as break even point. Below this print the company cover its costs as a result are suffers from the loss. And above this point sales revenue exceeds the total cost which provides the profit to the company. In the figure above the company has only below its break even point and creates the sales volume of Rs. 17849.60 million. Where the total the total cost Rs.15536.80 million imposed for generating sales volume is Rs. 13971.80 million where the loss of the company (Actual sales-total cost) equal to Rs. 1565 million.

Figure - 4.6

Graphical Representation of BEP (Rs.) for the year 2008

(In Million)



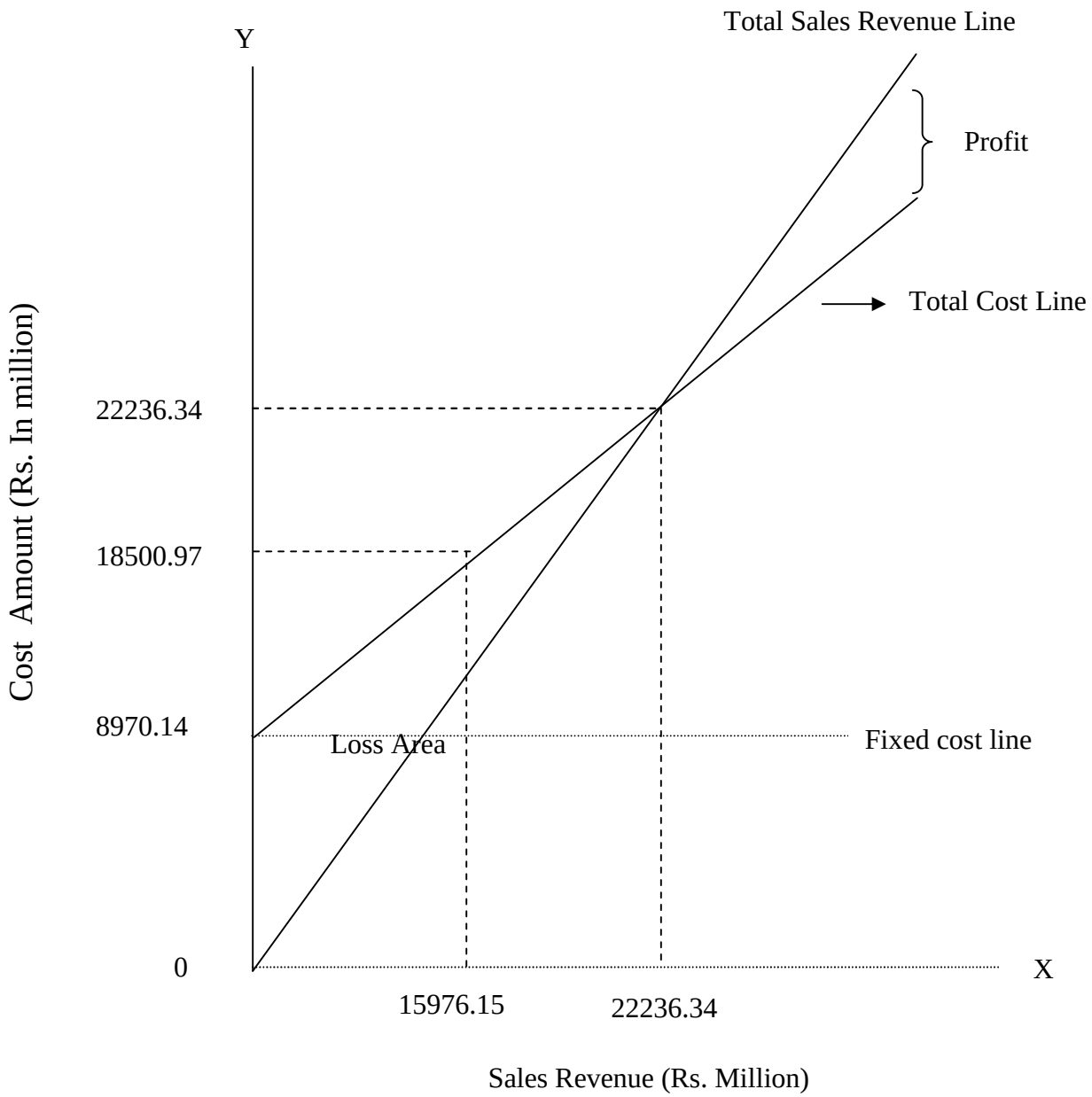
Above fig. shows that the break even chart of Nepal Electricity Authority for the financial year 2008 has shown above, where X-axis represents the sales revenue and Y-axis representing cost amount. In this financial year cost revenue as well as sales revenue has been increased compared to financial year 2007. Sales revenue has increased by Rs. 1494.54 million

and break even point is decrease by Rs. 2929.39 million.

