COST VOLUME PROFIT ANALYSIS

OF NEPAL AUSHADHI LTD

By

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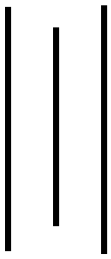

In partial fulfillment of the requirement for the degree of

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RECOMMENDATION

This is to certify that the Thesis

Submitted by:

ACHYUT SHRESTHA

Entitled:

COST VOLUME PROFIT ANALYSIS

OF NEPAL AUSHADHI LTD

has been prepared as approved by this Department in the prescribed format of the Faculty of Management. This thesis is forwarded for examination.

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VIVA-VOCE SHEET

We have conducted the viva –voce of the thesis presented

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OF NEPAL AUSHADHI LTD

And found the thesis to be the original work of the student and written according to the prescribed format. We recommend the thesis to be accepted as partial fulfillment of the requirement for the degree of Master of Business Studies (M.B.S.)

Viva-Voce Committee

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DECLARATION

I hereby declare that the work reported in this thesis entitled "**COST VOLUME PROFIT ANALYSIS OF NEPAL AUSHADHI LTD**" submitted to Office of the Dean, Faculty of Management, Tribhuvan University, is my original work done in the form of partial fulfillment of the requirement for the degree of Master of Business Study (M.B.S.) under the supervision of **Yamesh Man Singh, Associate Professor** of Shanker Dev Campus.

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CHAPTER - I

INTRODUCTION

1.2 Background of the Study

Nepal is a small, landlocked country situated between two large countries China and India. The country has a lot of problems as well as prospectus too. Unemployment is said to be the biggest problem of the country. Nepal is an agricultural country. Most of the people of the nation are primarily engaged in agriculture sector therefore they are depended on agriculture to fulfill their basic needs.

Industries have not developed to the extent of expectation in Nepal. The industrial development process in Nepal started after establishment of Biratnagar Jute Mill and Udyog Parishad in 1936. People hesitate to invest due to the lack of appropriate knowledge and lack of sufficient investing capital. Unstable political environment is another reason for it .A State should effort to encourage people for investment and create new investment opportunities with the minimum required facilities. For a successful investment, first one should know his/her own financial condition. It is necessary to look into the factors, which influence the development of industries and to assess those factors.

After re-instate of democracy in 2046 B.S. some important changes took place in the field of industry. Some industries were established from the private sector thereafter. The role which manufacturing industry has been playing in the national economy is marginal but gradually, it is in increasing trend and market is also being large due to the increment of consumer needs and desires.

Establishing and running of enterprise are a risky task and it needs huge knowledge of management and profit planning. Profit planning plays a vital role in the development of an industry. Therefore, understanding of profit planning is very essential to conduct a business.

Profit planning involves two aspects; profit and planning. Profit is the primary objective of business. It is necessary for survival and growth of every business entity. Profit does not just happen, they are managed. Profit is the primary measurement of business success in any economy, if firm is not able to earn profit than it fails to hold the capital for long period. When business firm can't hold capital, it can't secure and retain other sources, such as manpower, materials, and machine etc, In other words the more profitable firm/enterprises are more attractive to the holders of the available capital.

There are several different interpretations of the term 'profit'. According to an economist, profit is the reward for entrepreneurship for risk taking. Leader of labor might say that profit is a measure of how efficiently labor has produced and that it provides a base for negotiation a wage increase. An investor will view it as a gauge of the return on his/her money. An internal revenue agent might regard it as a base for determining income taxes. An accountant will explain it simply as the excess of firm's revenue over expenditure of producing revenue in a given fiscal year.

Similarly planning is the first essence of management and all other functions are performed with in the framework of planning, planning means deciding in advance what is to be done in future? Planning starts from forecasting and predetermination of future event. Planning is the whole concept of any business organization. No firm can achieve its predetermined goal and objectives in the absence of proper plan. Hence, it is life blood of any organization which makes efficiently run towards the competitive environment. It is a method of thinking out acts beforehand. Planning is the foundation of profit realization and a plan is a projected course of action. Management is the process of planning, organizing, directing, decision-making, and controlling. In modern days profit planning is taken as an important managerial technique of decision-making. It is also regarded as a way of management and is given the name profit planning programmers; profit planning is a part of overall planning process of an organization. Cost volume profit analysis serves as a powerful tool in the hands of management for profit planning.

The systematic relationship between cast volume and profit is shown by cost volume and profit analysis. It is analytical tool for analyzing the relationship among cost, profit and sales or production volume.

CVP analysis can be used in profit planning because it provides the information about the behavior and relation of cost, volume and profit. It also provides the information about sensitivity of profit due to variation in projected amount of output or sales. CVP analysis is an important tool to look into effects on profit on profit form variation in cost and sales and to take appropriation decisions. CVP analysis is great helpful in managerial decision making especially in cost control and profit planning. Profit planning is the fundamentals aspect of the overall management functions. Therefore CVP is also known as complementary to PPC.

Profit planning can be done only when the management has the information about the cost and selling price of the product. Profit planning and control have wide application. It can be applied in both profit making and nonprofit making organizations, and also in both manufacturing and non manufacturing business.

In Nepalese context, manufacturing organizations are facing so many problems. There are need for a large number of good managers and managerial decisions in a developing country like Nepal. Most of organizations are in loss, profit earning is necessary to serve organization. For this application, profit planning tools are necessary.

Cost-volume - profit analysis is a systematic method of examining the relationship between changes in activity (i.e. output) and changes in total sales revenue, expenses and net profit. As a model of these relationships CVP analysis simplifies the real-world conditions that a firm will face. C-V-P analysis is a management accounting tool to show the relationship between the elements of profit planning. Profit planning is the function of the selling price of product, demands variable costs, fixed cost, taxes

etc. The whole picture of profit planning is associated with cost-volume-profit interrelationships. A popular technique to study cost-volume-profit relationship is break even analysis. Break-even analysis is concerned with the study of revenues and costs in relation to sales at which the firm's revenues and total costs will be exactly equal or the net income will be zero. It is a "no profit no loss" situation. This point is a corner-stone of profit planning.

1.2. Introduction of Nepal Aushadhi Limited

The gate for modern medicine was open only after establishment of British Residency in Kathmandu in 1916 with an establishment of a small hospital for the residency staff. The hospital also provided services to local people. The concept of producing modern medicine in Nepal developed only after His majesty's Government (at present Nepal Government) drafted a master plan for the utilization of medicinal plants in 1955 and implemented in 1961. As per the plan, Royal Drugs Research Laboratory (RDRL) was established in 1964, which along with various activities started manufacturing modern pharmaceutical drugs from 1968. The manufacturing unit of Royal Drugs Research Laboratory (RDRL) was converted into Royal Drugs Limited (RDL) in1972 for commercial production.

Royal Drugs Limited (RDL), an enterprise of His Majesty's Government (at present Nepal Government) of Nepal was established in 2029 B.S in the public sector as an undertaking of HMG (Nepal Government) of Nepal. The company had its beginning in plans which formulated a program for the production and marketing of some medicine by RDRL within the department of medicinal plants, Ministry of Forest Nepal. Later a separate production unit under the same laboratory was created with the help of technical assistance of the British Government in the form of experience and equipment, and become a milestone in the pharmaceuticals industry of the nation.

It run for the four years as trial period in manufacturing and marketing of pharmaceuticals. After successful trial period of four years, the production unit was converted into a company in accordance with the company act. To begin with, the

company began its activities from a small building situated at Thapathali. Now the company is operating at Babarmahal, Where it has 45 ropanies of land, which includes 9000 square feet of main factory building and other smaller buildings.

The company initiates its activities with an authorized capital Rs. 15,000, 0000 and paid up capital Rs. 6,342,000. Currently the company's authorized capital is of Rs. 150,000,000 and paid up capital of RS. 75,499,000. Out of this capital, Nepal Industrial Development Corporation holds shares worth Rs700,000 and HMG (Nepal Government) owns rest of the shares. The company has also invested shares worth Rs. 1,302,000 in Herbs production and processing Company Limited.

The company is being assisted by international organization such as: UNIDO, UNICEF, ZAIKA,WHO, UNDP in terms of plants and machines. Currently, the company is facing with several drugs manufacturing companies, particularly Indian Pharmaceutical Companies.

It is noted that, the name of RDL has changed due to the development of new political situation of our country, after the JANA-ANDOLAN 2062-2063, it is renamed by Nepal Aushadhi limited.

1.7.1 Objectives of Nepal Aushadhi Limited (NAL)

The basic objectives of any running business organization are to earn profits. Profits determine the financial position, liquidity and solvency of the Nepal Aushadhi Limited (NAL).Without Profit, The main Objectives of the NAL are as follows:

- To fulfill the requirement of the people through the development of health situation by the production of better quality products of medicine and drugs at reasonable price.
- To produce new varieties of medicines as per the market demand and deliver them in time.
- To utilize the herbs and other resources and to research and develop the areas for drugs production.

- To pay more amount in National Economy by large selling of medicines.

1.7.2 Production

At present NAL is producing various types of drugs. Modern systems are used in quality control. RDL has produced different forms of medicine, which is used by Nepalese people as well as by foreign organization. NAL is serving the government not only through the supply of drugs but also by contributing to public revenue.

The following forms of medicine are produced by NAL:

- Tablet
- Capsule
- Powder and suspension
- I.V. and E.N.T.
- Ointment
- Jeevan Jal

.

1.7.3 Functions of the Company

NAL operates the following necessary activities to achieve mentioned objectives:

- To import purchase and maintain necessary raw materials, machines and tools of good quality.
- To sell the products in the different parts of the country.
- To manage training for its staffs for their development and improvement and also to reduce the gap of non-availability of specialist when required by company: through development of manpower, technicians and other personnel.
- To manage technical and non technical staffs from inside and outside the country..
- To receive and use all movable and immovable properties for the company.

1.8 Statement of the Problem

NAL is the first medicine industry of government sector in the country producing different kinds of medicines. A huge amount of money is invested for this industry. But the financial performance of the industry is not satisfactory and it is suffering from a heavy loss every year and accumulated loss of Rs 202, 851,921million to the date up to 2063. (NAL Balance Sheet Report)

How the business is being operated largely depends on how the business operation is planned. Poor performance is the outcome of poor planning, controlling and decision making. The key motive of every business enterprises is to make and maximize profit. Profit just doesn't happen by chance, it is to be managed. Cost-Volume-Profit analysis is a supplementary tool of planning for profit. Cost volume profit is immensely helpful for developing alternative strategies in sales planning and cost estimation.

If the business enterprise suffering from continuous loss then the profit plan of the business should be reviewed. This study is basically designed to solve the following problems by taking into account the budget's role in planning the profit:

The NAL is one of the biggest industries in the country. Being a large-scale industry large amount is invested from various sectors; therefore, the successful operation of the industry is very much important.

How the business is being operated largely depends on how the business operation is planned. The key motive of every business enterprise is to make and maximize profit. Profit just doesn't happen by chance, it is to be managed. Cost-volume-profit analysis is a supplementary tool of profit planning. CVP analysis is hugely for developing alternative strategies in sales planning and cost estimation.

Nepalese forms are still being run with primitive management. The lack modern management culture there is a lot of difference between the theory and practice in the business form. In Nepal, the practice of using CVP analysis tools for different management decision is rare.

CVP analysis provides the technique of profit planning framework. Based on annual published annual report, performance of the Nepalese industry is not satisfactory. Poor

performance is the outcomes of poor planning controlling, decision making. CVP analysis tool facilitates to carry planning, decision making, and controlling function? The following research questions will help to study the application of CVP analysis to make NAL successfully.

- Is Nepal Aushadhi Limited practicing cost volume profit analysis for its profit planning?
- What will be the relationship between the cost, volume and profit?
- What are the major difficulties in application of CVP analysis?
- Why are the Nepal Aushadhi Limited suffering from loss?
- Which part (i.e. CM, BEP, and MOS etc) of CVP analysis is mostly practiced and which are not practiced till now?
- What sales volume is needed to achieve break even?
- What should be the sales volume to earn a desired profit?
- What will be the profit or loss to the specified level of sales?

1.9 Objective of the Study

The main objective of the study is to examine the use of CVP analysis to plan the profit in NAL. The other specific objectives of this study are:

- To analyze different components of costs as per cost behavior.
- To study the application of CVP analysis in NAL
- To evaluate the sensitivity of profitability.
- To analyze the CVP and its impact in profitability of NAL. To study the profitability and financial position of NAL.
- To provides suggestion and recommendation on the basis of major finding.

1.10 Significance of the Study

The present research work is the study of Cost-Volume profit analysis in NAL. This study will be significance in the following ways:-

- It examines the application of CVP analysis in the company.
- This study provides necessary recommendation to the related department of the company.

- It provides information on the application of the tools under profit planning in difference circumstances.
- This study will be useful for potential managers, accountant, policy marker and planners.
- It will also provide the literature to the researcher, who wants to carry on further research in this field.

1.11 Limitations of the Study

Every research has some limitations. Basically, not availability of required data and information would be the major limitations of the study. The study is confined only to CVP analysis as a tool of profit planning and control.

Following factors will limit the Study:-

- The Study will cover the data of five fiscal years of NAL.
- The Study will be based on the secondary data, if there is necessary of primary data researcher will collect and include that also.
- The study only focuses on the sensitivity analysis of cost.

1.12 Organization of Study

The whole study was divided into the follow-up five chapters:

Chapter – I Introduction

Chapter – II: Review of Literature

Chapter – III: Research Methodology

Chapter – IV: Data Presentation and Analysis.

Chapter – V: Summary, Conclusion and Recommendations

The first chapter dealt with background, a brief overview of Nepal Aushadhi Limited, statement of problems, objectives of study, Significance of study, Limitations of study and organization of the study.

The second chapter dealt with conceptual framework including the fundamental concept of profit planning and control and the tools of profit planning and control. It also dealt with the various theoretical aspect of the CVP analysis and includes the brief review of previous research work.

The third chapter dealt with the research methodology followed to achieve the purposes of the study. It included research design, the period covered, nature and source of data, tools used, research variables etc.

In the fourth chapter, the data collected through the various sources were presented. It mainly consisted the analysis of sales plan, variable cost plan, fixed cost plan and other relevant factors analyzed from profit and loss account, balance sheet. Apart from this, sensitivity analysis and cost volume profit analysis with product mix were analyzed and findings were drawn.

In the fifth chapter, the last chapter dealt with the summary, conclusion and recommendations.

The bibliography and appendix were included at the end of the study paper.

CHAPTER-II

REVIEW OF LITERATURE

2.1 Introduction

Planning and controlling are the primary function of business. Without planning and controlling no business can run smoothly in the competitive and global environment. In fact, profit planning is a managerial technique in written form in which all aspects of business operation for a defined period. It is a formal statement of policy, plan, objectives and goals established by the management. Profit planning is deciding in advance at present, what to achieve in future.

A profit plan is the formal expression of enterprises plan, goals and objectives stated in terms of specific future period time. Mostly profit plan depends upon the objectives of the organization. Plan should achieve the goals of the organization. It determines approach in which the goals or objectives are to be accomplished commonly. The approach is described in the form of strategic, policies, programmers and procedures for achieving the chosen objectives in a given environment. Profit planning programming also provides proper organizational structure to implement the approved plans and policies.

Profit planning function of management rests upon some fundamentals views that are the conviction that a management can help the long range destiny of a manufacturing enterprise by making a continue streamed of well conceived decision. The streamed of managerial decision must generate plans and action to provide the essential inflows that are necessary of support the plans outflow of enterprises so that, realistic profit and return on investment are earned. Continuing generation of profits by managerial manipulation of the inflow and outflow provide the substance of profit planning. The aggregate meaning of the preparation of various functional annual budgets is known as profit planning. The determination of next year tends to achieve the sales which are directly related with revenue generation. The decision on new capital investment and financial borrowing represents profit planning in all cases the form of deciding now how it will use its resources i.e. manpower, material, machine and money in future. A

formal profit planning is the key to corporate survival in a world of rapid social change and intense competition. Profit planning can take the best use of firm's opportunities and resources to meet the targeted profits.

2.2.3 Profit

An organization is established to achieve some goals. Its has its own objectives. To achieve the goals of organization should clearly mention. In this competitive globalize business age, an organization whether it is public or private profit is essential. Profit is result of successful management.

Profit is the primary measure of successful business of a firm or company. It is the main test of the business enterprise performance. Simply profit is the excess of income over cost of product or services.

The basic objective of running any business or organization is to earn profit. Profit is taken to measure the competency and efficiency of the management. Profit is not just happened but it is managed. If a firm cannot make profit it cannot generate capital of future. Profit is the primary measurement of successful business in any economy. Profit is residual income left after payment to other factor of production. The difference between the outflows of expenses i.e. sale price is called profit. It is a reward for business activities. Profit is obtained by subtracting the cost from revenue. Profit determines the financial position, liquidity and solvency of the business.

The basic objective of running any business organization is to earn profit. Profit serves as yardstick for judging the competence and efficiency of management.

The word profit implies the comparison of the operation of business between two specific dates, which is usually separated by an interval of one year. In order to optimize those corporate source of wealth in which national prosperity depends on those corporate financial objective of the company is to maximize within socially acceptable limits profit from the use of funds employed by them. The maximization of

profit within socially acceptable limit implies a proper regard to public interest has been paid. No company can survive long without profit; profit is the ultimate measure of its effectiveness and in capitalized society. There is no future for private enterprise which always increased losses. The survival measure of the effective performance of a business is a profit which really is a measure of how well business performs economically. Profit is a signal for allocation of resources and a yardstick for judging managerial efficiency. Profit is primary objective of a business in view of heavy investment which is necessary for success of most enterprise. Profit in the accounting sense tends to become a long term objective, which measure not only the success of product but also the development of market of it.

According to economic perception; some economist says that profit is the rent of ability. Some says profit as reward for risk bearing of firm. It is also said that profit is return to uncertainty bearing and it is also reward for innovation. Innovations are those new products of process which increases national income more than they increase national cost (Reeki, 1998: 380-381).

In the opinion of Myres Joshn: Profit is the dominant goal in business and profit making should be the main objective in terms of which the general effectiveness of organization is measured. In other words, profit is obtained by subtracting the cost from revenue. Profit is the reward of entrepreneur rather of entrepreneur's functions.

Profits differ from the return on other factors in three respects;

- Profit is residual income and not contractual or certain income as in the case of other factors.
- There is much greater fluctuation in profit than the reward of the others factors.
- Profit may be negative but rent, wages and interest must be always being positive.

Dean Joel clearly distinguishes the views of accountant and economist about profit in the following points. The most important point of difference between economist and accountant approaches is;

- The business of cost i.e. what should be subtracted from revenue to get profit.
- The meaning of depreciation.
- The price level basis for valuation of assets.
- The treatment of capital gain and losses and perhaps most important.

According to Robert Willians the term profit in views from management is as follows;

- An intangible expression of the goals it has set for the firm.
- A measure of performance towards the achievement of it's goals.
- A means of maintaining the health growth and continuity of the company.

2.2.4 Planning

Planning is the first essence of management and all other function of performing within the framework of planning. Planning means deciding in advance, what is to be done in future? Planning starts from forecasting and pre-determination of future event. Planning is the whole concept of any business organization. No firm can achieve its pre-determined goals and objective in the absence of proper plan. Hence it is lifeblood of any organization which makes efficiently run towards the competitive environment.

Planning is also aimed at giving shape to the future. It is a basic function of management. It may be defined as the selection from among the alternative of courses for actions. It is functioned by the managers' decision what goes out to be accomplished and how they are to be reached.

The planning process which involves the both short term and long term is the most crucial component of the whole system. It is both foundation and the bond for the other elements because it is through the planning process that we determine what we are going to do, how we are going to do it and who is going to do it. It operates as the brain centre of organization.

Profit doesn't just fall, it should be properly planned. In other words, profit isn't matter of changes. It comes from effective and realistic plan. Planning is the process of developing enterprises objectives and selecting future course of action to accomplish them. It is the methods thinking about acts and purpose before planning starts comes foresting and determination of future events. It is the first essence of management and all other functions are performs within the framework of planning. So, planning is the basic foundation of profit plans.

Planning assesses the future makes provision for it and assumes the achievement of pre-defined goals. Simply the planning means the determination of any works in advance of actions. Basically, it is a decision making process that provides a base for economic and effective future course of action.

Planning means assessing the future making provision for it and assuring that establishment goal can be met with acceptable home frame. Define the planning it simplest term as determination of anything in advance of action. It is essentially a decision making process that provides a basis for economical and effective action in future. Effective planning sets the stage for integrated action to take place, reduce the number of enforceable crisis, promotes to use of more efficient methods and provides the basis for managerial function of control (Edwin B. Filppo, 1996:49).

Glen A Welsch defines management planning as the design of desired future state for an entity and effective ways of bringing about. He further explains that a fundamental purpose of management is to provide for a feed forward process. The concept of feed forward planning is generally recognized as the most difficult task facing the manager and it is one on which it is very easy to procrastinate. It is clearly indicated that planning is a decision making process of highest order, it requires management time and dedication and systemic approach. The decisions made in planning process are:

- Anticipatory, since they are made something in advance of action and
- Interrelated, since they comprise broad groups of interdependent choice from alternatives of government.