Figure - 4.7

Graphical Representation of BEP (Rs.) for the year 2009

(In Million)



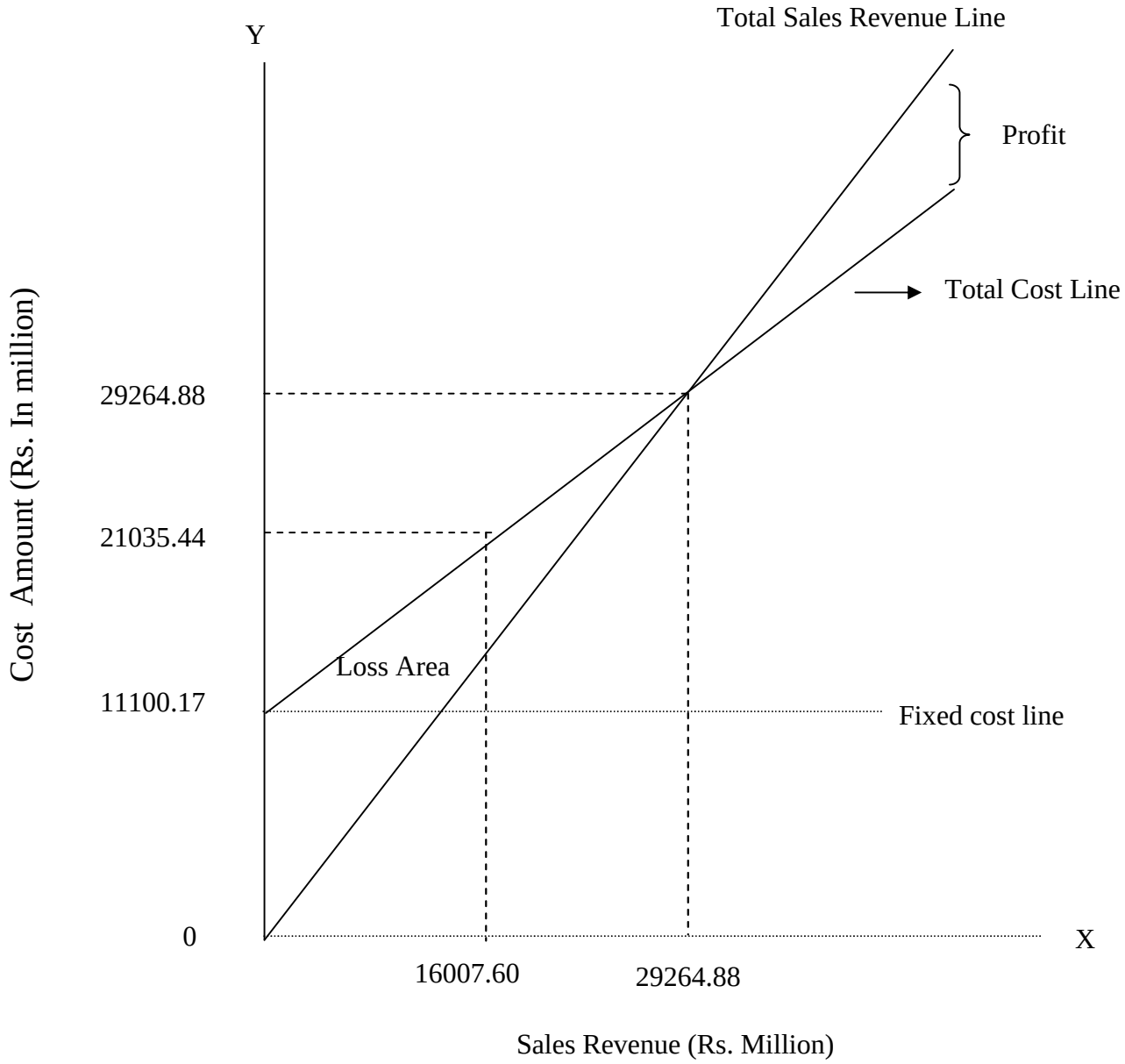
In the above figure, breakeven chare to Nepal Electricity Authority for the financial year 2009 has shown X-axis as sales revenue and Y-axis as cost revenue has been compared to the financial year 2009. Fixed cost of

NEA is 8970.14. Break even point, Actual sales revenue and Total cost of NEA are 22236.34, 15976.15 and 18500.97 respectively.

Figure - 4.8

Graphical Representation of BEP (Rs.) for the year 2010

(In Million)

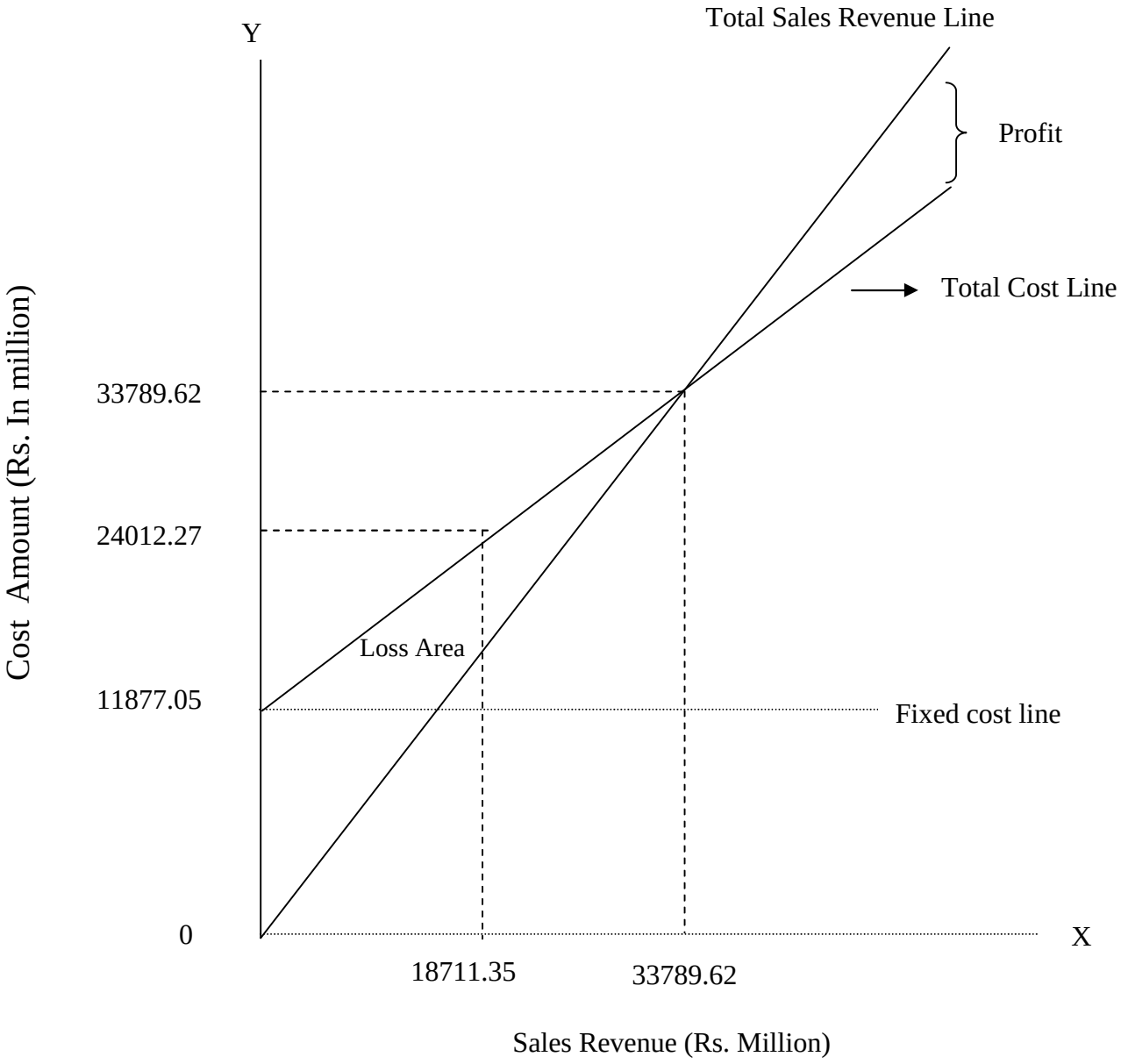


As per the above figure, breakeven chart of Nepal Electricity Authority for the financial year 2010 has shown X-axis as sales Revenue and Y-axis as cost Revenue. Fixed cost of NEA is 11100.17. Break Even point volume, Actual Sales and Total cost are Rs. 29264.88 million, Rs. 16007.60 million and Rs.29264.88 million respectively.