Planning is the basic foundation of profit planning and a plan is a projected course of action. Planning is a technique whereby the use of pattern of resources is carried out calculating, foresting by different methods and formulating a master plan (Agrawal, 1989: 348).

A planning process includes goal setting, resource upon the organized objectives. For the planning purpose, a firm's objective can distinguish mainly three types: prime, instrumental and specific. The prime objective is to complete the action. Instrumental objectives are for accomplishment of divisional and individual goal. Specific objectives are those objectives that have been specified as to time and magnitude, which are known as organizational goals. Therefore, companies objective provide the ultimate criteria for resolving difficulties of company and company objectives are the bases for long range profit planning.

Planning is the conscious recognition of the future of present decision. Planning is the feed forward process to reduce uncertainty about future. So planning is an intellectual process, rational way and the goal oriented task. Primary function of management and planning provides all managerial activities and it is directed towards efficiency (Welsch, 1992:3).

In operational terms, planning process involves four stages; (Welsch, Hilton and Gordon, 1995:75).

) Objectives

The first stage in the planning and control system is setting the objectives which are designed as the broad and long range desired state or position in the future. They are motivational or directional in nature and expressed in qualitative terms.

- **Goals**

The second stage in the planning process is specifying the goals. The term goals as an element in planning represent targets, specified in qualitative terms to be achieved in a specific period of time.

- **Strategies**

The next step involves laying down the strategies denote specific methods or of actions to achieve the goals. Strategies are the basic thrusts ways and tactics that will be used to attain planned objectives and goals. A particular strategy may be short term and long term strategies focus.

- **Budgets/Plans**

The final step is the preparation of budgets/Plans. Basically budgeting is the periodic planning to implement the alternative during a particular fiscal period, usually, one year. It converts goals and strategies into annual operating plan.

2.2.5 Profit Planning

Profit planning is the primary function of management in any organization. A company always wants to earn maximum profit through optimum utilization of available resources. Profit planning measures the success of any organization. Various budgets are major elements of profit planning. It is a key which helps to predict the future, minimizes risks, estimates output from the scare resources and help for revenues and help for various managerial decision making processes.

A profit plan is estimation and determination of revenues and expenses that evaluates how much income will be generated in order to meet the financial requirements. It present a plan for spending income for profit generation. It represents an overall plan of operation for definite period of time and formulates the planning decision of the management.

Profit planning is, therefore a fundamental part of overall management function and is vital part of the total budgeting process. The management determines the profit goals and prepare budgets that will led them to realization of theses goals. Profit planning can be done only when the management has the information about the cost of product both fix and variable and selling price at which it will be position to sell the product (Maheshwori, 2000:171).

Profit planning is planning for future operation in such a way as to maximize the profit or maintain a specified level of profit. A comprehensive profit planning is also known as broad budgeting schedule developed in financial statements, Profit planning deals with the development of objectives, specification of short term goals, development of strategies and tactical profit plans. In other words, profit plan is a detail expression of the expected result from the planning decisions. Profit planning is an important approach developed to facilitate for effective performance of management process like as planning, organizing, staffing, controlling etc. Therefore, profit planning carry out the responsibility of forward thinking about the future operation of the organization. It is the precise measurement of operation in terms of quantity (i.e. the matters of profit planning are expressed in numerical value).

Profit planning is a comprehensive statement of intentions expressed in financial terms for both short term and long term operation of the firm. It is a plan for the accomplishment of organizational expectations. It is a base for measuring the variation between planned and actual performances. The success of each organization will be determined by reaching or exceeding those targeted plans.

Profit planning is one of the comprehensive approaches that have been developed to facilitate effective performance of management process. It is a systematic and formalized approach for performing significant phases of management planning and control functions. It includes following activities:

Development and application of broad and long term objectives of organization.

- Specification of organization goals.

- Development of long run profit plan in broad terms.
- Development of short run profit plan detailed by assigned responsibilities.
- System of periodical performance report detailed by assigned responsibilities.
- Follow up the procedure.

The main aim of profit planning is to forecast about future. So it plays the vital role in the development of organization. It is the most important tool in the field of managerial decision making in enterprises. Main purpose of profit planning and control are as follows: (Welsch, 1992:44).

- To state the firms expectations (goals) in clearly format terms to avoid confusion and facilitate their attainability.
- To communicate expectation to all concerned with management of the firms so that they are understand, supported and implemented.
- To avoid a detailed plan of action for reducing uncertainty and for its proper direction of individual and group efforts to achieve goals.

Profit planning is a part of an overall planning process and is an area in which finance function play a major roles. The success of each enterprise in realizing its optimum profit each year will be determined by the extent to which it establishes, develops, co-coordinate plans to meet those objectives and exercise control of all facts of its activity so as to have actual results reach or exceed those planned. This entire process constitutes the further stated that profit planning and control has the ultimate objectives of attaining the optimum profits (William, 1998:388).

Neil W. Chambrlin describes in research report that "Profit Planning and Control" refers to the organization techniques and procedures whereby long and short range plans are formulated, considered and approved. A profit plan is an advance decision of expected achievement based on the most efficient operating standards in effect or in prospect at the time is established against which actual accomplishment is regularly compared. In short, it provides a tool for more effective supervision of individual operations and practical administration of the business as a whole.

Matz and Milton described that profit planning is a well throughout operational plan with its financial implications expressed at both long and short range profit plans and budgets in the form of financial statements including balance sheets, income statement and cash flow statements and working capital projection.

Ninemeier, Jack D and Stimidgall, Rayrall defines the topic profit plan "as an estimation and pre-determination of revenues and expenses that estimates how much income will be generated and how it should be spent in order to meet investment and profit requirements".

2.2.6 Process of Profit Planning

The profit planning process should involve periodic consistent and in-depth re-planning so that all aspect of operation are carefully re-examined and re-evaluated. Therefore, individual manager engaged in the planning process should help knowledge about the components of profit planning are explained below;

The steps of profit planning are explained below:

a. Identification and Evaluation of Relevant Variables

In order to implement PPC efficiently management should evaluate the relevant variables that present on the function of an enterprise.

Identification also involves separate consideration of variables that are non-controllable and those that are controllable. This means, management planning must focus on how to manipulate the controllable variables. Moreover there must be managerial planning of how to work with the non-controllable variables. By relevant variables we obviously imply those that will have a direct and significant impact on the enterprise. However, in most enterprise there is a strong need for a periodic evaluation of the relevant variables, usually on an annual basis. A comprehensive PPC programmed uses such a periodic evaluation in depth. So, analysis and evaluation of the environmental variables must be a continuing concern of management. This activity should involve all executive managers; who in turn should expect various staff groups to provide data and recommendations. A particularly significant phase of this

analysis includes an evaluation of the present strength and weakness of the enterprise (Welsch, 1992:75).

b. Development of the Broad Objective of the Enterprise

On the basis of evaluation of the enterprise and practical assessment strength and weakness of the management is in a position to develop the realistic objective of the enterprises.

Development of the broad objective of enterprise is a relevant variable and an assessment of strength and weakness of the executive management can specify this phase of profit planning. The statement of brad objective should express the mission, vision, and ethical tone of the enterprises. It tends to provide identify continuing of purpose and identification (Welsch,1992: 65).

c. Development and Establish Specific Goals for the Enterprise

The purpose of the steps is to bring the statement of broad objectives into sharp focus and at the same time to move from the realm of general information to the confines of internal management. This component of comprehensive PPC program deals specific short range and long range goals for the enterprises. This step provides definite and measurable goals for the whole enterprise and for each of the major sub-division.

d. Develop and Evaluation of Company Strategies

Company strategies are the basic trust ways and practice that will be used to attained planed objectives and goals. The management should develop the strategy for the strategic or long range profit plan and tactical (short range) plan.

The purpose of development of strategies is to find the best alternatives for attaining the plan broad objectives and specific goals. It focuses on how to plan. Here are some examples of basic strategies: (Welsch, 1992:77).

- Increase long-term market penetration by using technology to develop new product and improve current product.
- Emphasize product quality and price for top of the market.

- Price of product with low market price to expand sales volume.
- Improve employee morale and productivity by initiating a behavioral management programmed.

e. Preparation of Planning Premises

When the objectives for the periodic plan are developed the executive management should provide with the certain instruction and guidelines to the lower management in order to develop the profit plan of the other respective responsibilities centre. Thus, instruction and format guidelines as communicated by the top management at this point in the planning process have come to be generally identified as the statement of planning premises. It is simply a communication step from executive management to the lower level of management.

f. Preparation and Evaluation of Projects Plan

When the planning premises is received from the top management, the executive responsible for the enterprises sub unit most develop the project plan. The project owns prepare and evaluate the periodic plans should be develop with help of project plans must be coincided with project plan. Periodic and project plans are different in nature and function, project plan encompass variable time horizons because each project has a unique time dimension. Project plan encompass such items for improvement of present production, new and physical facilities etc. the nature of project is such that they must be planned as separate unit. In planning for a project the time span considered most normally is the anticipated life span of the project. The preparation and evaluation of current and future project plan are essential of the planning phase (Welsch, 1992:79).

g. Development and Approval of Tactical Profit Plans

When the managers of various responsibility centers in the enterprise receive the executive management planning structure and the project plans they can begin intensive activities to develop their respective strategic and tactical profit plans. The

strategic long range plan and tactical short range plan are usually developed. It is possible that executive management or the chief financial executive will develop the strategic and tactical profit plans (Welsch, 1992:80).

h. Implementation of Profit Plans

Implementation of plan requires the timely performance reports to be prepared and forwarded by respective organizational sub units. For this Welch explained, as profit plans are being implemented during the period of time specified in the tactical plan, periodic performance report are needed. These performance reports are prepared by the accounting department on monthly basis. Also some special performance reports are prepared more often as per need. These performance reports;

1. Compare actual result and planned performance and
2. So each difference as favorable or unfavorable performance variation.

A clear distinction must be made between external and internal financial report. Internal reports can be further be classified as (Welsch, 1992:85)

- Statistical reports that give the basic quantitative internal statistics about the operation of the enterprises.
- Special managerial reports about none recurring and special problems.
- Periodic performance reports which are focus on dynamic and continuous control tailored to assigned managerial responsibilities.

Follow up action is an important fact of effective control and re-planning performance reports are the bases for effective follow up action. this is the part of effective control. It is important to distinguish between causes and effect. The performance variation is effect, the management must determine the underlying causes, and the identification of causes is primarily a responsibility of line of management. Analysis to determine the underline causes of both favorable and unfavorable performance variance should be given immediate priority. In the cases of unfavorable performance variance, after

identifying the basis causes, as opposed to the results, an alternative for corrective action must be selected. Then the corrective action must be implemented. In the case of favorable performance, the underlying causes should also be identified (Welsch, 1992:88).

2.2.7 Elements of Profit Planning

The basic elements of profit planning are as follows:

2.2.7.1 Comprehensive and Co-ordinate Plan

The profit planning considers all activities and operations of an organization. The budgets prepared by different departments inside an organization are to be complied to and coordinated to make profit planning.

2.2.7.2 Expressed in Financial Terms

All activities covered by budgets are related with funds. Therefore, the budget has to be expressed in money units (i.e. in rupees, dollars, pounds etc.)

2.2.7.3 Plans for Operational Resources and Expenses

It is a plan for the firms operation and resources. Budget is a mechanization 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 any quantity of revenue and expenses related to specific activity. The plan should be made to carry out the operations. The planning for resources will include planning assets and sources of funds.

2.2.7.4 Future Plan

It is a plan for specific period. Time dimension must be added to a budget because it will be meaningful only when it is related to a specific time. The budget estimates will be relevant only for some specific period.

2.2.7.5 Components of Profit Planning

Profit planning and control is a systematic and formalized approach for accomplishing the planning, co-ordination and control responsibilities of management. Components

of PPC are bones of a business/an enterprise, which help it operate properly, effectively. The components of PPC are as follows; (Welsch, 1992:74).

2.2.7.6 The Substantive Plan

This plan represents the following:

- Broad objectives, missions and short term goals of the enterprise.
- Specified enterprise goals, structure, responsibility and authority.
- Enterprise policies and strategies.
- Instruction and communication of executive management planning.

2.2.7.7 The Financial Plan

The financial plan includes:

A) Strategic Long Range Profit Plan

- Sales, cost, and profit projections.
- Major projects and capital additions.
- Cash flow financing.
  - Personnel requirement.

B) Tactical Short Range Profit Plan

i) Operating Profit Plan

The operating profit plan includes:

- Planned income statement.
- Sales plan.
- Production or merchandise purchase plan.
- Administrative expenses budget.
- Distribution expenses budget.
- Appropriation type budget (e.g. research and development, promotion, advertising.)

ii) Financial Position Plan

It includes planned balance sheet (i.e. assets, liabilities, and owner's equity.)

iii) Cash Flow Plan

- Planned cash flow statement
- Cash from operating activities
- Cash from investing activities
- Cash from financing activities

C) Variables Expenses Budgets (i.e. Expenses Formula)

D) Supplementary Data (i.e. CVP Analysis, Ratio Analysis.)

E) Performance Reports (i.e. Each Month and as Per Need)

F) Follow up Corrective Action and re- Planning Reports

2.2.8 Major Tools used in Profit Planning and Control

Profit planning and control represents an overall plan of operations, which covers a definite period and formulates of planning decision of management. It consists of three main budgets which are:

2.2.8.1 Operating Budget

The operating budgets cover revenue and expenses. In other words, operating budgets relates to the physical activities or operations of a firm such as sales, production, purchases material, labor and other different expenses budgets. Operating budget has the following term;

i) Sales Budget

Sales budget is starting point in the preparation of the comprehensive PPC. It is an estimate of the goods that will be sold. After knowing creating the idea of what it sales be, it can be then decide how much to produce or purchase. All the other plans and budget are dependent upon the sales budget.

A sales budget is a detailed schedule of expected sales for coming period, which is usually expressed in both amounts and units. Once the sales budget has been set a decision can be made on the level of production that will be needed to support sales and the production budget can be set well. The sales budget is constructed by multiplying the expected sales in units by the sales price (Garrison, 1985:173).

Sales budget is prepared from sales forecast where as a sales forecast encompasses potential sales for the entire industry as well as potential sales for the firm preparing the forecast (Welsch, Hiltion and Gordon, 1995:173).

It should be broken down not only in time periods but also into geographical or responsibility areas by the use of sales quotas.

ii) Production Budget

The second step of PPC is the production budget. The production budget is an estimate of the quantity of goods to be manufactured during the budgeted period. After the sales budget has been prepared, the production requirement for the forth coming budget period can be determined and organized in the form of a production budget. Sufficient goods will have to be available to meet sales need and provide for desired ending inventory. A portion of these will already exit in the form of beginning inventory. The remainder will have to be produced. Thus, the production budget can be determined by adding budgeted sales units to be desired ending inventory and deducting the beginning inventory from the total (Horngren, Foster and Datar, 1999:182).

iii) Purchase Budget

In case of non manufacturing concern it would prepare merchandise purchase budget to plan the amount of goods to be purchased during the period. The merchandise purchase budget is in the same basis format as the production budget. It shows goods to be purchased but it doesn't show the goods to be produced.

iv) Direct Material Budget

After the production needs have been computed, a direct material budget should be prepared to show the material that will be require on the production process. Sufficient raw material will have to be available to meet production needs and to provide for desired ending raw material inventory for the budget period. Parts of this raw material require will be already existing in the form of beginning raw material inventory. The remainder will have to be purchased from supplier.

v) Direct Labor Budget

The direct labor budget is also developed from the production budget. Direct labor requirement must be computed so that the company will know whether sufficient labor time is available to meet the production needs. Just knowing the requirement in advance, direct labor requirement can be computed so that the company can be computed multiplying product to be produced by each period by number of direct labor hours require to produce a single unit. Many different type of labor will be involved. If so, then computation should be by type of labor needed. The hours of direct labor time resulting from computation can be multiplied by the direct labor cost per hour to obtain budged total direct labor cost.

vi) Manufacturing Overhead Budget

The manufacturing overhead budget provides a schedule of all costs of production other than direct material and direct labor. These costs should be broken down by cost behaviors for budgeting purpose and predetermined overhead rate developed. This rate will be used to apply manufacturing overhead to units of product throughout the budget period.

vii) Selling and Administrative Overhead Budget

The selling and administrative expenses overhead budget contains a listing of anticipated expenses for the budget period that will be incurred in areas other than manufacturing. The budget will be made up of many smaller individual budget

submitted by various person having responsibility for cost control in selling and administrative matters. If the number of expenses item is very large separate budget is needed for the selling and administrative functions.

2.2.8.2 Financial Budgets

Financial budgets are concerned with expected cash receipt or disbursements, financial position and result of operation. The components of financial budgets are;

i) Budget Income Statement

ii) The budgeted income statement is one of the key schedules in the budget process. It is the document that tells how profitable operations are anticipated to be in the forth coming period. After it has been prepared, it stands as a benchmark against which subsequent company performance can be measured (Garrison, 1985:313).

iii) Cash Budget

Cash budget is the detail showing cash receipt cash disbursement and the balance cash. The cash budget is composed of four major sections. The receipts section, the disbursements section, the cash excess or deficiency section, and the financing section. The receipt section consists of the opening balance of cash added to whatever is expected in the way of cash receipts during the budget period. The disbursement section consists of cash payments that are planned for the budget period. The cash excess or deficiency section consists of the difference between the cash receipts section total and the cash disbursement section total. The financing section provides a detailed account of the borrowing and repayments projected to take place during the budget period. It is also includes a detail interest payment that will due on money borrowed.

iv) Budgeted Balance Sheet

Budgeted balance sheet is a statement of assets and liabilities prepared after the operating budget and financing budgets. It is based on functional or operating budget, cash budget, income statement and previous year's asset and liabilities. In other words,

budgeted balance sheet developed by beginning with current balance sheet and adjusting it for the data contained in the other budgets.

2.2.8.3 Appropriation Budget

The appropriation budget covers all type of expenditure on advertising and research sectors.

Apart from the above budget, PPC also has relationship with following additional budgets such as flexible budget, capital expenditure budget, CVP analysis, completion of profit planning and performance reports.

i) Flexible Budgets

Flexible expense budget relate to expenses or cost. They are also called dynamic, activity or output adjusted expenses budgets. The concept of flexible expense budget is that all expenses are incurred because of passage of time, output activity or combination of time and activity; therefore, it is complementary to tactical profit plan, which helps to provide and expenses in periodic performance report. Expenses or cost must be identified into fixed and variable expenses or costs in flexible budget.

ii) Capital Expenditure Budget

Capital expenditure budgeting is a process of planning and controlling of the long term and short term expenditure for expansion, replacement and contraction of fixed assets. Capital budgeting is useful to earn future profit and reduce cost. The major element of capital expenditure budgets are cash outflows and cash inflows. Cash outflows include the cost of project as cash outlays at different times during life of a project. The cash outflows are affected by the provision of the residual value of old equipment, tax provision, additional working capital needed etc. cash inflows are expected cash revenue during the life of a project. The non cash expenses like depreciation and tax position affect the inflows.

iii) Zero Base Budgeting

Zero base budgeting is the method of budgeting in which managers are required to start at zero budget levels every year and to justify all cost as if the programmed involved were being initiated for the first time. No costs are viewed as being ongoing in nature; the manager must start at the ground level each year and present justification for all costs in the proposed budget regardless of the type of cost involved. Zero based budgeting differs from traditional budgeting in which budgets are generally initiated on an incremental basis, the manager start with last years budget and simply adds to it according to anticipated needs. The manager doesn't have to start at the ground each year and justify ongoing for existing programmed.

iv) Activity Based Budgeting

Activity based costing can lead to improved decision making. Activity based costing focuses on the cost of activities to produce and sell products and services. It separates indirect cost into separate homogeneous activity cost pools. Management uses the cause and effect criterion to identify cost drivers for each of these indirect cost pools.

v) Completion of Profit Plan

The principal output of budgeting is a comprehensive profit plan that ties together all phases of an organizations operations. The completion or profit plan is compromised of many separate budgets or schedules that are interdependent. In other words, completion of profit plans means the process of profit planning ends with the planned income statement and planned balance sheet.

vi) Performance Report

Performance report is an important portion of comprehensive profit planning system. The performance reporting phase of a comprehensive PPC programmed significantly influences the extent to which the organizations planned goals and objectives are attained. Performance report deal with control aspect of PPC or management control function of management defined as "the action necessary to assure the objectives, plans, policies and standards are being attend" or in other words, the objectives of control is to guarantee the achievement of the planned objectives of the management

by introducing periodic systemic correction measure. Performance report is one of the vital tools of management to exercise its control function effectively.