Figure - 4.9

Graphical Representation of BEP (Rs.) for the year 2011

(In Million)



In the above graph table, break even chant of Nepal Electricity Authority for the financial year 2011 has shown X-axis as sales Revenue and Y-axis as cost revenue. The company has below its break even point and creates the sales volume of Rs. 18711.35 million where the total cost imposed for generating sales volume is Rs. 24012.27 million where faces the loss of the company. Fixed cost and BEP sales of NEA are Rs.11877.50 million and Rs.33789.62 million respectively.

4.3 Sensitivity Analysis

Sensitivity analysis is the measurement of elasticity of the change in cost volume profit factors on break even pointer given profit. It is another popular technique of testing the cost volume profit variables. Profit is the main function among the variety of factors. CVP factors can be affected by change in volume, cost and prices. Profit may be affected by the change in price, volume variable cost, fixed cost and combinations of factors. Which shows proportionate relationship, Positive relationship, inverse relationship and no relationship.

4.3.1 Effect of changes in Sales value

Any positive changes the sales revenue will lead to increase in PV ratio. Lowering the BEP and finally increasing profit. On the other hand if any negative change appears in sales revenue, it results decrease in P/V ratio, increase BEP and decrease profit. To see the effect of change is sales value, we increase and decrease sales revenue of PV 2011 by 10% making other things constant, we get the following result.

Table 4.8

Income statement with 10% changes in sales price for the fiscal year 2011.

Particulars	Changes of Sales Revenue		
	Original	10% Increase	10% Decrease
Sales Revenue	18711.35	20582.49	16840.22
Less :- Variable Cost	12135.22	12135.22	12135.22
Contribution Margin	657613	8447.27	4705
Less : Fixed Cost	11877.05	11877.05	11877.05
Profit/Loss	(5300.92)	(3429.78)	(7172.05)
Change in Profit/Cost	-	1871.14	(1871.13)
P/V Ratio	0.3515	0.4104	0.2794
BEP in Rs.	33789.62	28940.18	42509.13
% change in BE	-	(14.35)	25.80%

Above table shows that when sales price of NEA is increased by 10%. Net loss is reduced by Rs. 1871.14 million and PV ratio is increased to 0.4104 from 0.3515. When sales revenue is increased by 10% break even sales is reduced by 28940.18. When sales revenue is decrease by 10% net loss is increased by Rs. 1871.13 million. PV ratio is decreased to 0.2794 from 0.3515 and the break even sales are increased to 42509.13 million from 33789.62 million. Break even sales is increased by 25.80%.

4.3.2 Effect of change in variable cost

When the variable cost is changed without changing the sales revenue and fined cost, we can find the change result in PV ratio, profit and BEP. Chain effect appears with any change in variable cost towards profit, if variable cost is lowered then PV ratio will increase, BEP will lower and

profit rises. But is variable cost is increased, then it will lower PV ratio, increases BEP and finally reduces profit. To see the effect of change in variable cost, we increase and decrease variable cost of FY 2011 by 10% making other things constant. We get the following result.

Table No.4.9

Income statement with 10% changes in variable cost for the fiscal year 2011

Particular	**Changes of Sales Revenue**		
	Original	**10% variable cost Increase**	**10% variable cost Decrease**
Sales Revenue Less :- Variable Lost	18711.35 12135.22	18711.35 13348.74	18711.35 10921.70
Contribution Margin Less : Fined cost	657613 11877.05	5362.61	7789.65 11877.05
Profit/Loss	(5300.92)	11877.05	(4087.40)
Change in Profit/Loss	-	(6514.44)	1213.52
P/V Ratio	0.3515	(1213.52)	0.4163
BEP in Rs.	33789.62	0.2866	28530.03
% change in BE	-	22.64%	(15.57%)

Above table shows that when sales price of NEA is changed by 10%. When variable cost is increased by 10%, Net loss of NEA is increased by Rs. 1213.52, million and PV ratio is decreased to 0.2866 from 0.3515. Break even a sales is increased by 22.64% and reach to Rs 41441.21 million. When variable cost of NEA is decreased by 10%, net less is loss is decreased by 1213.52 million and PV ratio is increased to 0.4163. Break even sales is reduced by 15.57% and reach to Rs. 28530.03 million.