2.2.9 Cost Volume Profit Analysis

The dictionary meaning of cost is the price paid to acquire, produce, accomplish, or maintain anything. Volume is a mass or quantity of something or amount. Profit is the ratio of such pecuniary gain to the amount of capital invested and analysis is resolution, separation or breaking into parts. But actually cost volume profit analysis is the examining the relationship among revenues, cost, and profit for relevant range of activity and for a particular time frame. Basically, CVP analysis involves finding the most favorable combination of variable, fixed cost, selling price, sales volume, and mix of products sold. CVP analysis provides the managers with a powerful tool for identifying those courses of action that will and not improve profitability.

Cost volume profit analysis is important tool of profit planning because it provides the information about the behaviors of cost in relation to volume, volume of production or sales where the business will break even, sensitivity of profit due to variation of output, amount of profit for a projected sales volume and quantity of production and sales for a target profit level etc. CVP analysis may therefore be defined as a managerial tool showing the relationship between various ingredients of profit planning, (cost, selling price and volume of activity). CVP analysis is an important media through which the management can have an insight into effects in profit on account of variations in cost and sales and take appropriate decisions. CVP analysis is great helpful in managerial decision making. Specially, cost control and profit planning is possible with the help of CVP analysis. Profit planning is the fundamental part of the overall management functions. Profit planning can be done only when the management has the information about the cost of production and selling price of the product.

CVP analysis is an analytical tool for analyzing the relationship among cost, price, profit, sales and production volume. Mainly, there are three elements in CVP analysis.

They are cost, sales or production volume and profit. All these terms are interconnected and dependent on another. For instant, profit per unit of a product depends on its selling price and cost of sales. The selling price to a greater extent will depend in cost and cost depends on the volume of production. It is highly essential for the management to have the complete knowledge about the interrelationship among the cost, volume and profit. CVP analysis is extremely helpful in profit planning and control, management decisions and cost control etc.

CVP analysis can be regarded as a sophisticated method or analytical tool used in management. The use of this method helps in determining the different levels of product of sales to avoid losses to earn a desired net profit and so on.

CVP analysis is one of the most important and powerful tool to analyze the financial statement of the firms. It is one of the important parts of the profit planning or budgeting.

CVP analysis is one of the most important and powerful tools that managers have at their command in short term planning. It helps managers understand inter relationship between cost volume of profit in an organization by focusing on interaction between the following five elements.

1. Price of the product
2. Volume or level of activity
3. Total fixed costs
4. Per unit variable costs
5. Mixed product sold

Generally cost volume profit analysis provides information regarding (Munankarmi, 2003:124).

- Minimum level of sales to avoid losses.
- Sales levels to earn profit.
- Effect of changes in process, costs and volume on profits.
- Effect of changes in sales mix on profit.

- New breakeven point for changes.
- Impact of expansion plan on CVP relationship.
- Products those are most profitable and least profitable.
- Whether to continue or discontinue the sales of products or operation of plant.
- Whether to close or not the firm for a short term.
- Effect on operating profit with the increase in fixed cost etc.

Cost volume profit analysis provides information for the management decision about effective budgeting of a company. It is an organized approach for planning, appraisal or coordinating and control.

Cost volume profit analysis examines the behavior of total revenues, total cost and operating income as changes occur in the output level, the selling price, the variable cost per unit and fixed cost of a product (Hongren Datar and Foster, 2003:136).

CVP analysis is a systematic method of examining the relationship between changes in activity (i.e. output) and change in total sales revenue, expenses and net profit. CVP analysis is subject to number of underlying assumptions and limitations. Nevertheless it is powerful tool for decision making in certain situations (Drury, 2001:17).
Most of the business fails after a few years sometimes month of starting because they tend to anything for volume without thinking how it's going to affect to bottom line. CVP analysis is a management accounting tool to show the relationship between the elements of profit planning. Profit planning is a function of selling price of product demand, variable cost, fixed cost, taxes etc (Bajrachrya, Ojha and Sharma, 2004:225).

CVP analysis is the analysis of three variables i.e. cost, volume and profit. Such an analysis explores the relationship existing among cost, revenue, activity levels and the resulting profit. It aims at measuring variation of cost with volume. In the profit planning of a business, cost volume profit relationships is the most significant factor. The CVP analysis is an extension of marginal costing. It makes use of principles of

marginal costing. It is an important tool of planning. It is quite useful in making short run decisions.

The key motive of business enterprises is to make and maximize profit. Profit doesn't happen by chance. It is to be managed. CVP analysis is supplementary tool of planning for profit. CVP is immensely helpful for developing alternative strategies in sales planning and cost estimation. Cost volume profit analysis is an accounting technique showing the relationship between variables. It is equally applicable for non profit making organization to allocate scarce economic resources most effectively among the competing alternative. Allocation of scarce resource among the various demanding sectors is the most important part of national planning.

2.2.10 Use of CVP Analysis in Profit Planning

Planning, controlling and decision making are the essential managerial function. Cost volume profit analysis helps the managers to plan for profit to control cost and make decision. As such it helps.

- To determine the breakeven point in rupees and units.
- To determine profit and loss at different levels of activity.
- To determine the margin of safety in units and rupees.
- To determine new break even points in rupees and units after change on variable cost or fixed cost or selling price.
- To determine sales volume in rupees and units at which the profit goal of organization will be achieved.
- To determine the most profitable and least profitable product or project.
- To determine the maximum sales volume in units and rupees to avoid losses.
- To determine the optimum selling price.
- To help management to find the most profitable combination of cost and volume.
- Go find out effect on profit after increase in or decrease in selling price, variable cost and fixed cost.

2.2.11 Application of Cost Volume Profit Analysis

Cost volume profit analysis is applied specially for break even analysis and profit planning. Business organization is run to earn profit. Profit planning is the fundamental part of the overall management function. Profit planning can be done only when the management has the information about the cost of the product, both fixed and variable cost and the selling price of the product.

CVP analysis can be applied in the following respects; (Dangol, 2004:36)

- It helps in fixation of selling price.
  - It is helpful in cost control.
  - It also assists the management in understanding the behaviors of cost and helps in budgeting control.
  - It helps in determining the level of output where all the costs can be met.
  - It assists the management in profit planning.
  - It also assists the management on performance evaluation for the purpose of management control.
  - 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 profitable product mix etc.

2.2.12 Approaches to CVP Analysis

There are three approaches to CVP analysis.

They are:

- The contribution margin (CM) approach
- Cost revenue equation approach
- Graphic approach

2.2.13 Contribution Margin Approach

In general sense, contribution is to leave something for some purpose. CM reflects the revenue remaining after covering all variable costs.

The profit potential of a business enterprise is indicated by contribution margin approach. It highlights the relationship among cost, sales and profit.

Contribution margin is the excess of sales revenue over variable costs, so contribution margin means how much is left from sales revenue after covering variable expenses that are contributed toward profit for the period. Contribution margin is used to first to cover the fixed expenses and then whatever remains, after the fixed expenses are covered goes toward profit.

If the contribution margin is not sufficient to cover the fixed expenses then a loss occurs for the period. Basically contribution margin indicates why operating income changes as the volume of sales changes.

The difference between selling price and variable cost (i.e. the marginal cost) is known as 'Contribution margin'. In other words, fixed cost plus the amount of profit is equivalent to contribution margin. It can be expressed by the following formula:

Contribution Margin = Sales Revenue – Variable Cost
or,
Contribution Margin = Fixed Cost + Profit
and,
Contribution Margin per Unit = Selling Price per Unit − Variable Cost per Unit

CVP analysis is the amount of contribution margin available from the sales volume of absorbs fixed cost and also contributes towards company's profit goal after deducting all variable cost of sales. When the contribution margin is high, then also profit is high.

Companies that separately identify and measure the fixed and variable components of cost often use a contribution margin approach on their periodic income statement prepared for internal management uses. These income statements provide financial

data that are uniquely useful for management planning purpose because of the emphasis on fixes and variable costs. Most of the managerial decisions that relate to operations (either directly or indirectly) are based in some way to knowledge of the fixed and variable components of cost (Hilton and Paul, 1995: 498-499).

Contribution Margin Ratio (CM Ratio)

Contribution margin ratio is also known as profit volume ratio P/V Ratio) CM ratio equals to contribution margin divide by revenue. The analysis of relationship between profit and volume is known as profit volume analysis. Profit volume ratio or contribution margin ratio establishes a relationship between the contribution and sales value. Percentage of contribution margin to total sales is referred to as the cm ratio. Cm ratio can be calculated by using either per unit or total revenue minus total variable cost information as follows.

$$\text{CM Ratio} = \frac{\text{Sales Revenue} - \text{Variable Costs}}{\text{Sales Revenue}}$$

Or,

$$\frac{\text{Contribution margin}}{\text{Sales Revenue}}$$

Or,

$$\frac{\text{SPPU} - \text{VCPU}}{\text{SPPU}}$$

It is also the remaining percent of the variable cost ratio:

CM Ratio=1-Variable Cost Ratio

Or,

$$1 - \frac{\text{Variable Cost}}{\text{Sales Revenue}}$$

Fixed costs do not change within the relevant range in the short period so profit change by the same amount as the contribution margin changes.

$$\text{CM Ratio} = \frac{\text{Changes in Contribution Margin}}{\text{Change in Sales Revenue}}$$

Or

$$\frac{\text{Changes in Net Profit}}{\text{Changes in Sales Revenue}}$$

This ratio is helpful for determination of the desired level of output or profit and for the calculation of variable costs for any value of sales.

VC=Sales (1-CM Ratio)

Comparison of different ratio is usually made by management to find out which product is more profitable. Management tries to increase the value of the ratio by reducing the variable cost or by increasing the selling price.

A business enterprise can improve its profit by improving a profit volume ratio. The management can eliminate the unprofitable lines which are having either a lower profit volume ratio can be increased by:

- Increased sales price per unit.
- Decreasing variable cost.
- Increasing the production of products having high profit volume ratio and vice versa.

2.2.14 Use of Profit Volume Ratio

Profit volume ratio can be taken as a significant tool for an evaluation of earning capacity of a business enterprise. The earning capacity of an enterprise can be measured by the profit volume ratio. The higher profit volume ratio reflects the firm's ability for increasing profitability.

The profit volume ratio is used to determine the following facts:

- For the analysis of the break even point.
- For ascertaining of profit at a budgeted sales volume.
- For calculation of sales amount needed to keep up with previous profit while decreasing selling price.
- For ascertaining profit on margin of safety.

- For determination of selling price.
- For calculation of sales amount required to earn target profit.

2.2.15 Cost and Revenue Equation Approach

The cost and revenue equation approach is based on the income statement concept. It represents the most convenient and accurate approach to cost-volume – profit analysis. The various formulations in CVP analysis are derived from the revenue and cost function. The relationship between cost, volume and profit can be expressed algebraically as:

Profit=Total Revenue- Total Cost

Total revenue and total cost are affected by sales volume. The addition of quality in the above equation will provide useful information for knowing the effect of revenue, costs and volume as operating profits. When the quantity is included in the above equation, its algebraic form will be as follows:

$$\text{Profit} = \text{Total Revenue} - \text{Total Variable Cost} - \text{Fixed Cost}$$

Or

$$\text{Profit} = (\text{Unit Selling Price} \times \text{Sales Unit}) - (\text{Unit Variable Cost} \times \text{Sales Units}) - \text{Fixed Cost}$$

Or,

$$P = (S \times Q) - (V \times Q) - FC$$

Or,

$$P = Q(S - V) - FC$$

Where,

P = Profits

Q = Sales Units

S = Unit Selling Price

V = Unit Variable Cost

FC = Fixed Cost

2.2.16 Break Even Analysis

Break even analysis is used to determine the level of sales of products required to just recover all cost incurred during the period.

Break even analysis is widely used technique to study cost volume profit relationship. The narrow interpretation of the term break even analysis refers to system of determination of that level of activity where total cost equals total selling price. The broader interpretation refers to system analysis, which determines probable profit at any level of activity (Maheshwori, 2000:175).

Cost volume profit analysis is sometimes referred to simply as a break even analysis. This may be misleading because break even analysis is just one part of the entire CVP concept. It is always taken as an important part of profit planning as it gives the planet many insights into the data with which he or she is working. Profit planning of each firm begins from break even analysis.

A popular technique to study cost volume profit relationships is break even analysis. It concerns with the study of revenue and costs in relation to sales at which the firm's revenue and total cost will be exactly equals or the net income will be zero. It is a no profit no loss situation.

2.2.17 Approaches to Cost Volume Profit Break Even Analysis

The cost volume profit relationships and break even point can be analyzed through different approaches.

A. Contribution Margin Approach

The contribution margin income statement approach to CPV analysis allows the preparation of Performa statement from the available information. BEP and other required CVP relationships can be explained through a contribution margin statement.

B. Formula Approach

The most popular practiced approach to the break even point and cost volume profit analysis is the formula also known as the equation. The formula approach uses an algebraic equation to calculate the break even point (Rainborn, Barfield and Kinney, 1993:89).

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

Table 2.1

Formula Approach of CVP Analysis

Contribution Margin Approach	Symbol or Equation
Sales Volume (units)	Q
Selling Price Per Units	SPPU
Sales Revenue (rs)	Q × SPPU
Less, Variable Costs	Q × VCPU
Contribution Margin	Q × SPPU- Q × VCPU
less; Fixed Cost	FC
Net Profit	Q × SPPU –Q × VCPU -FC

Equation:

Sales-Variable Cost-Fixed Cost=Net Profit

Or

Sales=Variable Cost+ Fixed Cost +Net profit

Or

Q × SPPU=Q × VCPU + FC +Net Profit

Therefore,

$$Q = \frac{FC + Profit}{CMPU}$$

Where, SPPU-VCPU=CMPU

BEP in units $= \frac{FC}{CMPU}$

BEP in RS $= \frac{FC}{P/V\ Ratio}$

There is no profit no loss at BEP. IN case the volume of output or sales is to be computed for a desired profit, the amount of desired profit should be added to fixed cost in the formula given above.

Required sales to Earn Desired Profit in Units $= \frac{FC+DP}{CMPU}$

Required sales to Earn DP in Rs $= \frac{FC+DP}{P/V\ Ratio}$

Required Sales to Earn DPAT in Units $= \frac{FC+\frac{DPAT}{(1-Tax\ Rate)}}{CMPU}$

Required Sales to Earn DPAT in RS $= \frac{FC+\frac{DPAT}{(1-T)}}{P/V\ Ratio}$

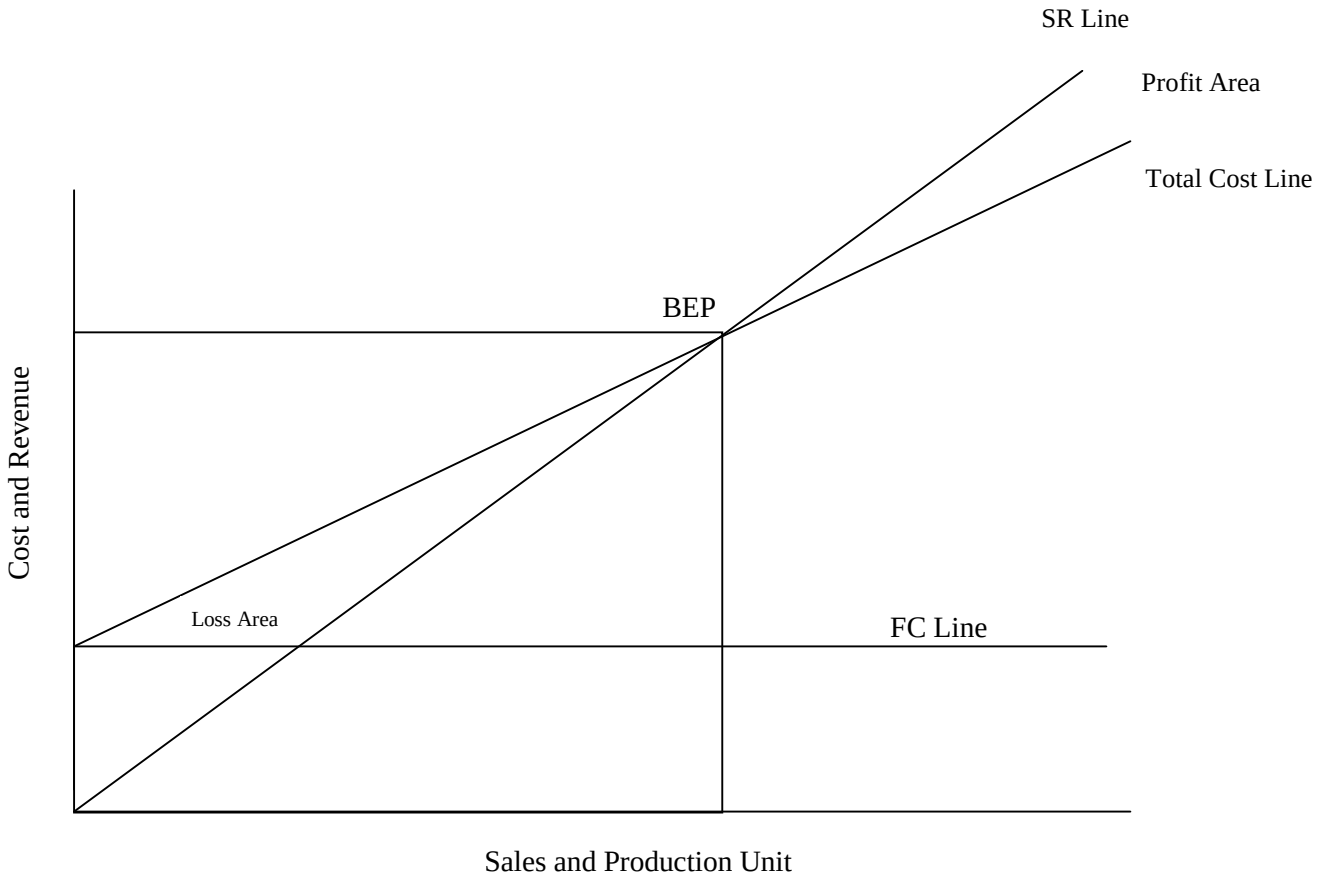
The contribution margin and equation approaches are two equivalents for finding the BEP. Both methods reach the same conclusion, so personal preference dictates which approach should be used.

C The Graphic Approach

A break even chart is used to graphically depict the relationships among revenues, variable costs, fixed costs and profit or losses. The no profit no loss point (BEP) is located at the point where the total cost and total revenue line cross as below this point the firms bears losses and above this point, the firms earns profit.

Figure 2.1

Graphic Approach of BEP Analysis



The sales and production unit is plotted on horizontal or x-axis and vertical or y-axis represents cost and revenue. In graph the fixed costs remain constant with relevant range; the fixed cost curve is parallel to 'ox' axis. Variable cost slope upward from the origin to right but depends on variable cost curve. BEP is located where the total cost line crosses the sales revenue line.

The above graph clearly states that if the company can reach the point BEP, it can generate sufficient revenues to cover all its operating expenses. At this point total

revenues equal the total cost. Here, the revenue curve break up (intersects) the total cost curve, that's why this point is called break even point. At BEP total sales revenues=total cost (Bajracharya, Ojha, Goet and Shrma, 2004:230).

If the actual sales are more than the break even sales, the organization will earn profit and if the actual sales are les than the break even sales, the organization will suffer from loss.

D Cash Break Even Point

Some of the firms fixed costs are non cash outlays, and for a period, some of its revenue may be in receivable. It may be therefore important to find BEP on cash basis for accounting and financial decision making. If non cash items are eliminated from revenues and costs, the BEP analysis on cash basis can be easily be computed.

It is the point of sales where cash break even the cash expenses. While calculating this sales the cash fixed cost (i.e. excluding depreciation and deferred expenses) and cash contribution (i.e. selling price less the cash variable costs) are considered. The point helps the management in determining the level of activity below which there are chances of insolvency on account of the firms inability to meet cash obligations unless alternative arrangement are made (Maheshwari, 2000:178).

The cash break even point can be computed by the following formula.

$$\text{Cash BEP} = \frac{\text{FC} - \text{Non Cash Outlays}}{\text{CM Ratio}}$$

$$\text{Where, CM Ratio} = 1 - \frac{\text{Variable cost}}{\text{Sales} - \text{Non Cash items}}$$

Applications of Break Even Analysis

Break even concept can be used to formulate different policies in a business enterprise, some or these applications are:

- Determination of profit at different level 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 sale mix.
- Effect of fixed cost or variable cost changes on sales volume.
- Selection of most profitable alternative, make or buy decisions and drop or add decisions.

Assumptions of Break Even Analysis

The assumptions underlying the construction of break even points are as follows.

- All costs can be classified into fixed and variable cost. There is no other cost than fixed cast and variable cost.
- Selling price per unit remains constant. It is not affected by sales volume.
- Fixed cost will remain constant and variable cost varies proportionately with activity.
- Either the firm produces only one product or the product mix is constant at all level of output.
- General price level will remain essentially stable in the short run.
- Changes in the opening and closing inventories are not significant.
- That the level of production and sales remain unchanged during the period.