4.3.3 Effect of Changes is fixed Cost

When fixed cost is changed it does not bring any change in contribution margin and PV Ratio. But it changed net Profit and BEP amount. If fixed cost rises in any special conditions like change in managerial policy, inflection and due to some eternal factors, the BEP will rise and profit falls. But if fixed to see the effect of change in fixed cost, we increase and decrease fixed cost of PV 2011 by 10% making other things constant. We get the following result.

Table No.4.10

Income statement with 10% changes in fixed cost for the fiscal year 2011

Particulars	**Changes of Sales Revenue**		
	Original	**10% Increase in fixed cost**	**10% Decrease in fixed cost**
Sales Revenue	18711.35	18711.35	18711.35
Less :- Variable Lost	12135.22	12135.22	12135.22
Contribution Margin	657613	6576.13	6576.13
Less : Fixed cost	11877.05	13064.76	10689.35
Profit/Loss	(5300.92)	(6488.63)	(4113.22)
Change in Profit/Loss	-	(1187.70)	1187.70
P/V Ratio	0.3515	0.3515	0.3515
BEP in Rs.	33789.62	17168.59	40410.67
% change in BE	-	10%	(10%)

Above table shows that changed in fixed cost does not bring any effect in contribution margin and PV ratio. But when fined cost is increased by 10%, net loss is increased by Rs. 1187.70 million and Break even sales increases upto Rs. 37168.59 million from Rs. 33789.62 million. The increase of break even sales is 10% more than original break even sales.

When fixed cost is decreased by 10% net loss is decreased by 1187.70 million. Break even sales is also decrease due to reduction in fixed cost and break even sales becomes Rs. 30410.67 million from Rs. 33789.62 million. So, we can say that there is proportionate relationship between break even print and fixed cost, where one leads to change another proportionately.

4.4 Major Findings

Research work is done to find something new, based on the objective of the study. The major findings on the basis of various types of analysis are as follows:

- NEA has not segregated cost into fixed and variable there are no practicing identifying semi-variable cost and their segregation into fixed and variable cost. CVP analysis is not practicing by NEA.
- Variable cost of NEA is more than its fixed cost in total cost structure concept FY 2010.
- NEA has no effective plan and technique to reduce costs. Goals and objectives of NEA are not cleanly communicated to all levels of management.
- Margin of safety in NEA is negative because break even sales is higher than actual sales. There is no safety margin in NEA.
- NEA has various projects but not complied in specified time and cost of production is increased.
- Sensitivity text shows that the changes in various factors cause the increase and decrease in PV ratio, BEP, margin of safety etc.
- NEA is not able to earn profit percentage loss is very high. NEA has profit from production but high amount of interest and depreciation creating loss.
- Percentage increase in total revenues with respect to previous year

is 5.67%, 2.63%, 0.2% and 16.9% in 2007, 2008, 2009, 2010 and 2011 respectively.

- Bar diagram and trend line shows that total revenue is increasing every year except 2010.
- Variable costs are increasing in decreasing ratio in 2007, 2008, 2009 and 2010 but in 2011, it is increasing in increasing ratio.
- Total fixed cost decrease in 2008 and increase in 2008 and increase in remaining year.
- High fixed cost is higher risky project than lower fixed cost. Higher fixed cost is higher profitability.
- Gross profit of NEA increase in 2008, 2009 and 2011 with respect to previous year but it is decrease 2010 with respect to previous year.
- The financial position of the NEA is not satisfactory because net profit margin is not satisfactory.
- Contribution margin is increasing in every year but contribution margin ratio increasing in 2008, and remaining year it is decreasing.
- BEP of NEA are 17849.60 million, 14920.21 million 22236.34 million, 22264.88 million and 33789.62 million in 2007, 2008, 2009, 2010 and 2011 respectively.
- BEP diagram shows that BEP sales are greater than actual sales in every year except 2008.
- Increase in sales price increases in profitability, contribution margin and increase in break even point and vice versa.
- Change in fixed cost does not affect contribution margin. Increase in fixed cost decrease in profit but increase in BEP and vice versa.