Limitations of Break Even Analysis

The break even analysis is based on some unrealistic assumptions. It main limitations are as follows:

- According to the assumption of break even point, total cost can be divided into only fixed and variable costs, which is not practicable in real life. There are some costs, which are neither fixed nor variable. Those costs are described as semi fixed or semi variable costs.
- The assumption that fixed cost always remains constant is not true. Sometimes it can be increased, especially in that situation, when production or operation technique is changed.
- The assumption that variable cost per unit always remains constant can not be entirely true.

- Constant selling price is also not true. In case of increase in sales volume, some modification can be made in selling price by considering the nature of demand for the goods.
- The assumption that either the firm produces only a single product or production mix ratio remains constants is also obviously quite unrealistic. Industries producing several types of goods have to bring about modification in the production mix ratio from time to time.
- The assumption that the production level and sales levels should be equal is another drawback of break even point. Such a condition is hardly found in practice
- The capital invested in business is also a significant element of profit planning and control. However, it is not given a place in break even point.

2.2.18 Margin of Safety

Margin of safety is the excess of budgeted or actual sale over the break even sales. 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 serves as a cushion or spring plate that enables a business firm to absorb the shocks of adverse business conditions. It indicates the extent to which sales may fall before suffering any loss i.e. greater the margin, safer the firm.

The soundness of business is indicated by margin of safety. The difference between total sales and break even sales is identified by margin of safety. The high margin of safety is good for business. It indicates that there can be substantial falling on sale and profit can still be made. On the other hand, if the margin of safety is small, it indicates the weak position of business. The small margin of safety shows that even a small reduction in sale or production will adversely affect the profit position of business.

It gives management a feel for how close projected operations are to be organizations break even point. Managers often consider the size of the company's margin of safety when making decisions about various business opportunities. The larger is the safety

margin, the greater is the chances for the company to earn profit (i.e. larger the margin of safety, safer the company).

Margin of Safety can be ascertained by using the following formula:
Margin of Safety in units=Actual Sales in Units –Break even sales in units
Margin of Safety in Rs=Actual Sales in Rs- Break even Sales in Rs

$$\text{Margin of Safety in Units} = \frac{\text{Profit}}{\text{CMPU}}$$

$$\text{Margin of Safety in Rs} = \frac{\text{Profit}}{\text{P/V Ratio}}$$

If margin of safety is unsatisfactory, it can be improved through the following steps:

- By increasing the sales and production volume.
- By increasing the selling price.
- By decreasing the fixed costs.
- By reducing the variable costs.
- By changing the sales or production mix ratio.

CVP Analysis for Multi Product Firm

Sales mix can be defined as the relative combination of two or more products represented in total. It is not only the sales revenue the makes profit. The proportion of the sales contributed by different products greatly changes the amount of profit. Managers try to achieve that combination, or mix, that will yield the greatest amount of profit. If a company sells more than one product, these may not be equally profitable. So the company's profit will depend upon the ratio or each products sale to total sales revenues. Profit will be greater if high margin items make up a relatively large proportion of total sales than if sales consist mostly of low margin items. Changes in sales mix can cause great variations in a company's profit, A shift to low margin items can cause the total profit to decrease even through total sales increase. In the contrary, a shift in the sales mix from low margin items to high margin items can cause the reverse effect total profit may increase even through total sales decrease.

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 ort 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 cist for each product is known. The firms overall break even point can be calculate by dividing total fixed costs by the contribution ratio for the firm. The multi product firm's P/V ratio will be the weighted average of the p/v ratios for all the products, the weights being the relative proportion of each products sale. The p/v ratio for the multi product firm can also be calculated by dividing total contribution from all products by total sales. A change in the product mix will not affect the firms break even point and profit if each product has the same p| v ratio. However, a change in the product mix will change the break even point and profit when products have unequal P/V ratios.

In case of single product, the solution of a problem required is much simple. But if the company has more than one product the solution for the problem required may be a little complex.

The product mix and sales mix are used interchangeably, when a firm produce or sells more than one type of commodity, it is described as product or sales mix. In such a situation different selling price, variable cost result in different unit contribution margin and contribution margin ratio. As a result, break even points vary with the relative proportion of the commodities produced or sold. However, the assumption has to be made that sales mix remains constant. It does not change for a specified period.

2.2.19 Break Even Point for Multi Product Firm

The different products may have their own different production facilities and fixed cost separately. In that case cost volume profit analysis can be done for each product separately. But if common facilities and common fixed costs are being used by different products, CVP analysis is performed by averaging data using sales mix as weight. In that case, break even point is calculated as follows:

Table 2.2

Determination of Break Even Point in Terms of Unit

Step-1	To find out sales mix ratio in units
Step-2	To find out unit contribution margin for each product
Step-3	To multiply the sales mix ratio and contribution margin of each product separately.
Step-4	To find out weighed average contribution margin by adding product of step-3
Step-5	To find out overall break even units by using formula: Overall BEP in units = $\frac{\text{Total Fixed Cost}}{\text{Weighted CMPU}}$

Table 2.3

Determination of Break Even Point In Terms of Rs

Step-1	To find sales mix ratio in sales amount
Step-2	To find out P/V ratio of each product separately
Step-3	To multiply the sales mix ratio and P/V ratio of each product separately
Step-4	To find out overall P/V ratio by adding product of step-3
Step-5	To find out overall BEP BY using formula: Overall BEP in Rs = $\frac{\text{Total Fixed Cost}}{\text{Weighed P/V ratio}}$

Some Important Formula

Overall BEP in unit $= \frac{\text{Total Fixed Cost}}{\text{Weighted CMPU}}$

Overall BEP in Rs $= \frac{\text{Total Fixed Cost}}{\text{Weighted P/V Ratio}}$

Product wise BEP in unit = Overall BEP in unit $\times$ Respective Proportion (from Sales Units)

Product wise BEP in Rs=Overall BEP in Rs $\times$ Respective Proportion (From Sales Rs)

$$\text{Required Sales to Earn DP (in units)} = \frac{\text{Total Fixed Cost} + DP}{\text{Weighted CMPU}}$$

$$\text{Required Sales to Earn DP(in Rs)} = \frac{\text{Total Fixed Cost} + DP}{\text{Weighted CM Ratio}}$$

$$\text{Required Sales for DP after Tax(in Units)} = \frac{\text{Total Fixed Cost} + \frac{DPAT}{(1-t)}}{\text{Weighted CMPU}}$$

$$\text{Required sales for DPAT (in Rs)} = \frac{\text{Total Fixed Cost} + \frac{DPAT}{(1-t)}}{\text{Weighted CMPU Ratio}}$$

2.2.20 Cost Volume profit Analysis and Limiting Factors

CVP analysis is more helpful in profit planning for a company producing a number of outputs of its choice. But in real word, it is not possible because of some critical factors like shortage of finishing machine time or raw material or labor. These critical factors in the CVP analysis are known as constraints.

2.2.21 CVP Analysis with Single Constraint

Single production constraint exists when the production is constrained by only one resource or bottleneck resource. For example, if all the firms' products require the same basic raw materials, then the firms output will be limited by the available quantity raw materials. Likewise if the products require the same labor, then the firms output will be limited by the available labor hours.

Scarce resource should be efficiently be allocated in order to maximize the contribution margin. A particular simple and instructive situation arises when there is only one constraining resource. This can occur if the firm products are all produced on single machine and output is limited by hours available on this machine. In the same way, single output is limited by availability 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

scarce resource should be allocated to the alternative uses on the basis of contribution per scarce resource.

2.2.22 CVP Analysis with Multiple Constraints

Where more than one scarce resource exists the optimum production programmed cannot easily be established by the simple process applied in single resource constraint. Under the circumstances single allocation of resource or the basis of contribution margin per unit is neither feasible nor desirable. Contribution margin per unit of scarce resource may be constrains factors rather than single constraint. In such situation, linear programming technique may used to optimize product mix. The linear programming formulation is required to determine a production plan which maximizes contribution from the product mix. Linear programming is a mathematical technique which shows how to arrive the optimum results, allocation available resources in a meaningful manner. It is basically concerned with the problem of allocating limit resources among competitive activities in an optimum manner. It is a technique to optimize the allocation of scarce resources in product mix problems which provides a valuable extension to cost volume profit analysis (Munankarmi, 2003:2008).

Multiple production constraints exists when more than one resources limits the quantity that can be produced any time in an aggregate manner. In situation of multiple production constraints, contribution margin per unit of scarce resource approach used in single production constraints does not work, as ranking of products across different constraining resources will generally differ. Instead, linear programming helps us to make and optimal allocation or to determine an optimal product mix.

Linear programming is a mathematical model for finding the best uses of firm's limited resources. The basic requirements of a linear programming problem that's fits to multiple production constraints problem also can be enumerated as:

- There must be an objective the firm wants to achieve i.e. criterion in which alternatives are assessed e.g. profit maximization (which is our concern at

present) or cost minimization. As profits are not linearly related to sales volume, contribution is the appropriate term to be used instead of profit.

- There must be alternative courses of action; one of which will assist in achieving the objectives.
- Resources or facilities must be in limited supply.
- The variables in the problem must be interrelated.
- Objectives and constraints must be able to be expressed as mathematical equations or inequalities and these must be linear equations or inequalities.

2.2.23 CVP Analysis under Condition of Uncertainty

CVP analysis can be used for various purposes such as choosing between machine and products, planning of profit and most significant fixing up of selling price. Management uses this as a convenient tool of profit planning with giving consideration of risk and uncertainty involved in it.

Our discussion of cost volume profit so far was based on the very assumptions that all cost and revenues were known with certainty. This assumption of single value estimate, which is so far from reality naturally, limits the usefulness of CVP analysis for profit planning and other decision purposes. To prove it –self a better tool in the hands of manager, CVP analysis should incorporate risk and uncertainty in its parameters.

The fundamental variables used in the CVP analysis are (1) the selling price per unit, (2) the variables cost per unit, (3) the total fixed cost and (4) the expected sales volume of each product. In any given decision problem, all four of these factors can be uncertain. To simplify the problem, however, we can first start with the uncertainties in sales volume assuming other factors are equivalent to certainty. Moreover, Relative to the expected sales quantity, the costs and selling prices are quite certain; that is, for analytical purpose, the decision maker may be justified in treating several factors as certainty equivalents.

A possible approach to incorporate risk and uncertainty in CVP analysis is to apply normal distribution theory. A normal distribution theory normally estimates the likelihood than the random variable will take in various possible values. Such an estimate is more or less based on personal judgment and id called subjective probability distribution.

The normal probability distribution approach can be used to further analysis the element of risk in cost volume profit analysis. The use of normal probability distribution will enable the decision maker to have an idea of the probability of different expected values of sales or cost or profit, that is the probability of sales or cost or profit having the value of probability distribution is an important statistical technique in the hand of decision maker for evaluation the riskyness of a firm.

The parameters of the normal probability distribution are mean and standard deviation. A particular normal probability distribution can be completely determined, if it's mean and standard deviations are known. The standard deviation is a measure of dispersion of the distribution about its mean. The larger the standard deviation, the more spread out is the distribution.

Managers know their firms expected sales, the break even sales and expected profit. Surely, they would benefit from knowing that:

2.2.24 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:

A. Cost Segregation

The total cost 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 sales volume.

B. Constant Selling Price

The selling price per unit remains the constant; that is, it does not change with volume or because of other factors.

C. Constant Sales Mix

The firm manufactures only one product or if there are multiple products the sales mix does not change.

D. Coordinated Production and Sales

Production and sales are coordinated, that is inventories remain the same.

2.2.25 Limitation 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.

- It is difficult to separate cost into fixed and variable components.
- It is not correct to assume that fixed cost would remain unchanged over the entire rage of volume.
- The assumption of constant selling price and unit variable cost is not valid.
- 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 a static tool.

2.2.26 Special Problems in CVP Analysis

There are three special problems in CVP analysis hat are as follows:

A. The Activity Base

When two or more production or activities are combined for break even analysis, the activity is usually in amount. Product unit s used for single product. The activity base must be in additive units using a common denominator of volume or output in multiple products. For the company as a whole, net sale amount are usually the only

satisfactory common denominators because manufacturing. Selling and administrative activities are expressed in combination.

B. The Change in Inventory

Usually, the budgeted change in inventories (i.e. finished goods and work in progress) is immaterial in amount and thus may be disregarded in CVP analysis. On the other hand, when the change in budget inventory is significant, it should be included in the analysis. Management policy in inventory change is:

- Disregard the inventory changes.
- Included the inventory changes.

C. The Non operating Incomes and Expenses

The non operating incomes and expenses (extra ordinary gains and losses) cause another problem in CVP analysis. The main problem is that whether they should be included or excluded in the analysis. Management Policy may be to;

- Include the non operating income and expenses.
- Exclude the non operating income and expenses.

2.2.27 Sensitivity Analysis

Sensitivity analysis is the measurement of effect of the change in CVP factors on 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 CVP 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 variables. We know that the goal of a business enterprise is to maximize profit. Profit is the excess of revenue over the total costs.

$$\text{Profit} = \text{Total Sales} - \text{Total Cost}$$

Or

$$\text{Profit} = \text{Sales Units} \times \text{SPPU} - \text{Sales Units} \times \text{VCPU} - \text{Fixed Cost} - \text{Taxes}$$

So that,

Profit = F (Sales Volume, Variable Cost, Fixed Cost, Taxes etc.)

But none of the factors remain unchanged; sometime the manager can be intentionally change the price and cost factors as a part of strategic decision. But the strategy should focus more on the factor, which in the more sensitive or responsive for profit. So to measure the sensitivity of CVP factors, we can see the impact of certain percentage or amount change in volume, price, or cost factors on net profit (Bajracharya, Ojha, Goet, and Sharma, 2004:245).

2.2.28 Risk Measurement: The Operating Leverage and Break Even Point

Operating leverage is a measures of the extent to which fixed costs are being use in organization. The relationship of a company's variable and fixed cost is reflected in its operating leverage. Generally, highly labor intensive organization has high variable costs and low fixed costs and this has low operating leverage and a relatively low breakeven point. Conversely, the organization that are highly capital intensive has a cost structure that includes low variable and high fixed costs which reflects high operating leverage with high breakeven point. It shows that fixed costs and operating leverage have direct relationship. Higher the amount of fixed costs higher the operating leverage and breakeven point and vice versa. In other words, the firm with relative high operating leverage has proportionally high fixed expenses; the firms breakeven point will be relatively high.

Operating leverage tells us how profit change with change in sales. It is evident that profit change more rapidly than sales. Why do profit change more rapidly than sales? It is because some costs do not change say if sales decline variable costs also decline so, the net operating income decline more rapidly. Sales revenue changes but some parts of costs, known as fixed costs, remain unchanged. This usually net income changes more rapidly. This change is called the operating leverage.

Operating leverage can be measured in terms of the Degree of Operating Leverage (DOL). DOL shows the items of percentage change in net operating income of the given percentage change in sales. DOL may be defined as the percentage change in net operating income or EBIT associated with a given percentage change in sales.

$$\text{DOL} = \frac{\text{Percentage Change in Net Operating Income}}{\text{Percentage Change in Sales}}$$

Alternatively,

$$\text{DOL} = \frac{\text{Contribution Margin}}{\text{Net Operating Income}}$$

$$\text{DOL} = \frac{Q\,(\text{SPPU} - \text{VCPU})}{Q\,(\text{SPPU} - \text{VCPU}) - \text{Fixed cost}}$$

Where,

Q = Total Demand in Units

SPPU = Selling price per unit

VCPU = Variable cost per unit

As we know,

$$\text{BEP in units} = \frac{\text{Fixed Cost}}{\text{SPPU} - \text{VCPU}}$$

Leverage decision is meant to substitute variables costs by the fixed costs. To create a degree of operating leverage means the employment of higher amount of fixed cost which eventually increases the breakeven point also. No DOL is to be used when the DOL occur "1" and in this situation BEP comes to "0".

Higher the fixed cost increases the DOL and they also increase the breakeven point, so there is close relationship between the degree of operating leverage and the breakeven point. A high DOL and high BEP both are indicators of high risk.

2.2.29 Financial Statement Analysis

Financial statement at least refers to the two statements which are prepared by a business concern at the end of the year. These are;

- **Income Statement or Trading and Profit and Loss Account**

It is prepared by a business concern in order to know the profit earned and loss sustained during a specified period.

- **Position Statement or Balance Sheet**

It is prepared by a business concern on a particular date in order to know its financial position.

The above mentioned statements collectively called financial statement of a company.

Analysis is the process of critically examining in detail accounting information given in the financial statement. For the purpose of analysis, individual items are studied; their interrelationships with other related figures established, the data are sometimes rearranged to have better understanding of the information with the help of different techniques or tools for the purpose. Financial analysis is helpful in assessing the financial position and profitability of a concern. This is done through the comparison of ratios over the period (Jain, 1991:1).

Absolute figures are valuable but they standing alone convey no meaning unless compared with another. Accounting ratios show inter- relationship which exists among various accounting data. When relationships among various accounting data supplied by financial statements are worked out, they are known as accounting ratios.

Ratio may be classified in a number of ways keeping in view the particular purpose. Ratios indicating profitability are calculated on the basis of the profit and loss account are called profitability ratios and those indicating financial position are calculated on the basis of the balance sheet are called financial ratios.

2.2.30 Profitability Ratios

Profitability ratios are of utmost importance for a concern. These ratios are calculated to enlighten the end results of business activities which are the sole criterion of the overall efficiency of a business concern. The following are the important ratios:

a. Gross Profit Ratio

This ratio tells gross margin on trading and is calculated as under:

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

b. Operating Profit Ratio

This ratio establishes the relationship between operating profit and sales and is calculated as follows:

$$\text{Operating Profit Ratio} = \frac{\text{Operating Profit}}{\text{Net Sales}} \times 100$$

c. Net Profit Ratio

This ratio is very useful to the proprietors and prospective investors because it reveals the overall profitability of the concern. This is the ratio of net profit after taxes to net sales and is calculated as follows:

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

d. Return on Shareholders' Investment Ratio

This ratio also called return on proprietor's fund is a measure of the percentage of net profit to shareholders funds. The ratio is expressed as follows:

$$\text{Return on Shareholder's Fund Ratio} = \frac{\text{Net Profit After Tax}}{\text{Shareholders Fund}} \times 100$$

Where,

Shareholders Fund= Equity Share Capital + Capital Reserve + Revenue Reserve + Balance of Profit and Loss Account –Fictitious Assets

e. Return on Total Assets

This ratio is calculated to measure the profit after tax against the amount invested in total assets to ascertain whether assets are being utilized properly or not. It is calculated as under:

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

2.2.31 Financial Ratios

These ratios are calculated to judge the financial position of the concern from long term as well as short term solvency point of view. The following are the ratios which are calculated in this respect (Jain , 1991: 1).

a. Current Ratio

This is the most widely used ratio. It is ratio of current assets to current liabilities. It is expressed as follows:

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

Where,

Current Assets = Cash, Bank Balance, Short Term Investment, Bills Receivables, Trade Debtors, Inventories, and Prepaid Expenses etc.

Current Liabilities =Bank Overdraft, Bills Payable, Trade Creditors, Provision for Taxation, Proposed Dividend, Accrued Interest on Loans and Debentures, Outstanding Expenses etc.

Generally, 2:1 is considered ideal for concern i.e. current assets should be twice of the current liabilities.

b. Quick Ratio

This is the ratio of liquid assets to current liabilities. 1:1 is considered ideal ratio for a concern because it is wise to keep the liquid assets at least equal to the liquid liabilities at all times. Liquid assets are those assets which are readily converted into cash and will include cash balances, bills receivables, sundry debtors and short term investments. Inventories and prepaid expenses are not included in liquid assets. Quick ratio is calculated as follows:

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

c. Fixed Assets to Capital Employed Ratio

This ratio is calculated as under:

$$\text{Fixed Assets Ratio} = \frac{\text{Fixed Assets}}{\text{Capital Employed}}$$

Capital Employed = Equity Share Capital + Preference Share Capital + Undistributed Profit + Reserve and Surplus +Long Term Liabilities – Fictitious Assets

This ratio gives an ideas as to what part of the capital employed has been used in purchasing the fixed assets for the concern. If the ratio is less than one it is good for a concern.

d. Ratio of Current Assets to Fixed Assets; this ratio is worked out as;

$$\text{Current Assets to Fixed Assets Ratio} = \frac{\text{Current Assets}}{\text{Fixed Assets}}$$

This ratio will differ from industry to industry and therefore no standard can be laid down. A decrease in the ratio may mean that trading is slack or more mechanization has been put through. An increase in the ratio may reveal that inventories and debtors have unduly increased or fixed assets have been intensively used.

e. Debt to Equity Ratio

This ratio is calculated to measure the relative proportions of outsider's fund and shareholders' funds invested in the company. This ratio is also known as external internal equity ratio and is calculated as follows:

$$\text{Debt Equity Ratio} = \frac{\text{Long Term Debt}}{\text{Shareholders Fund}}$$

f. Proprietary Ratio

A variant of debt to equity ratio is the proprietary ratio which shows the relationship between shareholders fund and total assets. The ratio worked out as follows:

$$\text{Proprietary Ratio} = \frac{\text{Shareholders Fund}}{\text{Total Assets}}$$

2.3 Review of Related Studies

2.3.1 Review of Books

"The study of the interrelationship of sales costs and net income is usually called cost volume profit analysis. CVP analysis examines the response of profit to change in volume. It relies on linear cost analysis and on linear revenue assumptions. To gain understanding of CVP analysis, the common examples of a firm which produces only single product will be used. The analysis will be expanded to cover firms with several products by multiple divisions.

CVP analysis consists essentially in examining the relationship between changes in volume and changes in profit. The scope of CVP analysis ranges from the determination of the optimal output level of a single product department to the determination of the optimal mix of large multi product firm.

"All these decision rely on the simple relationship between changes in revenues and costs and changes in output levels. Output should be expanded or the output mix altered if the incremental revenue resulting from the changes exceeds the incremental costs of making the change. Thus, all cost, volume and profit analysis is characterized by their emphasis on cost and revenue behavior over various ranges of output levels and mixes".

"Cost volume profit analysis includes the related concepts of (a) Contribution analysis and (b) Break even analysis. This concept entered the mainstream of management accounting starting in the 1930's with major emphasis in the 1950's. Both concepts rest upon the concept of variability (i.e. flexible or variable expenses budgets), contribution analysis involves a series of analytical techniques to determine and evaluate the effects on profits on change in sales volume, sales prices, fixed expenses and variable expenses. Basically, it applies the concept of a contribution margin

income statement: Revenues minus variable expenses equals contribution margin, and contribution margin minus fixed expenses equals profit. Break-even analysis focuses in the breakeven point: Fixed expenses divided by the contribution margin equals break even sales volume (the point at which profit is zero because revenue equals total cost). The result of breakeven analysis is usually graphed to show the relationships between revenue (i.e. sales, fixed expenses, and variable expenses, within the relevant range of sales volume"

"C-V-P analysis is concerned with examining the relationship between changes in volume and changes in total revenue and costs in the short term. Drury has compared the economist's and accountant's models of CVP behavior. The major differences are that the total cost and total revenue functions are curvilinear in the economist's model, whereas the accountant's model assumes linear relationships. However, we have noted that the accountant's model was intended to predict CVP behavior only within the relevant range, where a firm is likely to be operating on constant returns to sale. A comparison of the two models suggested that, within the relevant production range, the total costs and revenue functions are fairly similar" (Drury, 1989:215).

2.3.2 Brief Review of the Previous Research Work

Researches in the area of CVP analysis as a tool to measure effectiveness of PPC (budgeting) of a company in Nepalese context are not made sufficiently. As profit planning and control and covers major aspects of CVP analysis, researchers made on these sectors are taken into consideration for review. Many researches have been made on manufacturing concern expect only a few of them are profound.

Here, an attempt is made to review some of the researches submitted on the CVP in the context of Nepal.

Dangol, Pratima (2001) had conducted a research entitled "Profit planning in manufacturing public enterprise; a case study in Hetauda cement industry ltd". Miss Dangol had focused her study in the application of profit planning concepts. The time

period covered by the research is five years from FY 2051/2052 to 2055/2056. It was submitted to Shanker Dev Campus.

The required data and information were collected from both primary and secondary source. Miss Dangol had reached at the conclusion from the analysis making several remarkable findings. Some of the findings were as follows:

- No proper application of any effective sales forecasting technique.
- Planning of budgeting policy of the company is very poor and there is no system of taking corrective action for pre planning.
- Decision making powers are centralized.
- There is no clear cut duties and responsibilities of the employees.

Ghimire, Indira (2004) had conducted a research entitled "Profit planning in manufacturing company in Nepal; A Case Study of Bottlers of Nepal Ltd". Miss Ghimire had concerned her study to examine the practice of profit planning and control in the manufacturing companies in Nepal. It was submitted to Nepal Commerce Campus, T.U. Nepal.

Her major finding findings are as follows:

- The company has not maintained the broad and long range objectives and periodic report and objectives are limited to high ranking official only.
- Relevant internal and external market variables are not fully explored.
- Cost classification is not systematic. There is no practice of segregating semi variable cost.
- Management information system is not performance based.
- Sales and production targets are not achieving due to defective forecasting.
- Enterprises has no financial plan, they have only sales and production forecast.
- There are no any proper criteria for performance evaluation for financial tools.

Rijal, Madhav (2005) has studied on the topic "Cost volume profit analysis to measure the effectiveness of profit planning and control (A Case Study of Nebico Pvt

Ltd.)". The study was base on both primary data as well as secondary data and analysis was based on only five years data. It was submitted to Shanker Dev Campus, TU, and Kathmandu.

The main objectives of that research analysis are as follows.

- To study relationship of cost volume and profit as an applicable tools of budgeting.
- To evaluate the stability, financial position and sensitivity of Nebico's activities.
- To analysis the CVP of the company and its impact in profit planning and control.
- To provide suggestions and recommendations for improving Nebico's condition etc.

Mr. Rijal had pointed out some major findings in his research although most of his findings were out of objectives of the study. Some major findings are follows;

- The company's sales trend has fluctuation but not satisfactory trend of increasing.
- The company's variable cost is in high proportion than fixed cost in comparison with total cost which contributes for lower contribution margin.
- NEBICO had no any plan to reduce cost.
- The profit trend of the company was not satisfactory.
- The company had no effective inventory policy.
- There were not effective sales forecasting techniques.
- NEBICO Pvt. Ltd. had not practice of segregating the cost into fixed and variable and controllable and non controllable.
- Net profit margin profitability ratio and other things were not satisfactory.
- CVP relation is not considered while developing sales plan production plan and pricing strategy.
- The following suggestions have been recommended on the basis of this research:

- NEBICO Pvt. Ltd. should consider BEP analysis while preparing sales plan production plan and setting the practice of its products.
- Classification of expenses as variable and fixed or controllable and uncontrollable must be made within a specific framework of responsibility and time.
- Cost control department separately established which is divided the cost by production and control the cost.
- A systematic approach should be made towards comprehensive profit planning. This can considerably contribute to the increase in profitability of NEBICO Ltd.
- CVP analysis and PPC manuals should be communicated from top to lower levels.
- As company as unable to generate more profit as per investment made in fixed cost, company should put address on effective utilization of fixed cost.
- All personnel should be participated on decision making and planning process.

Dahal, Udaya Kumar (2006) has studies on the topics of "Cost Volume Profit Analysis as Tool to Measure the Effectiveness of Profit Planning with Special Reference to Dabur Nepal Ltd." This was submitted to Nepal Commerce Cumpus, TU in partial fulfillment of Master's degree in the year 2006.

The main objective of research was:

- To examine the variance between target and actual sales and production.
- To show the capacity utilization of Dabur Nepal Ltd.
- To forecast future production and sales.
- To analyze the financial performance.
- To analyze the CVP of company and its impact of profit planning.
- To analyze the trend of profit over the time covered by the study.
- To provide recommendations and suggestion for improving the profit planning system of Dabur Nepal Pvt. Ltd.

To conclusion of the research regarding the present practice of profit planning of Dabur Nepal Pvt. Ltd. has given below.

- Dabur Nepal Pvt. Ltd constitutes lack of adequate inventory policy.
- No control over external factor i.e. it has poor SWOT analysis.
- Dabur Nepal Pvt. Ltd does not prepare strategic and policies for long term.
- Dabur Nepal is not able to coordinate among various departments.
- Dabur Nepal Pvt. Ltd not prepares raw material requirement budget and raw material purchase budget systematical.

The researcher also provides the following recommendations,

- CVP analysis should be considered while formulating profit plan.
- Profit planning manuals should be communicated from top level to lower level.
- The company management should look carefully into the basis of setting target for sales and achieving those targets meaningfully.
- Dabur Nepal Pvt. Ltd should focus on the relationship between expenditure and benefit, expenses planning and controlling is necessary to obtains companies goals.
- To get the idea of future cash requirement and application of the form, it should make cash budget systematically.
- The company should prepare raw material budget and production budget scientifically.

Timsina, Dharma Raj (2007) had studied on the topic "Cost Volume Profit Analysis of Himalayan Distillery Limited." this was submitted to Nepal commerce campus, TU in partial fulfillment of Master's Degree in the year 2007.

The general objective of this study is to evaluate the CVP analysis of multi products manufacturing company. The specific objectives of this study are as follows:

- To analyze different components of cost as per cost behavior.
- To analyze the impact of fixed cost on profit.

- To analyze breakeven point of overall firm as well as individual product.
- To show the relationship of cost, volume and profit between multi products.
- To provide suggestions and recommendations on the basis of major findings are as follows;
- Different types of profit planning tools, which are used in the academic field, are not found applied by HDL.
- CVP analysis is not applied by HDL as no segregation of cost into fixed and variable, which is the hardcore of CVP analysis.
- Company has no clear cut boundaries to separate cost into fixed and variable. The classification of cost is not scientific and systematic. So, HDL has not been able to use CVP analysis and make the realistic and smart budget.
- Production and sales are comparatively low than production capacity.
- Avoiding CVP analysis tool and not utilizing full capacity, the company is bearing loss. Promoter and director, and staff of the company are enjoying by achieving allowance and salary respectively. Other part, general shareholders are not achieving dividend and government couldn't claim for income tax since loss and loss recovery situation.

The researcher also provides following recommendations:

- Classification of expenses item as variable and fixed or controllable and non-controllable must be made within specific framework of responsibility and time.
- Separate cost control department should be established for the effective management and reduction of cost.
- HDL should consider about the product line to improve its profit. Market studies on demand, supply and pricing of product should be carried out and loss oriented costs should be identified and control.
- HDL is multi Product Company; more emphasis should be provided the product having high contribution so as have more profit.
- Some portion of fund should be allocated to research and development program so that new technology could be found which provide more competitiveness in the market.

- HDL should have proper manpower planning.
- System of periodical performance reports should be strictly followed to be conscious about poor performance and take corrective action immediately and timely.
- New market areas should be identified for the coverage of increased activities of companies.

Dipendra Raj Dhakal (2005) has studied on the topics of "CVP Analysis as a Tool to Measure the Effectiveness of Profits Planning and Control: A Case Study of Gorakhali Rubber Industry". This was submitted to Shanker Dev Campus,TU in partial fulfillment of Master'sDegree in the year 2005. The researcher has pointed our various findings and recommendations. Some remarkable findings were as follows:

1. The industry does not have detailed and systematic practice of cost plan, which is one of the essential elements of profit planning and control. Therefore, it is recommended to initiate the cost planning system.
2. Top level management claims that they have participative management system to set goals but these goals and objectives are not clearly communicated to the lower level of management.
3. GRIL is utilizing only 35% capacity. The full capacity of the industry is 3 shifts per day but it is running with one of reasons of high price of its products.
4. The financial position of the industry is not satisfactory. Gross profit margin ratio and net profit margin are not satisfactory.
5. The industry should consider the cost volume profit relationship while fixing the price of its products.
6. GRIL is bearing huge amount of fixed costs for employee expenses which is not good for the organization. Therefore, the industry should initiate the cost control program.

2.3 Research Gap

Many public or private enterprises are not practicing various accounting tools and techniques to measure its performance in Nepal. Accounting practice only lays

emphasis on the tax system. There is a significant gap between present research work and previous research works. There are many of researches which are conducted mainly on profit planning and control and management accounting of public enterprises. In most of the researches, profit planning tools are analyzed in one way of the order but their impacts are rarely explained. But none of these theses has conduct on CVP analysis of NAL. It is therefore, this present research work has been conducted in order to fulfill the objective. For this purpose, the researcher examines the current practice of cost volume profit analysis in the manufacturing industry, namely Nepal Aushadhi Limited. Probably this might be the first research study carried one of NAL on CVP analysis.

CHAPTER- III

RESEARCH METHODOLOGY

3.10 Research Design

This study attempted to show the relationship among cost, volume, profit and various functional budgets for solving the problems that has accrued in Nepal Aushadhi Ltd. Cost-Volume and profit analysis of Nepal Aushadhi Ltd was presented and analyzed by descriptive research design and analytical method. A study design is the arrangement of the conditions for collection and analyze of data in manner that aims to combine relevance to the study purpose with the economy.

To fulfill the objective of the study primary as well as secondary data will be used and study design will be descriptive as well as analytical.

3.11 Research Population and Sample

The large group about which the generalization is made is called the population under study, or the universe and small portion on which the study is made is called the sample of the study.

Research population would be all manufacturing company of Nepal. Due to various. Circumstances it would not be possible to attempt all the number of research population regarding in the dissertation, To convenient the research, only one Nepal Aushadhi Limited is taken for the research study.

3.12 Source and Type of Data

Data and information are the foundation of any study. Data may be obtained from several sources; it is not easy to list them in detail. Each research project has its own data needs and data sources. Secondary data were taken from annual reports, auditor's reports, balance sheet, P/L account, cost detail sheet, previous thesis and other relevant published and unpublished documents related to NAL For further information informal interviews were conducted with the concern authority.

3.13 Variables or Studies

Variables are characteristics of person, things, groups, objects etc. A variable is thus a symbol to which numerals or values are assigned. In other words, a variable can take on many values are assigned. The was concerned with two types or variables, independent variables and dependent variables, which are presented as below.

a) Independent Variables

A variable is called independent variable if it is not influenced by any other variable under study. The independent variables are those, which are the basis of predication.

b) Dependent Variables

A variable is called dependent variable if its values depend upon the variables. The investigators purpose is to study analyze and predict the variability in the dependent variable. The dependent variable is the variable that is being predicted.

Table 3.1

Classification of Variables

S.N	Independent Variable	S.N	Dependent Variable
1	Sales Unit	1	Sales Rs
		2	Cost (Variable & Fixed)
		3	Profit

3.14 Method of Analysis & Presentation

Analysis and presentation of the data is the core of each and every research work. In order to get the concrete results from this research, data are analyzed by using different types of tools. Basically, following two techniques are used to explain the collected data.

3.15 Descriptive Techniques

Descriptive technique is a fact-findings operation for adequate information. It is a type of study, which is generally conducted to assess the opinions, behaviors or characteristics of a given population and to describe the situation and events occurring at present. Descriptive technique is a process of accumulating facts. It does not

necessary seek to explain relationships, test hypothesis, or get at meanings and implications of a study.

3.16 Quantitative Techniques

Descriptive techniques would not be enough to prepare excellent research report. To fulfill the gap, or make the research report attractive and for better understanding the following profit planning and statistical tools were used:

3.17 CVP Analysis Tools

C-V-P Analysis Was Included the following Techniques:

Contribution Margin (CM) = Sales – Variable Cost

$$\text{Contribution Margin Ratio} = 1 - \frac{\text{Variable Cost}}{\text{Sales}}$$

$$\text{Break Even point (BEP) In Units} = \frac{\text{Total Fixed Cost}}{\text{SPPU} - \text{VCPU}}$$

$$\text{Break Eden point (BEP) In Rs.} = \frac{\text{Total Fixed Cost}}{\text{CM Ratio}}$$

$$\text{Cash BEP (In Rs)} = \frac{\text{Fixed Cost} - \text{Non Cash Outlay}}{1 - \frac{\text{Variable Cost}}{\text{Sales} - \text{Non Cash Outlay}}}$$

$$\text{Required sales for desired profit (in units)} = \frac{\text{FC} + \text{Desired Profit}}{\text{CMPU}}$$

$$\text{Required sales for desired profit (in Rs)} = \frac{\text{FC} + \text{Desired Profit}}{\text{CM Ratio}}$$

$$\text{Required sales in units for DPAT} = \frac{FC + \frac{DPAT}{(1-T)}}{CMPU}$$

$$\text{Required Sales in Rs for DPAT} = \frac{FC + \frac{DPAT}{(1-T)}}{\text{CM Ratio}}$$

Safety Margin (In Units) = Actual Sales Units – BEP in Unit

Safety Margin (In Rs) = Actual Sales Rs. – EBP in Rs

$$\text{Margin of safety Ration} = \frac{\text{Actual/ Budgeted Sales} - \text{BE Sales}}{\text{Actual/ Budgeted Sales}}$$

3.18 Statistical Tools

The relationship between two or more variables can be measured by using statistical tools. In this study the following statistical tools are used.

) Bar Diagram

Bar diagram are one of the easiest and the most commonly used methods of presenting the numerical date. They present the data by means of bars, or rectangles of equal width. The length of the bars represents the given figures and the width may be of any size.

) Mean

The sum of all the observations divided by the number of observations is called Mean. In such cases all the items are equally important. It is usually devoted by X. It is defined by the following formula:

$$\text{Mean } (X) = \frac{x}{N}$$

Where ,

x X*the* Sum of observations

N= no. of observation

) Standard Deviation (S.D.)

The standard deviation is defined as the positive root of the mean of the squared deviation from their mean of a set of values. It is also known as Root Mean Square Deviation. It is usually devoted by the Greek letter & (Small Sigma)

The SD is calculated by the following formula:

$$SD = \sqrt{\frac{(X \; Z \; X)^{2}}{N \; Z1}}$$

) Coefficient of Variation (CV)

The relative measure of dispersion based on SD is called coefficient of SD. Thus,

$$\text{Coefficient of SD.} = \frac{¢}{X}$$

100 times coefficient of SD is called coefficient of variation. It is denoted by C.V. thus,

$$CV = \frac{¢}{X} x100$$

) Correlation Analysis

The degree of relationship between two variables at a time is called correlation. In other words, two variables are correlated in such way that if one variable changes then other variables also changes subsequently.

$$\text{Co-efficient of correlation (r)} = \frac{\sum(x-\bar{x})(y-\bar{y})}{\sqrt{\sum(x-\bar{x})(y-\bar{y})}}$$

The correlation coefficient measures the degree of correlation between Y on X. It should be between + 1 and -1. If not there is no correlation between two variables.

) Coefficient of Determination (r^2)

A meaningful analysis id available from the square of correlation coefficient (r^2), which is called the coefficient of determination and calculated using the following formula:

Co- efficient of determination (r^2)= r × r

Probable Error (P.E.) = $0.6745 \times \frac{1Zr^2}{\sqrt{N}}$

CHAPTER-IV

DATA PRESENTATION AND ANALYSIS

4.1 Budgeted and Actual Sales of NAL

The individuals who are best able to forecast sales are usually the sales force and product managers. Their ability to accurately forecast sales depends on the nature of the industry and on characteristics of the product. Demand is seasonal for many products, in which case month's forecast usually incorporates information about sales for the same month of the last year. The following table presents the budgeted and actual sales revenue of NAL for five fiscal years from 2059/2060 to 2063/2064.

Table 4.1

Nepal Aushadhi Limited

Budgeted and Actual Sales

Date	Sales (In Rs '000')		Achievements	
	Budgeted	Actual	% of Budgeted Sales	% Change in Actual sales
2059/2060	180,000.00	75,564.96	41.98%	
2060/2061	142,059.00	60,106.90	42.31%	-20.46%
2061/2062	170,000.00	66,207.80	38.95%	10.15%
2062/2063	140,000.00	51,805.78	37.00%	-21.75%
2063/2064	140,000.00	50,259.17	35.90%	-2.99%

Source: Audit Reports

The above table shows that there is more difference between budgeted and actual sales. There is more a difference of more than 50% between the budgeted and actual sales. The achievement was highest in fiscal year 2060/2061 which was 42.31% and lowest in fiscal year 2063/2064 which was 35.90% So, according to this table it can be said that the plan was not systematic because of the company was less than 50%. The fluctuations of the budgeted sales and actual sales indicate that the plan was not scientific. Therefore, it can be said the budgeted sales did not consider past sales data, market research, environmental scanning, expert opinion etc. The actual sales revenues of NAL of the five fiscal years were in fluctuation. There were positive as

well as negative fluctuates between years. The sales revenue has decreased over the years except in F/Y 2061/062.

The total sales revenues of NAL were in fluctuation. There must be various reasons which cause the variation on sales revenue. The significant factors responsible for the variation in sales revenue are demand conditions of the products, cost of the production, political situation of the country, political conflict, government policy, top competition with imported products, product quality etc. Most companies face a downward-sloping demand curve for their products, which implies that forecasting sales revenue requires prediction sales volume at the planned sales price.