This chapter deals with the finding and conclusion had drawn from study of cost-volume-profit analysis of NEA. This chapter consists of three

sections the first section provides the summary of the study the second section drawn the conclusion of the study and final section gives recommendations to solve the problems observed on the basis of findings.

CHAPTER-V

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary

Management can effectively achieve organizational objectives through efficient use of scarce and limited resources in a changing environment of business. Future in uncertain which created risk and to avoid or reduce risk proper management is very essential. Cost volume profit analysis is an analytical technique for studying the relationship between cost, volume and profit planning process of the organization.

In fact the entire filed of profit planning is associated with the CVP relationship, without CVP analysis determination of profit planning and controlling processes are almost impossible or useless.

The main objective of the present study is to analysis CVP analysis of NEA. As per the objectives of the study, the secondary data were used and related other information were collected through informal interviews. The collected data were analyzed with analytical and descriptive approach for sales revenue analysis, cost analysis, PV ratio analysis, Break even analysis, sensitivity analysis etc.

Above CVP analysis shows that the company has low contribution margin, low P/V ratio, high BEP and negative margin of safety. The sensitivity test of CVP analysis shows that if variable and fixed cost increases, the break even point will also increases and if they were decreased then, the break even point also decreases. But increase in sales price and also decreases. But increase is sales price the break even point

will decrease it indicates that the relationship between sales price and break even point is negatively correlated. Company's condition is very poor and requires positive action to improve its position. Lack of detail information on scientific cost analysis and extra cost burden and loss of the company are the main reason behind not practicing profit planning and control tools like CVP analysis.

5.2 Conclusion

The analysis shows there is a vast gap between theory and practice in the content of Nepalese industries. Different types of profit planning tools are taught in colleges but the application of there are found in minimum scale in Nepal electricity authority.

1. Different types of profit planning tools, which are used in the academic field and in multinational companies of developed nation, are not applied by NEA. NEA has not segregating cost into fixed and variable. Segregation of cost into fixed and variable is the fundamental of CVP analysis. The company did not adopt the cost control programme. The accumulation and apportion of cost on the basis of cost center is not done by the company. Therefore, NEA has not been able to use CVP analysis.
2. Sales revenue of NEA in increasing in fluctuating trend. NEA is not producing sufficient electricity. Profit pattern of the company shows that the company is ineffective in the profit planning. The cost structure of NEA discloses variable cost and fixed cost which indicated the risk due to has high variable cost and high amount of interest CVP analysis shows that the contribution margin did not cover the fixed cost. BEP of the company is greater than sales due to low PV ratio. The business of the company is in high operating risk due to higher break-even sales. The analysis of cost behaviors facilities the

use of another CVP technique called as sensitivity analysis which supports the decision making. The change in variable cost, fixed cost or sales price has certain impact on BEP. There is direct relationship between fixed cost and BEP.

3. The plans are prepared from top level and later it is communicated to the lower level. There is lack of authorities to formulate various plans in lower level management. Company has not analyzed its strengths and weaknesses. NEA has not able to utilize its capacity in optimum level, very high cost on large projects are another problem of NEA. Most of the public enterprise created financial burden to the government. To run NEA properly controlling of cost and participative management are essential. To strengthen the positive and to carry out PPC activities the company should use the CVP analysis.

5.3 Recommendation

On the basis of above study, the following recommendation seems to be fruitful to the management of NEA.

- NEA has not practiced CVP analysis. So it is suggested that NEA should practice CVP analysis and cost volume profit relationship should be considered while formulating profit plan.
- Classification of cost into variable and fixed as well as controllable and non-controllable must be made with in specific framework of responsibility centre and time.
- Cost plan of NEA are not systematically maintained separate cost control department need to be established to central cost.
- Sales revenue of NEA is increasing trend but it is not sufficient to cover the cost and earn profit.
- Company need to restructure its capital structure as huge amount is paid as interest on long term loan every year. Such burden could be

minimized through interned financing.