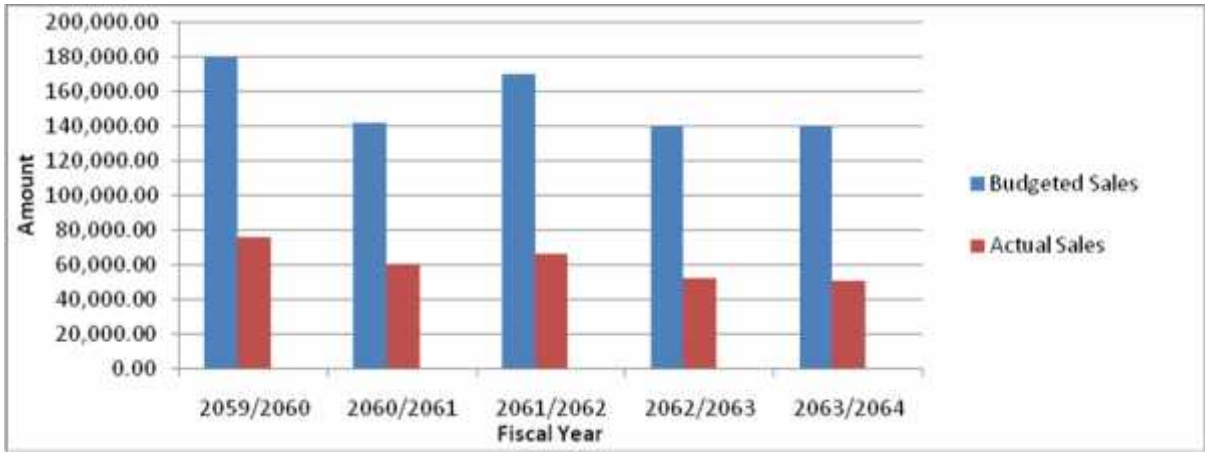
In the fiscal year 2060/2061, the actual sales revenue collected by the industry through its products was only Rs. 60,106,900 which was 20.46% less than the sales revenue of Rs. 75,564,960 previous year of 2059/2060. But in the year 2061/2062 sales revenue increased by 10.51%as compared to the previous year's sales of Rs. 60,106,900. During the FY 2062/2063 the sales revenue dropped to Rs. 50, 805, 780 from Rs. 66, 207, 800. It was 21.75% less as compared to the FY 2061/2062. Like previous year, during the FY 2063/2064 sales revenue also decreased to Rs. 50, 259, 170 from Rs. 51, 805, 780. In other words, the sales revenue of 2063/064 decreased by 2.99% as a compared of the previous year. Therefore, the above mentioned facts clearly show that the sales revenue trend of the industry was unstable.

The presentation of the budgeted and actual sales figure will be more effective by following graph.

Figure 4.1

Nepal Aushadhi Limited

Budgeted and Actual Sales



The above diagram shows that there is wide difference between budgeted and actual sales. There is a difference of more than 50% between the budgeted and actual sales. Total sales revenue of FY 2059/060 was highest. But as compared to the budgeted and actual sales, the achievement of the actual sales was highest in fiscal year 2060/061 which was 42.31% of the budgeted sales and lowest in fiscal year 2063/064 which was 35.90% of budgeted sales.

In order to find out the nature of variability of the budgeted sales and sales achievement of different years, arithmetic mean, standard deviation and coefficient of variation of budgeted and actual figure of NAL for the fiscal five years were calculated.

4.2 Summary of Statistical Calculation

Table 4.2

Summary of Statistical Calculation

Statistical Tools	Sales	
	Budgeted	Actual
Mean	154, 411.80	60, 788.92
Standard Deviation	17, 121.56	9,378.00
Coefficient of Variation (C.V.)	11.09%	15.43%
Correlation (r)	0.94	
Probable Error (P.E.)	0.037	
6* P.E.	0.222 (6*0.037)	

Source: Appendix-1

The table 4.2 represents the calculated statistical values. This table shows that mean of the budgeted sales is more than mean of the actual sales. There is wide difference between the budgeted and actual sales. But standard deviation of actual sales is less than the budgeted sales and there is more fluctuate between budgeted and actual sales. The coefficient of variation of actual sales is more than C.V. of budgeted sales. This shows that budgeted sales fluctuated less than actual sales. Having smaller C.V., the budgeted sales are more homogeneous or more consistent than actual sales.

While studying two variables at the same time, if it is found that the change in one variable is reciprocated by corresponding change in the other variable either directly or inversely, then the two variables are known to be associated or correlated. Otherwise, the two variables are known to be dissociated or uncorrelated or independent. If two variables move in the same direction i.e. an increase or decrease on the part of one variable introduces an increase or decrease on the part of the other variable, then the two variables are known to be positively correlated. Otherwise, known to be negatively correlation. But in this case, the correlation coefficient (r) between two variables (i.e. budgeted and actual sales) are 0.94 (i.e. $0< r< 1$). It shows that positive correlation between budgeted and actual sales, but r is very closer to 1 so it is called high by positive correlation between the budgeted and actual sales.

The Probable Error (P.E.) may be used to test if an observed value of correlation coefficient is significant. If $r<$P.E (r) i.e. of the observed value of r is less than the P.E., then the correlation is not at all significant . If $r>6$ P.E.(r) i.e., if the observed value of r is greater than 6 times of its P.E., then r is definitely significant. In the other situation, nothing can be concluded with certainty. But in this situation, the value of 'r' is greater than 6 P.E. (i.e. $0.94> 0.222$), the calculate value of r is definitely significant.

4.3 Time Series Analysis of Sales Revenue

The time series may be defined as a collection of magnitudes belonging to different time periods of variable or composite of variables, Such as production, sales, per

capita income, price or index of industrial production. It helps in understanding past behaviour, planning future operations, evaluating current accomplishments and facilitates comparison. When such analysis is coupled with a careful examination of current business indicators one can undoubtedly improve substantially upon guest mates (i.e. estimates based upon pure guesswork) in forecasting future business conditions.

There are various methods to analyzed the time series but in this thesis to analyze the trend of actual sales, least square is the most appropriate to estimate the possible future sales for given time or year. A straight line trend will show the relationship between time period and actual sales of the relevant year. In this method, it is assumed that the sales consistently changes (increase or decrease) with the change in time and such change can be expressed by the components of time factor. In this method time factor is considered as independent factor and sales is considered as dependent factor upon time. Then straight line trend of actual sales (Y) depends upon the time(X), which is expressed as:

Y = a + bX.....(**)

In order to determine the values of the constants ‘a’ and ‘b’ the following two normal equations are to be solved:

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

$$XY = a \quad X\,\Gamma b \quad x^2 \quad \ldots\ldots\ldots\ldots\ldots\ldots (ii)$$

Where N represents number of years for data given

4.4 Fitting the Straight Line Trend by Least Square Method

Table 4.3

Time Series Analysis

Fitting the Straight Line Trend by Least Square Method

Year	Actual Sales (Y) (in Rs. 'ooo')	X = t-2061/062	XY	X^2	Trend (Y_c) (Rs'000')
2059/060	75, 564.96	-2	(151, 129.92)	4	60, 800.71
2060/061	60, 106.90	-1	(60, 106.90)	1	60, 794.81
2061/062	66, 207.80	0	0	0	60, 788.92
2062/063	51, 805.78	2	51, 805.78	1	60, 783.03
2063/064	50, 259.17	1	100, 518.34	4	60, 777.14
Total	Y = 303, 944.61	X = 0	xy = (58912.70)	X^2 = 10	Y_c = 303, 944.61

Where X = t-2061/062, i.e., origin is at 2061/062 and X units = 1 year and Y is sales revenue (in Rs. '000').

$Y = Na + b X$

or, 303, 944.61 = 5a + 0

$a = \frac{303,944.61}{5} = 60,788.92$

$XY = a X + b X^2$

or 58912.70 = a×0 +10 b

$b = \frac{(58,912.70}{10} = (5,891.27)$

Substituting in (**), the trend line is given by the question:

Y_c = 60,788.92 + [-5,891.27 X]……..(***)

Substituting X = -2, -1, 0, 1, 2 in (***), we obtained the trend values for the years 2059/060 to 2063/064 respectively. The trend values are given in the last column of the above table 4.3

The estimated sales revenue in 2065/066 is obtained on putting X = t – 2061/062 = 2065/066 – 2061/062 = 4, in (***).

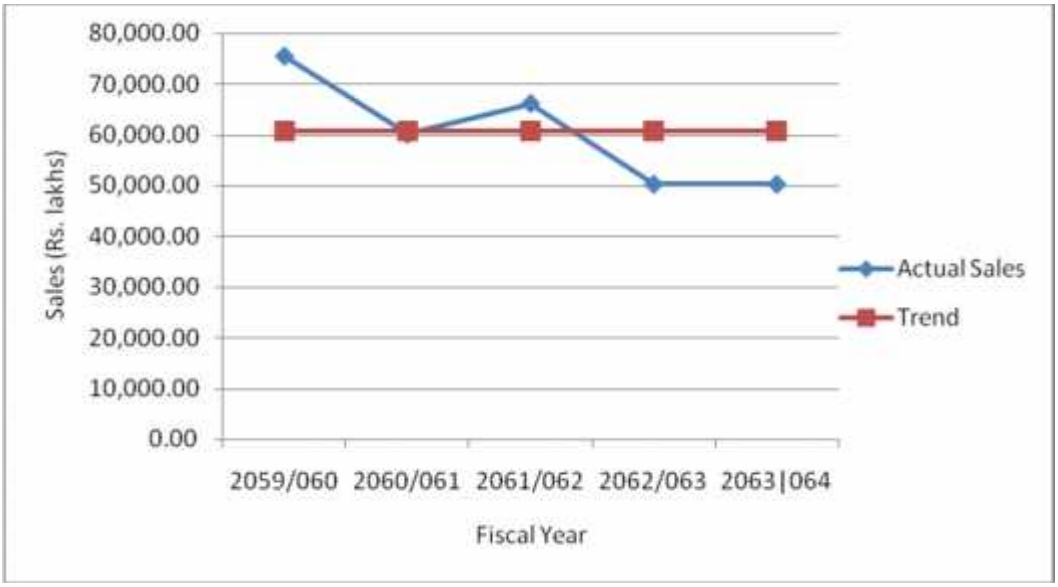
Thus (Y_c) 2065/066 = 60,788.92 + [-5,891.27 *4] = 37223.84 (Rs. '000')

Therefore, if the trend does not change, the possible sales for the fiscal year 2065/066 will be Rs. 37223.84 * 1,000 = Rs. 37,223,840

The presentation of the above sales figure with the trend will be more effective by the following graph.

Figure 4.2

Time Series Analysis of Sales Revenue



4.4.1 Variable Cost of NAL

A cost that varies proportionately with the variation in volume of activity level is known as variable costs. A Variable cost per unit remains fixed where as total variable cost keeps on fluctuating with activity level. Unless otherwise mentioned labour costs, materials costs and other costs of direct nature are examples of variable costs.

Table 4.4

Variable Costs for the Five Fiscal Years

Particulars	**2059/060**	**2060/061**	**2061/062**	**2062/063**	**2063/064**
Printing and stationery	207,892	209,745	238,300	157,832	120,555
Misc. Expenses	207,264	216,265	242,239	218,589	159,047
Distribution Cost	4,352,993	5,829,921	7,157,705	4,982,989	4,084,821
VAT Expenses	158,620	148,650	167,630	221,700	132,680
Cost of Sales *	68,634,781	52,850,570	48,659,616	45,961,043	45,340,279
Total	**73,561,550**	**59,255,151**	**56,465,490**	**51,542,153**	**49,837,382**

% of Variable Cost on Production Cost	71.48%	41.56%	54.90%	52.96%	52.76%

Source : Appendix- II

Note, where, Production Cost =Fixed Cost +Variable Cost

The above table shows that there is variation in production cost for different years. FY Different factors are responsible for making change in production cost such as fluctuation in price of raw materials in international market, packing materials. The total variable cost of FY 2059/060 was Rs. 73,561,550 and it decrease every year.

4.4.2 Fixed Cost of NAL

Fixed costs are those costs which remain the same regardless of level of sales. Depending in type of business, some typical examples would be rent, interest on loan, insurance, depreciation on plant and equipment, and salary of permanent full- time workers The fixed costs of the company are given in the following table.

Table 4.5

Fixed Cost for the Five Fiscal Years

Particulars	**2059/060**	**2060/061**	**2061/062**	**2062/063**	**2063/064**
Salary	19,985,451	17,832,336	17,627,216	20,771,642	12,998,037
Rent	96,000	96,000	96,000	96,000	96,000
Auditing	50,000	50,000	50,000	50,000	55,000
BOD meeting Exp.	69,200	69,200	69,200	69,500	69,000
Bank charge	198,462	254,864	313,620	146,024	7,435
Insurance	1,709,864	1,735,995	1,959,040	377,187	302,740
Donation	20,000	25,000	31,000	16,000	
Training	16,000		300	13,800	
Diesel Boiler Machine	146,826	280,499	140,909	508,769	258,407
Misc. Expenses	3,028,895	2,909,635	2,977,890	3,204,433	3,004,532
Repair Machinery	198,568	179,192	205,458	122,822	109,847
Deposit Interest			218,685	228,000	
Consumed Goods	88,761	65,778	79,274	52,550	16,721
Electricity and water	1,781,387	1,374,439	1,601,118	2,358,957	1,048,262

Anniversary Exp.	8,935	6,428	7,198	996	
Analysis Dastur	9,652	6,735	7,546	1,023	
Reward	24,055	35,165	38,267	34,449	20,611
Research	17,600	815	913		
Advertisement	96,743	63,153	66,580	60,120	35,611
Interest Exp.		8,412,280	13,285,966	8,582,844	7,139,682
Depreciation	1,805,226	1,466,831	1,498,453	1,539,094	1,613,617
Medicine Exp.		15,187,853	5,511,707	673,783	1,249,830
Updan		33,264,229	600,851	6,854,024	16,576,145
Total	**29,351,628**	**83,316,428**	**46,387,192**	**45,785,019**	**44,624,483**

The fixed cost in the FY 2059/060 was lowest of Rs. 29,351,628 The highest fixed cost which was Rs. 83,316,428 in the FY 2060/061. However, there was no more fluctuation in the salary cost between the FY 2060/061 which was Rs. 17,832,336 and 2061/062 which was Rs. 17,627,216. Salary was the highest in the FY 2062/063 which was Rs. 20,771,642.Thus it can be concluded that the fixed cost increased in FY 2060/061due to highest interest expenses in comparison to the all other fiscal year.

4.5 Profitability of NAL

Profit is the major element of each and every business organisation for survival, further development and fulfils social expectation. In modern business, effectiveness and efficiency of any business organisation or management are measured on the basis of profit. However, the concept of profit is changing from time to time. At present, reasonable profit approach has been becoming at a strong position.

Since the industry is suffering from loss for so many years, therefore it is not relevant to analyzed only the net profit (loss) of the industry. For this reason gross profit is requested to be analyzed apart from net profit. Gross profit is the amount left after deducting cost of sales from total sales revenue. The profit pattern of NAL is presented below. The profit pattern is analyzed on the basis of actual sales achievement.

Table 4.6

Profit Trend of NAL

Years	Gross profit		Net profit (loss)		Operating Expenses	
	Rs.	%	Rs.	%	Rs.	%
2059/060	6,930,174	9.17%	(27,010,153)	35.74%	101,107,952	133.80%
2060/061	7,256,329	12.07%	(82,222,900)	136.79%	132,692,468	22.76%
2061/062	17,548,189	26.50%	(36,128,189)	54.57%	88,068,263	133.02%
2062/063	5,844,736	11.28%	(43,380,483)	83.74%	87,205,233	168.33%
2063/064	4,918,889	9.79%	(41,634,693)	82.84%	85,702,566	170.53%

Note: Where, Operating Expenses = Cost of Sales + Selling Expenses + Administrative Expenses

The industry is suffering from net loss for so many years. The amount of loss was highly fluctuated, I the FY 2059/060 the net loss of the industry was Rs. 27.348,223 and it was increased to Rs. 82,464,680 in FY 2060/061. There were numerous reasons for continuous loss of the industry which are: liquid political condition of the country, unstable industrial environment, top competition with the imported medicines, fluctuation in the price of raw material in the international market etc. Apart from the above mentioned factors there were other internal and external factors causing the continuous loss of the industry which were low utilization of capacity, excessive strikes and bandhs, price problem due to under utilization of the production capacity. The industry was not able to make operation profit (Profit before interest and depreciation) in each fiscal year from 2059/060 to 2063/064 due to huge amount of administration expenses.

The gross profit, Operation profit (loss) and Net profit for the five fiscal years (from 2059/060 to 2063/064 are shown in the Appendix III. The income statement for the FY 2063/064 is shown as follows:

Table 4.7

Income Statement for the year ended 2063/063

Particulars	2063/064
Sales Revenue	50,259,168
Less: Cost of Sales	45,340,279
Gross Profit (loss)	**(4,918,891)**
Add: Other Income	2,568,004
Total GP Including Other Income	7,486,895
Less:	
Selling Expenses	4,532,714
Administration Expenses	35,835,573
Operation Profit (loss)	(32,881,392)
Less: Other fixed costs	
Interest	7,139,682
Depreciation	1,613,617
Net Profit (loss)	**(41,634,693)**

Source : Appendix III

4.5.1 Gross Profit Margin Ratio

One of the most common ratio in operational analysis is the calculation of gross profit as a percentage of net sales. It is calculated by dividing the gross profit by sales.

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

The gross profit margin reflects the efficiency with which management produces each unit of product. This ratio indicates the average spread between the cost of goods sold and sales revenue. A high gross profit margin ratio is a sign of good management. A gross profit margin ratio may increase due to any of the following factors e.g. (a) higher sales price, cost of goods sold remaining constant, (b) lower cost of goods sold, sales prices remaining constant (c) a combination of variations in sales prices and

costs, the margin widening, and (d) an increase in the proportionate volume of higher margin items. A low gross profit margin may reflect higher cost of goods sold due to firm's inability to purchase raw materials at favourable terms, inefficient utilisation of plant and machinery, or over investment in plant and machinery, resulting in higher cost of production.

$$\text{Gross Profit Margin Ratio (for the FY 2063/064)} = \frac{4{,}918{,}889}{50{,}259{,}170} \times 100$$

$$= 9.79\%$$

Gross Profit margin ratio calculated from the FY 209/060 to 2063/064 in table 4.6

4.5. 2 Net Profit Margin Ratio

Net profit margin ratio establishes a relationship between net profit and sales and indicates management's efficiency in manufacturing, administration and selling the products. This ratio is the overall measure of the firm's ability to turn each rupee sales into net profit. The net profit margin ratio is measured by dividing profit after tax by sales:

$$\text{Net Profit Margin Ratio} = \frac{\text{Profit after Tax}}{\text{Sales}}$$

The gross profit margin has increased over years, but net profit margin has either remained constant or declined, or has not increased as fast as the gross margin, this implies that the operating expenses relative to sales have been increasing. The increasing expenses should be identified and control. Gross profit margin may decline due to fall in sales price or increase in the cost of production. As a consequence, net profit margin will decline unless operating decrease significantly.

$$\text{Net Profit Margin Ratio (for the FY 2063/064)} = \frac{(41{,}634{,}691)}{50{,}259{,}170} \times 100$$

$$= (82.84\%)$$

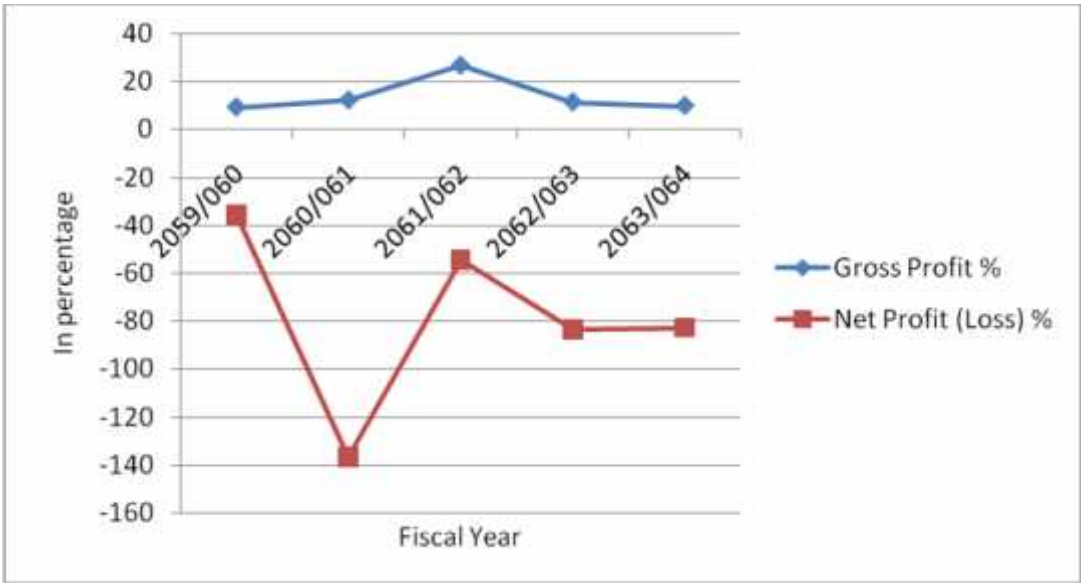
Net Profit Margin Ratio calculated from FY 2059/060 to 2063/064 in Table 4.6

This result shows that the company has suffered the huge amount of net loss and this is not the indication of efficiency of the business and utilization of resources. But still this figure indicates that one rupee increased in sales help to further increase of loss by

Rs. 0.82. The gross profit margin and net profit margin ratio is shown by the following graph:

Figure 4.3

Trend of Gross Profit and Net Profit in Percentage



4.5.3 Operating Expenses Ratio

The operating expenses ratio explains the changes in the profit margin ratio. This ratio is computed by dividing operating expenses viz cost of goods sold plus selling expense and general and administrative expenses (excluding depreciation and interest) by sales.

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

The operating expenses ratio is a yardstick of operating efficiency, but it should be used cautiously. It is affected by a number of factors, such as external uncontrollable factors, internal factors, employees and managerial efficiency (or inefficiency), all of which are difficult to analyze. Further, the ratio can not be used as a test a financial condition in the case of those firms where non-operating expenses ratio indicates the average aggregative variations in expenses, where some of the expenses may be increasing while other may be falling. Thus, to know the behavior of specific expenses items, the ratio of each individual operation expenses to sales should be calculated.

Operating expenses ratio (For the FY2063/064) = $\frac{85,702,566}{50,259,170}$

=170.53%

Operating Profit Margin Ratio calculated from FY 2059/060 to 2063/064 in Table No. 4.6. The operating expenses ratio for this company indicates that 170.53% of sales have been consumed together by the cost of goods sold and other operating expenses. This implies that the company should not cover the cost of goods sold and other operating expenses.

4.6 Cost-Volume-Profit Analysis of Nepal Aushadhi Limited

The study of relationship between cost, volume and profit is known as cost-volume profit analysis. CVP is the study of the effect of changes in costs and volume on a company's profits. Now days, CVP analysis has become a powerful instrument in management decision making, specially cost and profit planning. CVP analysis help to determine the minimum sales volume require avoiding losses and the sales volume at which the profit goal of the company will be achieved. So it is very important for sales and productions plan because without the knowledge of BEP, it is very difficult to determine the sales level for certain level of profit, Profit planning can be done only when the management has information about the cost of products, both fixed and variable cost and the selling price of the product. It is useful in setting selling prices, determining product mix, and maximizing use of production facilities. CVP analysis is especially applied for profit planning and control. On the calculation of BEP in NAL, following assumption should be considered**.**

- Activity base is selected in terms of sales revenue.
- The concept of cost variability is valid, so cost can be classified as fixed and variable.
- There is no opening and closing stock.
- Sales mix ratio among the products remains constant

Table 4.8

Nepal Aushadhi Limited

Income Statement and Various components of CVP

Analysis for five years

Particulars	**2059/060**	**2060/061**	**2061/062**	**2062/063**	**2063/064**
Sales Revenue	75,564.96	60,106,899	66,207,805	51,805,787	50,259,168
Variable Cost	73,561,550	59,255,151,	56,462,490	51,542,153	59,837,494
Contribution Margin	2,003,405	851,748	9,742,315	263,626	421,786
Fixed Cost	29,351,628	83,316,428	46,387,192	45,787,019	44,624,483
Profit (Loss) Excluding Other Income	(27,348,223)	(82,464,680)	(36,644,877)	(45,521,394)	(44,202,697)
Other income	338,070	241,780	516,688	2,140,910	2,568,004
Net Profit (Loss) including Other income	(27,010,153)	(82,222,900)	(36,128,189)	(43,380,484)	(41,634,693)
CM Ratio	0.02651	0.01417	0.14715	0.00509	0.00839
VC Ratio	0.97349	0.98583	0.85285	0.99491	0.99161
BEP Rs.	1,107,190,796,	5,879,776,147	315,237,458	8,995,092,141	5,318,770,322
BEP Rs. (**)	1,094,438,250	5,862,713,338	311,726,157	8,574,481,139	5,012,691,180
MOS Rs.	(1,031,625,841)	(5,819,669,248)	(249,029,653)	(8,943,286,363)	(5,268,511,154)
MOs Rs.(**)	(1,018,873,295)	(5,802,606,439)	(245,518,352)	(8,522,675,361)	(4,962,432,012)
BEP % on Sales	1465.217%	1782.198%	476.133%	17363.106%	10582.687%
BEP % on Sales(**)	1448.34%	9753.81%	470.83%	16551.21%	9973.69%
MOS % on Sales	-1365.217%	-9682.158%	-376.133%	-17263.106%	-10482.687%
MOS % on Sales(**)	-1348.34%	-9653.81%	-370.83%	-16451.21%	-5873.69%

*** Including Other Income*

4.6.1 Analysis of Contribution Margin Ratio

Cost volume profit analysis includes both contribution analysis and break even analysis. Contribution analysis involves a series of analytical techniques used to determine and evaluate the effects on profit of changes in sales volume (i.e. units sold), sales prices, fixed cost, and variable costs. It focuses on contribution margin. The term 'profit' used in CVP analysis is the amount of contribution margin available from the sales revenue to absorb fixed cost and also to contribute towards company's

profit goal after deducting all variable costs of sales. Therefore, CVP analysis requires distinction of cost into variable cost and fixed cost. All semi variable costs need to be clearly segregated into variable and fixed component. Contribution margin is the excess of sale over the variable cost. It can be presented as follows:

Contribution Margin (CM) = Sales Revenue – Variable Cost
Or, CM for FY 2059/060 = Rs.(75,564,955 – 73,561,550) = Rs.2,003,405
Or, CM for FY 2063/064 = Rs. (50,259,168 – 49,837,382) = Rs.421,786

The above table 4.8 shows the calculation of CM of NAL for the fiscal year from 2059/060 to 2063/064. CM for the five years shows the fluctuating trend. High CM is signal of high profit, low CM is the signal of low profit. Above clearly shows that CM of NAL is not satisfactory because it don't cover the fixed cost. By this result, the company is bearing huge amount of loss.

In the same way, the CM ratio establishes a relationship between the contribution margin and sales volume. It can be presented as follows:

$$\text{CM Ratio} = \frac{\text{Contribution Margin}}{\text{Sales revenue}}$$

$$\text{Or, CM Ratio for the FY 2059/060} = \frac{Rs.2{,}003{,}405}{Rs.75{,}564{,}955} = 0.02651$$

$$\text{Or, CM Ratio for the FY 2063/064} = \frac{Rs.421{,}786}{Rs.50{,}259{,}168} = 0.00839$$

The above table 4.8 shows the calculation of CM Ratio of NAL for the fiscal year form 2059/060 to 2063/064. CM ratio is not also satisfactory of this company. So, management should try to increase the value of the ratio by reducing the variable cost or by the increasing the selling price.

4.6.2 Analysis of Break – Even Point

Break even analysis is a technique widely used by production management and management accountants. It is based on categorizing production costs between those which are "variable" (costs that change when the production costs output changes) and those that are "fixed" (costs not directly related to the volume of production). Total variable and fixed cots are compared with sales revenue in order to determine the level of sales volume, sales value or production at which the business makes neither a profit nor a loss (the "break-even point"). Through contribution margin approach, break-even-point can be expressed as:

If other income is not included in the revenue then BEP is:

$$\text{BEP (in Rs.)} = \frac{\text{Total Fixed Cost}}{\text{CM Ratio}}$$

$$\text{Or, BEP (in Rs.) for the FY 2059/060} = \frac{\text{Rs.29,351,628}}{0.02651}$$

$$= \text{Rs.1,107,190,796}$$

$$\text{Or, BEP (in Rs.) for the FY 2063/064} = \frac{\textit{Rs.}44,624,483}{0.02651}$$

$$= \text{Rs. } 5,318,770,322$$

If other income is included in the revenue then BEP is:

$$\text{BEP (in Rs.)} = \frac{\text{Total Fixed Cost Z Other income}}{\text{CM Ratio}}$$

$$\text{Or, BEP (in Rs.) for the FY 2059/060} = \frac{\textit{Rs.}29,351,628 \text{ Z } \textit{Rs.}338,070}{0.02651}$$

$$= \text{Rs.1,094,438,250}$$

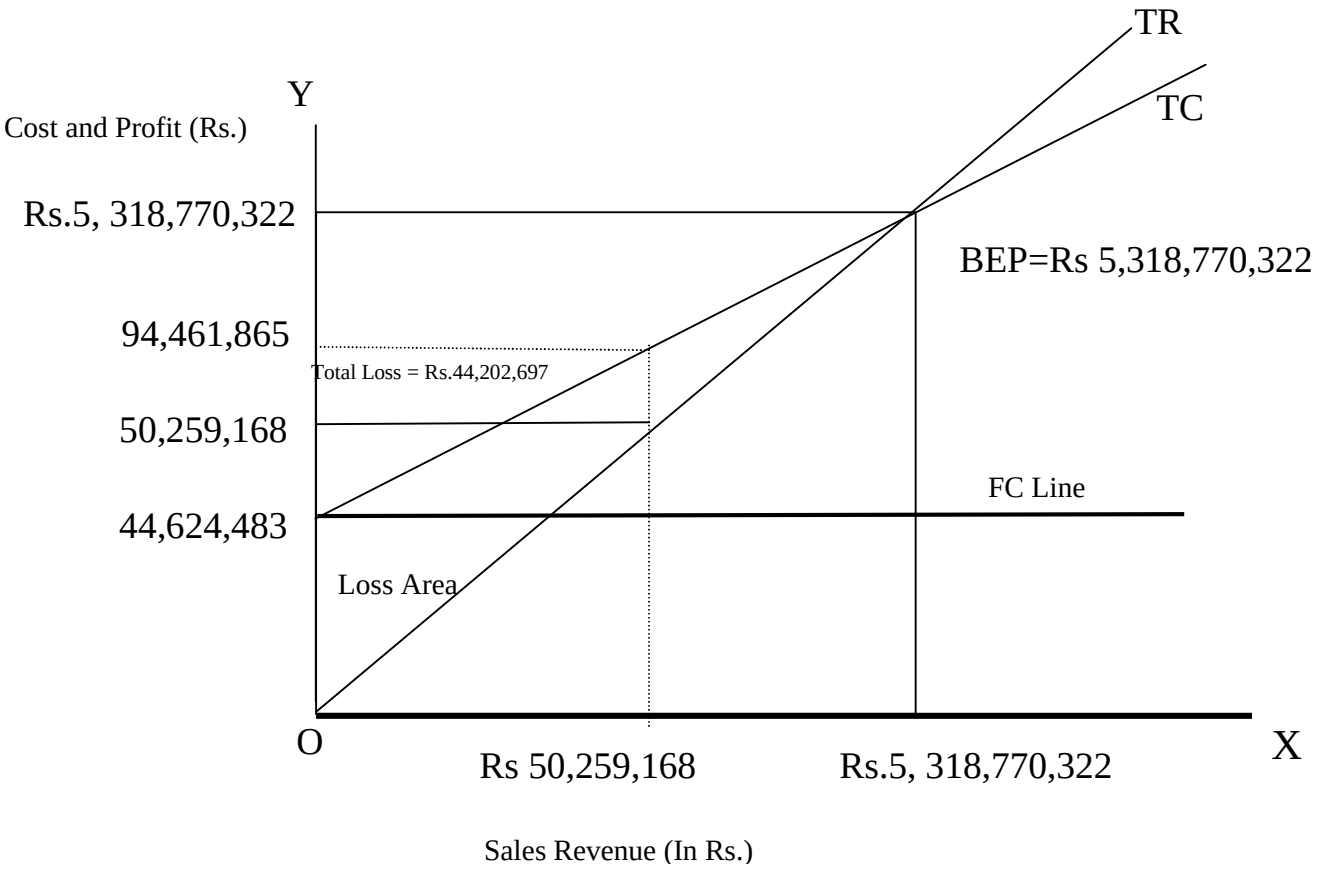
$$\text{Or, BEP (in Rs.) for the FY 2063/064} = \frac{\textit{Rs.}44,624,483 \text{ Z } \textit{Rs.}2,568,004}{0.02651}$$

$$= \text{Rs. } 5,012,691,170$$

For the above calculation, the BEP (if other income is not included) of NAL for the base year (2059/060) is Rs. 1,107,190,796 and for FY 2063/064 it is Rs. 538,770.322. If other income is included then the BEP of NAL is Rs.1,094,438,250 in FY 2059/060 and in FY 2062/063 it is Rs.5,012,691,180. Similarly, the table No. 4.8 shows the calculation of BEP of NAL for five fiscal year from 2059/060 to 2063/064. The break-even amount of NAL for five years shows decreasing and increasing trend. In all the five fiscal year, Break-even sales are higher than the actual sales of NAL which shows that it is necessary to increase in sales it recover loss and management should plan for its cost control. The break-even point can be also determined with the help of graph. A simple illustration of a hypothetical break even chart of NAL for the FY 2063/064 is given below and FY from 2059/060 to 2062/063 shown in appendix VI, when sales revenue is shown in X-axis and cost amount is shown in Y-axis.

Figure 4.4

BEP (in Rs.) for the FY 2063/064



From the above chart the fixed cost of the industry is Rs. 44,624,483. It is always equal within a certain level of activity, so fixed cost curve is parallel to X-axis. Since the variable cost directly varies with unit of production. If no production is made variable cost is zero. Total cost increase in sales revenue. As a result total cost curve is sloping upwards it right side. The total cost curve starts from fixed cost line. The amount of fixed cost is also total cost when sales revenue is even zero and variable cost will be zero. The sales revenue curve originates from the origin because sales revenue is zero when the quantity is zero. The chart also shows that sales curve is sloping upwards to right. An equilibrium point between total cost and total revenue curve is known as break-even point when both the cost and revenue is equal at BEP. If the actual sales amount is more that the break even sales amount, the company earn profit otherwise, the company will suffer loss. In the above figure NAL has not even

reached the break-even condition i.e. total cost (Rs. 94,461,977) exceeds the total sales revenue (Rs. 50,259,168) resulting the loss of Rs. 44,202,809, if other income is not considered for the year 2063/064

As from the table No. 4.8, the industry is always suffering form loss because of the high fixed costs viz. electricity, interest and upadan expense. The industry is operating in loss and far away from BE sales except in the FY 2061/062, where it is close to BE sales as compared to other years. It is observed from the table that at least the sales volume should be made more that five times just to be break-even condition i.e. neither profit nor loss. Otherwise the company should must be decrease the cost to attain at break-even point. The verification of BEP is shown below.

Table 4.9

Verification of BEP, If Other Income is Not Considered

Particulars	**2059/060**	**2060/061**	**2061/062**	**2062/063**	**2063/064**
Sales Revenue	1,107,190,796	5,879,776,147	315,237,458	8,995,092,141	5,318,770,322
Variable Cost	1,007,839,168	5,796,459,719	268,850,266	8,949,307,122	5,370,145,839
Con.Margin	29,351,628	83,316,428	46,387,192	45,785,019	44,624,483
Fixed Cost	29,351,628	83,316,428	46,387,192	45,785,019	44,624,483
Profit (loss)	0	0	0	0	0

Table 4.10

Verification of BEP, If Other Income is Considered

Particulars	**2059/060**	**2060/061**	**2061/062**	**2062/063**	**2063/064**
Sales Revenue	1,094,438,250	5,862,713,338	311,726,157	8,574,481,139	5,012,691,108
Other Income	338,070	241,780	516,688	2,140,910	2,568,004
Total Revenue (A)	**1,094,776,320**	**5,862,955,118**	**312,242,845**	**8,576,622,349**	**5,015,259,184**
Variable cost	1,065,424,632	5,779,638,690	265,855,653	8,530,837,030	4,970,634,701
Fixed costs	29,351,628	83,316,428	46,387,192	45,785,019	44,624,483
Total Cost (B)	**1,094,776,320**	**5,862,955,118**	**312,242,845**	**8,576,622,349**	**5,015,259,184**
Profit (Loss) (A-B)	0	0	0	0	0

4.6.3 Margin of Safety Analysis

Margin of safety (MOS) is a cushion available to a business firm to protect itself against the future business happenings. The larger is the margin of safety, the greater is the chances for the firm to earn profit or vice versa. Margin of safety if also defined as excess of actual or budgeted sales over and above the break even sales. In other words, it is the difference between actual or budgeted sales and break even sales. It states the amount by which sales can drop before losses begin to incur in an organization. The formula for its calculation is:

Margin of Safety (MOS) = Total Sales – Break Even Sales

It may be mentioned that the reciprocal of MOS is the operating leverage. A high MOS indicates that a firm has got enough risk bearing capacity as measured by variation in sales. A low margin of safety is the result of high operating cost, other factor remaining constants.

If other income is not included in the revenue than MOS is:

MOS for FY 2059/060 = Rs.75, 564,955 – Rs.1, 107,190,796
= (Rs. 1,031,625,841)

MOS for FY 2063/064 = Rs.50,259,168 – Rs.5,318,770,322
= (Rs.5,268,511,154)

If other income is included in the revenue then MOS is:

MOS for FY 2059/060 = Rs.75, 564,955 – Rs.1,094,438,250
= (Rs.1, 018,873,295)

MOS for FY 2063/064 = Rs.50, 259,168 – Rs.5, 012,691,180
= (Rs.4, 962,432,012)

For the above calculation, Margin of Safety (MOS) is negative in both fiscal year i.e. 2059/060 and 2063/064. Similarly, the table No. 4.8 shows the calculation of MOS both considering and not considering other income of NAL for five fiscal year from 2059/060 to 2063/064. In the all five years, NAL's break-even sales is higher than

actual sales, so margin of safety is in negative and less by 1365.087%, 9681.816%, 376.141%, 17267.447% and 10479.898% from FY 2059/060 to 2063/064 respectively. During the FY 2061/062 the MOS is less negative i.e. 376.141% as compared to other fiscal years.

When, other income is considered it is deducted from total fixed cost. This is because, income reduces the cost as a result BEP sales level of NAL is decreased than previous time. Margin of safety is also reduction than prior time. But still margin of safety is negative.

4.6.4 Analysis of Operating Leverage

Operating leverage is a measured of extent to which fixed costs are being used in an organization. The relationship of a company's variable and fixed cost is reflected in its operating leverage. Operating leverage is a measure of how sensitive net income is to percentage change in sales. An organization with high fixed cost and low variable cost reflects in sales. An organization with high fixed cost and low variable cost reflects high operating with high break-even point. It shows the direct proportionate relationship between fixed cost and sales. It is calculated by:

$$\text{Operating Leverage} = \frac{\text{Contribution margin}}{\text{EBIT}}$$

If the quotient become positive, operating leverage may be favourable otherwise it is unfavourable. In other words, impact on profit tat arise out of an increase in sales represents a favourable leverage. Similarly, a decrease in sales has a negative impact on operating profit and implies an unfavourable leverage. In profit planning, the objective is to maximize profit or minimize loss. So, leverage that has an unfavourable (or negative) impact on profit (i.e. due to decrease in sales) is not desirable. If sales fall, the firm with a high operating leverage would suffer more loss then the firm with no or low operating leverage.

Operating Leverage for FY 2063/064 = $\frac{Rs.421,786}{(Rs.37,063,015)}$

= (0.01138)

Table 4.11

Degree of Operating Leverage

Particulars	**2059/060**	**2060/061**	**2061/062**	**2062/063**	**2063/064**
Sales Revenue	75,564,955	60,106,899	66,207,805	51,805,778	50,259,168
Variable Cost	73,561,550	59,255,151	56,465,490	51,542,153	49,837,382
Contribution Margin	**2,003,405**	**851,748**	**9,742,315**	**263,626**	**421,676**
Fixed Cost excluding Interest	29,351,628	83,316,428	46,387,192	45,785,019	44,624,483
EBIT	(27,348,223)	(82,464,680)	(36,644,877)	(45,521,394)	(44,202,697)
DOL	(0.07326)	(0.01150)	(0.41707)	(0.00714)	(0.01138)

The table 4.11 shows the calculation of DOL of NAL for five fiscal year from 2059/060 to 2063/064. The DOL if NAL for five years shows decreasing and increasing trend. DOL of FY 2063/064 is -0.01138 indicates that if sales increase by 100 percent, operating loss will increase by 1.138%. Therefore, a levered firm is always riskier than an un-levered firm in bad times. But in good times, a levered firm's net operating income increases in higher proportion than the increases in sales. Therefore, it is riskier for NAL when the time is not favourable or the market condition is not satisfactory. Similarly, the above table shows that, if sales increase by 100% then the operating loss will increase by 7.326%, 1.15%, 41.707% and 0.714% from FY 2058/059 to 2061/062 respectively.

4.7 Impact of Changes in Various Variables on Profit

Sensitivity analysis is the measurement of responsiveness in outcome with the change in the determinant variables. As we know the profit is the function of volume, price, fixed cost, variable cost etc. Here, the researcher systematically deals with the following sensitivity analysis.

4.7.1 Effect of Changes in Sales

Break-even level of the industry will change when selling price per unit changes. But break-even level does not change when the total amount of sales revenue is changed due to change in sales unit. Because change in sales revenue impacts on CM and its ratio too. In the case of increase or decrease in the selling price, it effects on CM which is the cause of change in CM ratio, BEP and MOS.