- Price rising is not only one alternative to increase sales revenue controlling is necessary to decrease the wasteful expenses. NEA should adopt the controlling tools.
- CVP analysis and PPC manuals should be communicated from top to lower levels. All personal should be participated on decision making and planning process.
- All decision makers should be fully aware and understand the cost structure of their operation, otherwise CVP analysis will provide meaningless information.
- Systematic and periodicals performance reports should be strictly followed to trace poor performance and take corrective action immediately and finely.
- NEA should reduce variable cost and fixed cost as well as increase sales revenue to generate profit. This also helps in reducing break even sales.
- Financial state of the company is in decreasing stage and it should implement new and effective marketing strategies to improve the company.
- NEA should try to reduce the volume of popular purchases and replacement should be made by its capacity utilization, ultimately it helps to increase profit.
- It is suggested the NEA should try to avoid the load shedding and gain peoples faith.
- NEA should invest financial resources efficiently NEA should consider cost benefit ratio in selection of project.

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Nepal Electricity Authority
Highlights of FY 2010/11

Description	FY 2011*	FY 2010	Increase (Decrease)	
Revenue:			**Amount**	**%**
Net Sale of Electricity (M.Rs.)	17,586.91	14,405.93	3,180.98	22.08
Income from other services (M.Rs)	1,124.44	1,601.67	(477.23)	(29.80)
Total Revenue (M.Rs.)	**18,711.35**	**16,007.60**	**2,703.75**	**16.89**
Operating expenses				
Generation Exps. (M.Rs)	1823.22	1,119.71	703.51	62.83
Power Purchase (M.Rs)	9,078.76	7,691.28	1,387.48	18.04
Royalty (M.Rs)	888.08	796.12	91.96	11.55
Transmission Expenses (M.Rs)	345.16	328.16	17.00	5.18
Distribution Expenses (M.Rs)	2,867.58	2,575.09	292.49	11.36
Administration Expenses (M.Rs)	797.98	651.69	146.29	22.45
Depreciation Expenses (M.Rs)	2,498.26	2,361.20	137.06	5.80
Deferred Revenue Expenditure (M.Rs)	150.00	96.68	53.32	55.15
Total operating Expenses (M.Rs)	**18,449.04**	**15,619.93**	**2,829.11**	**81.11**
Operating Surplus (M.Rs)	**262.31**	**387.67**	**(125.36)**	**(32.34)**
Interest on Long term Loans (M.Rs)	3,204.00	2,492.55	711.45	28.54
Foreign Exchange Translation Losses	809.23	813.96	(4.73)	(0.58)
Municipalities street light dues written off		863.00	(863.00)	(100.00)
Provision for Employee benefits	1.550.00	1,246.00	304.00	24.40
Other Exps. (Income) Including Prior year's Adj	50.00	65.38	(15.38)	(23.52)
Net Income / Loss (M.Rs)	**(5,350.92)**	**(5,093.22)**	**(257.70)**	**5.06**
Longterm Loans (M.Rs)	60,381.19	53,78.45	6,592.74	12.26
Net property, Plan and equipment (M.Rs)	84,740.24	81,238.50	3,501.74	4.31
Number of Consumer	1,854,275	1,670,610	183,665	10.99
Total sales of electricity (GWH)	2,677.83	2,204.59	473.24	21.47
Internal Sale/Utilised (GWh)	2,603.35	2,158.21	445.14	20.63
Annual Average Consumer's consumption (kWh)+	1,403.97	1,291.87	112.10	8.68
Average Price of electricity (Rs. kWh)	6.71	6.69	0.02	0.36
Peak Load interconnected system (MW)	885.28	812.50	72.78	8.96
Total Available Electric Energy (GWh)	3,689.27	3,130.77	558.50	17.84
NEA Hydro Generation (GWH)	2,104.52	1,839.52	265.00	14.41
Thermal Generation (GWh)	13.12	9.06	4.06	44.81
Purchased Energy (GWh)- India	612.58	356.45	256.13	71.86
-Nepal (Internal)	359.05	925.74	33.31	3.60
Exported Energy (GWh)	74.48	46.38	28.10	60.59
Self consumption (GWh)	30.90	30.70	0.20	0.65
Net System Losses (Percentage)	**26.58**	**28.60**	(2.02)	(7.06)

Note:

) Provisional Figures; Subject to final audit.
+ on internal sale