Table 4.12

Income statement by 10% change in Sales (FY 2063/064

Particulars	**Original Sales Revenue**	**10% increase in Selling Price**	**10% decrease in selling price**
Sales Revenue	50,259,168	55,285,085	45,233,251
Less: Variable Cost	49,837,494	49,837,494	49,837,494
Contribution Margin	421,676	5,447,591	-4,604,242
Less: Fixed Cost	44,624,483	44,624,483	44,624,483
Net Income(Loss)	-44,202,809	-39,176,892	-49,228,725
Change in Net income(Loss)	-	5,025,917	5,025,917
CM Ratio	0.00839	0.09854	(0.10179)
BEP in Rupees	5,318,770,322	452,856,535	(438,397,514)
% change in BEP	-	-91.49%	-108.24%

The above table shows that when sales price is increased by 10%,net loss is decrease by Rs. 5,025,917. Similarly, CM ratio is increased to 0.09854 from 0.00839. The break-even amount is decreased to Rs. 452,865,535 from Rs. 5,318,7701,322 by 91.49%. When the selling price is decreased by 10%, net loss is increase by Rs. 5,025,917 from the original loss by Rs. 44,202,809. CM ratio is negative 0.10179 when sales price is decreased: BEP amount is negative to Rs. 438,397,514, due to negative of CM ratio, from the original BEP Rs.5,318,770,322. When sales value is increased by 10% the BEP value is decreased by 91.49%. In the contrary, 10% decreased in sales price, the increase BEP by 108.24%

4.7.2 Effect of Changes in Variable Cost

Other tings remaining constant, if the variable cost is changed then the BEP and CM ratio also changes. When variables cost is increased CM ratio will Be decreased and as a result profit will be decreased and vice-versa when variable when cost is decreased.

Table 4.13

Income statement by 10% change in Variable Cost (FY 2063/064)

Particulars	Original Variable Cost	10% increase in Variable Cost	10% decrease in Variable Cost
Sales Revenue	50,259,168	55,285,085	45,233,251
Less: Variable Cost	49,837,494	54,821,243	44,853,745
Contribution Margin	421,676	-4,562,075	5,405,423
Less: Fixed Cost	44,624,483	44,624,483	44,624,483
Net Income(Loss)	-44,202,809	-49,186,558	-39,219,060
Change in Net income (Loss)	-	(4,983,749)	4,983,749
CM Ratio	0.00839	(0.09077	0.10755
BEP in Rupees	5,318,770,322	-491,621,494	414,918,484
% change in BEP	-	-109.24%	-92.20%

The above table shows that when variable cost of NAL is increased by 10%, net loss of the company increased by Rs. 4,983,749. CM ratio is -0.09077 from 0.00839 and BEP is also negative to Rs. 491,621,494 from Rs. 5,318770,322 by -109.24%. When variable cost is decreased by 10%, net loss of the industry is decreased by Rs. 4,983,749 where CM ratio is 0.10755 and Break-even sales becomes Rs.414,918,484 or BEP decreases by 92.20% on actual level.

4.7.3 Effect of Changes in Fixed Cost

In CVP analysis, the change in fixed cost does not being any change in contribution margin ratio. Other factors remaining constant, when fixed cost is changed net income (loss) and BEP amount are also changed. Here 10% change in fixed cost of NAL is measured as follows:

Table 4.14

Income statement by 10% change in Fixed Cost (FY 2063/064)

Particulars	Original Fixed Cost	10% increase in Fixed Cost	10% decrease in Fixed Cost
Sales Revenue	50,259,168	50,259,168	50,259,168
Less: Variable Cost	49,837,494	49,837,494	49,837,494
Contribution Margin	421,676	421,676	421,676
Less: Fixed Cost	44,624,483	49,086,931	40,162,038
Net Income(Loss)	-44,202,809	-48,665,257	-39,740,361
Change in Net income (Loss)	-	4,462,448	(4,462,448)
CM Ratio	0.00839	0.00839	0.00839
BEP in Rupees	5,318,770,322	5,850,647,318	4,786,893,325
% change in BEP	-	10%	(10)%

The above table 4.14 shows that when fixed cost of NAL is increased by 10%, net loss of the industry is increased to Rs. 48,655,257 from Rs. 44,202,809.There are no effects on CM ratio while fixed cost is changed. So CM ratio is same but break-even sales revenue of the industry is increased of to Rs. 5,850,647,318 from Rs. 5,318,770,322. BEP level increase due to increase in fixed cost because to recover additional amount of fixed cost, It is required to increase in sales. When the fixed cost of NAL is decreased by 10%, net loss is decreased by 4,462,448. CM ratio remains constant because CM ratio does not change due to change in fixed cost, BEP reduces to Rs, 4,786,893,325 from Rs.5,318,770,322 due to decrease in fixed cost.

4.8 Break –Even Analysis of Multi-Products

Sales mix can be defined as the relative combination of product represented in the total sales. NAL has 6 products, which are not equally profitable. Profit depends to some extent on the sales mix that company is able to achieve. The break-even analysis of multi product company like as NAL is complex because different products will have different selling prices, different costs, and different contribution margins. Break-even point depends on the mix in which the various product are sold.

$$\text{Overall BEP (In Rs.)} = \frac{\text{Fixed Cost}}{\text{Weighted CM Ratio}}$$

$$= \frac{44{,}624{,}483}{0.00839}$$

$$= \text{Rs. } 5{,}138{,}770{,}322$$

The detail calculation of Weighted CM Ratio is presented in Appendix V. The sales mix and CM Ratio of each product are classified on the basis of sales. In the calculation, the overall break-even point if NAL is Rs. 5,318,770,322 for the FY 2063/064. This is computed by dividing the fixed cost by the company's weighted CM Ratio. If the sales mix changes, then the break-even point is also change. The details sales of each product of NAL to be a BEP for the FY 2063/064 is presented below in table 4.15

Table 4.15

Product Wise BEP Sales

S.N.	Products	Sales	Sales Mix	Product Wise BEP (Overall BEP * Sales Mix)
1	Tablet	48,455,871	0.96412	5,127,932,842
2	Capsule	256,824	0.00511	27,178,916
3	Powder and Suspensions	617,183	0.01228	65,314,500
4	I.V and E.N.T.	5,529	0.00011	585,065
5	Ointment	188,472	0.00375	19,945,389
6	Jeevan Jal	735,292	0.01463	77,813,610
Total		50,259,170	1.00	5,318,770,322

4.9 CVP Analysis and Uncertainty

The organization may fail to cover the fixed cost in the long run which can result in the demise of any organization, if much attention in given to the traditional CVP model (which ignores uncertainty). The basis CVP model is not adequate, bearing the

decision making process. If one or more variable of the CVP analysis are subject to uncertainty, the management should analyze the potential impact of this uncertainty. In any given decision problem, all four of factors viz. unit selling price, unit variable cost, total fixed cost and the expected sales volume of each product can be uncertain. However, to Simplify analysis several parameters can be taken as certainty equivalents. For the purpose, sales price, variable and fixed costs will be assumed be certain, while sales is assumed to be uncertain with the normal distribution. This means that the probability distribution for profit can also be assumed to be normal.

4.9.1 The Normal Probability Distribution

The normal probability distribution curve is bell-shaped and symmetrical with equal mean and median. To confirm whether a distribution is normal it is usually necessary to ascertain the mean («) and standard deviation (±). To compare two distribution it is necessary to translate the observations of both distributions into Z- values. Basically, Z-values convert each distribution into a standard normal from with a mean of zero, and a standard deviation of one. The formula used being.

$$Z = \frac{X\ Z\mu}{\sigma}$$

Where,

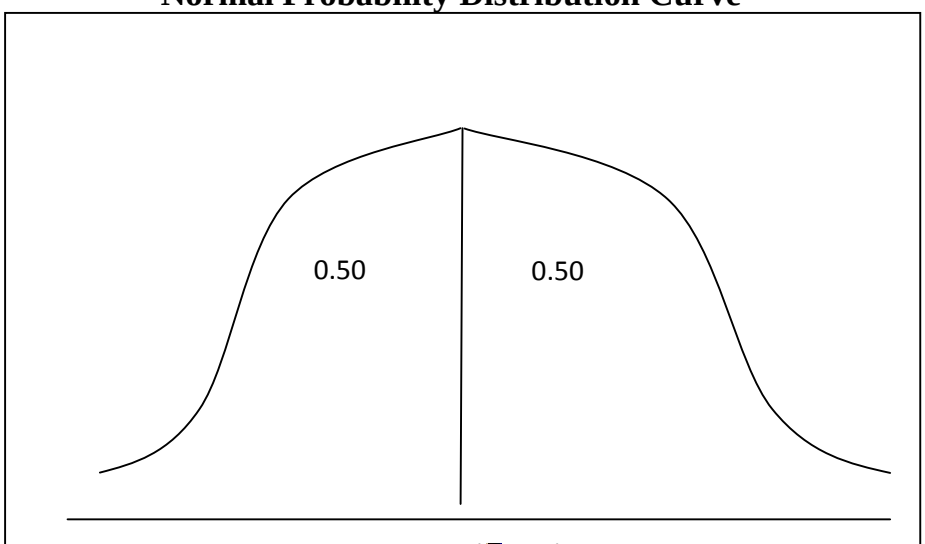
X = Value of Variable

« = Mean Value

± = Standard Deviation

Figure 4.5

Normal Probability Distribution Curve



In the figure Mean value $\overline{X}$ has divided the total diagram into exactly two equal parts i.e. 0.50 or 50% and total area of curve is one.

Here, BEP for NAL = Rs.5,318,770,322

Expected Mean Sales («) = Rs.60,788.92

Standard Deviation (±) = Rs.9,378

The calculation is presented in table No. 4.2. Computation of position to establish the probability of different profit level for the FY 2063/064 as follows:

1.) The Probability of at Least Break-Even Sales

Using Z-value

$$Z = \frac{5{,}318{,}770.322 - 60{,}788.922}{9378} = 560.672$$

Area between Z = P(0<Z<560.972)

= 0.50 or 50%

The break-even point lies 5,60,672 of NAL from the mean of our standard normal distribution curve. The probability distribution can be estimated from standard normal table. The figure of 0.5000 represents the probability of achieving the BEP by 50%

2.) The probability of sales of Rs. 43,115,110

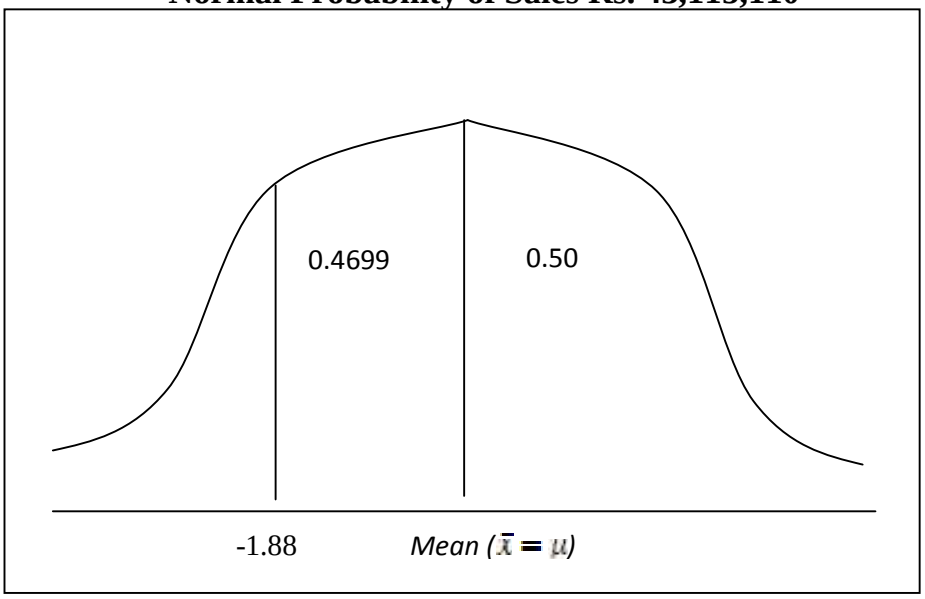
$$Z = \frac{43{,}115.110 - 60{,}788.922}{9378} = -1.88$$

The value or Z from Z-Table = 0.4699

The probability of sales Rs.43,115,110 is 0.4699 or 46.99%

Figure 4.6

Normal Probability of Sales Rs. 43,115,110



4.10 Impact of Income Tax

The industry was suffering from the huge amount of loss and its accumulative loss was Rs.230, 376,418. So in this regard, there would be no meaning of making analysis of impact of income tax.

4.11 Major Findings

On the basis of analysis, observation and informal discussion, the following major findings were drawn.

- Sales plan of NAL is not properly maintained. The industry did not use scientific method of sales planning.
- Sales trend of NAL shows the negative trend which can further increase the net loss further.
- Break-eve sales were more than actual sales. The industry was suffering from huge loss every year.
- NAL did not practice the scientific and appropriate cost classification technique. Costs were classified into fixed and variable as pre the decision of the top level management.
- Out of total cost of NAL, variable cost is 97.30%, 98.58%, 85.29%, 99.49% and 99.16% for the fiscal years 2059/060 to 2063/064 respectively. Costing very low contribution margin.
- MOS of NAL is negative in every years, the industry might be bearing very risk.
- The industry has 405 employees including skilled-technical and non-technical staffs. Out of total staff, 380 staffs are permanent and 25 staffs are working on daily wage system.
- Board of directors of NAL has sole responsibility of price fixing. Recommendations are collected from finance, Production and marketing department and on the basis of that Board of Directors fixes the price of the products.
- Top level managers set the goal but these goals and objectives are not clearly communicated to the lower level of management.
- The profitability of the industry is very poor. Every year the industry is suffering from loss and which is accumulated to Rs. 230.376,418 up to fiscal year 2063/064.
- NAL is utilizing only 40% capacity.
- The industry imports the Raw Materials from India and other country.

- The industry is facing problem of poor communication among productions, administration, technical, marketing and finance department.
- The operating profit ratio is very low which is not satisfactory. The net profit margin ratio is negative and the operating expenses ratio is very high. it shows that the financial condition of the industry is not good.
- As the degree of operating leverage is negative in every year. it suffers huge amount of loss even if the sales revenue decrease slightly.
- On the basis of sales, the largest top three products of the industry are tablet, powder and suspensions and jeevan jal.
- The industry is facing the problem of raw materials dependency and the fluctuation international price. Some times it also faces the problem of raw material scarcity as well and very tough competition market.
- There is significant different between budgeted sales and actual sales of the industry.
- If other income is considered then BEP of the industry was Rs. 1,094,438,250, Rs.5,862,713,338, Rs.311,726,157, Rs. 8,574,481,139 and Rs.5,012,691,180 from FY 2059/060 to 2063/064 respectively. Similarly if the other income is not considered the BEP of the industry was Rs.1,107,190,796, Rs.5,879,776,147, Rs.315,237,458, Rs.8,995,092,141 and Rs. 5,318,770,322 from FY 2059/060 to 2063/064 respectively.
- The sensitivity analysis, If variable cost is increased by 10% then contribution margin in negative and EBP is negative. Similarly, if the selling price is decreased by 10% then CM ratio is negative at the result BEP is also negative.

CHAPTER-V

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.4 Summary

In the present era, industrialization has become essential element for the development of the country. Industry promotes economic development by providing employment and by mobilizing the unutilized resources. Therefore, the strong need of public sector and private sector felt for the growth and economic development of the country through industrialization. Many public and private enterprises were established till now.

Nepal Aushadhi limited is only one medicine industry under government taking and its main purpose is to provide on reasonable price various kinds of essential medicine to the people at a reasonable price.

Use of CVP analysis in the Nepalese organizations is also lacking. Hence the basic problem in the Nepalese organization is failing to use management tools, especially accounting tools. Hence this study has been conducted to encourage the readers and the organizations to use such tools and methodologies in their management decision making and planning so that profitability could be maintained.

The main objective of present study is to examine the state of application of cost-volume-profit analysis. So the study was fully devoted to, examine the CVP analysis of the industry. As per the objective of the study, various primary and secondary data were collected for five years from FY 2059/060 to FY 2063/064.

The collected data from primary and secondary sources were analyzed with descriptive and analytical approach. Sales trend analysis. Costs analysis, costs analysis, profitability analysis. Sensitive analysis, sales mix analysis etc. were done with the help of both statistical and financial tools. Primary data were collected through inter-action with the concerned employees and questionnaire filled by senior

levels staff of NAL whereas secondary data were drawn from the various documents like annual reports of NAL, newsletters etc Published by industry. From the various analyses of cost-volume-profit variables, the company shows different results. The industry has low contribution margin ratio, high variable and fixed costs and negative margin of safety. The variable cost ratio is 93.35%, 98.53%, 85.29% 99.49% and 99.16% from the FY from2059/060 to2063/064 respectively. It shows that the variable cost was very high, the degree of operating leverage was negative in every year of the industry and it has very risky position and would suffer from further loss if the situation remained pessimistic. The gross profit margin was very low and net profit margin was negative and the operating expenses ratio was very high. It shows that financial position was not satisfactory. The industry is continuously suffering loss every year because of its high fixed cost for interest and extra Upadan. The industry did not apply scientific methods of cost classification and cost/expenses budget. The cost classification was done on the basis of high level managers decision of the industry's NAL has not practiced CVP analysis.

5.5 Conclusion

NAL has substantial gap between budgeted and actual achievement. Company's goals and objectives are clearly communicating with its employees. Various popular profit planning tools like JIT, Zero based budgeting, CVP analyses are not practiced in NAL. Cost segregation into fixed, variable and semi-variable are not done. Fixed costs are in increasing trend from the last 3 fiscal years. Long term liability is also increasing; big portion of income is spent over paying interest. Even though the operating costs are in rising trend no specific technique is utilized till now to control cost or reduce them. Classification of cost is not maintained on scientific and systematic basis for the realistic budget and not been able to practice CVP analysis as a tool to profit planning and control.

Study of NAL through CVP analysis shows, company has low contribution margin 0.51% and 0.84% for FY 2059/060 to2063/064 respectively. The company has always been run up below BEP and the loss of the industry is being accumulated every year and its accumulated loss till FY 2063/064 is 230,376,418. The sensitivity of CVP

analysis in response to change in fixed cost is proportionate where as it is very high in response to change in sales revenue and variable cost. The degree of operating leverage is negative in every year; it shows that the industry is in risky position. CVP relationship is not considered in NAL while developing sales plan, production plan and pricing strategy. As the decision making power is concerned is concentrated in top level management, Participative approach is to set the goals is rarely applied in the organization. The sales mix analysis shows that out of various groups of product, tablet is more profitable. Underutilization of capacity has become a big issue for the organization. If the management decision does not start utilizing full capacity right now and initiative is not taken to effective cost control program, NAL may bear further loss in future and it might be bitter experience in the history of industrial sector of the country.

5.6 Recommendations

Most of the organizations, especially in Nepalese perspective are failing to achieve their business objectives; to maximize the profit. It is because of the lack of use of accounting and financial tools and methodologies in management decision making and planning process. As Nepal has already got the membership of WTO, SAFTA and other international organizations, Nepalese industries should fit with this environment. Nepalese products will be in the trap of cut throat competition. The future of Nepalese industries largely depends on their strategic fit and for this, managers should be aware of the current business issues. To have strategic advantage over the competitions, Nepalese industries required identifying the various tools of accounting and relevant aspects should be analyzed and applied.

Hence the following recommendations would help to improve the present condition of NAL.

- NAI should apply CVP analysis; it is because none of the organization in the dynamic world be in a position to maximum profit without applying such tools.
- NAL did not apply suitable scientific methods of cost classification. So, the mixed costs should be divided into fixed and variable portions, so that CVP analysis could be applied

- Variable cost of the industry was very high. The CM ratio of the industry was 2.65%1.42%, 14.71%, 0.51%and 0.84%for the FY2059/060 to2063/064 respectively. Hence the industry seems to have higher amount of variable costs. SO, the classification of expenses and cost from their nature of variability is essential.
- The industry should try to reduce the fixed cost.
- NAL has invested huge amount of fixed cost as capital. Therefore, the company should try to maximum and effective utilization of fixed cost to generate profit.
- There is no systematic classification of cost as fixed and variable components. There is not system of analysis of cost and clear cut policy to separate semi-variable cost into fixed and variable. The costs are roughly classified and such classification is not scientific and appropriate.
- The industry should follow effective advertising policy and marketing representative (MR) should be involved to increase present sales volume and to find new areas where profit potential is high.
- The industry should consider the cost –volume-profit relationship while fixing the price of its products.
- The industry should put stress on effective utilization of fixed assets.
- NAL should consider the product line to improve its position. As shown by the analysis, the tablet products are more profitable than other shown by the analysis, the tablet products are more profitable than products, therefore the industry should allocate more resources to produce tablet, which might help to improve the profitability of NAL.
- Finally, a system of periodical performance reports should be strictly followed to be conscious about poor performance and take corrective actions immediately.