Cost, Volume and Profit Analysis: A Tool of Profit Planning and Control of NEBICO Pvt. Ltd.

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RECOMMANDATION

This is to certify that the thesis:

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Has been prepared as approved by this Department in the prescribed format of Faculty of Management. This is forwarded for Examination.

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And found the thesis to be original work of the student written in accordance with the Prescribed format. We recommended the thesis to be accepted as partial fulfillment of the Requirement for

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DECLARATION

I hereby declare that this dissertation entitled **"Cost, Volume and Profit Analysis: A Tool of Profit Planning and Control of NEBICO Pvt. Ltd."** submitted of 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 Studies (M.B.S) under the supervisor of my respected teacher Prof. Dr. Yadav Raj Koirala, Post Graduate Campus Biratnagar, Tribuvan University.

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PRAMOD KUMAR CHAUDHARY

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LIST OF ABBREVIATIONS

BEP	Break-Even Point
C .V.	Coefficient of Variation
CM ratio	Contribution Margin Ratio
CM	Contribution Margin
CMPU	Contribution Margin Per Unit
Coef.	Coefficient
CVP	Cost Volume Profit
DOL	Degree of Operating Leverage
DPAT	Desired Profit After Tax
DPBT	Desired Profit Before Tax
EBIT	Earning Before Interest and Tax
et. al.	Et alia
etc.	Etcetera, and other things
F/Y	Fiscal Year
FC	Fix Cost
Fig.	Figure
GDP	Gross Domestic Product
Govt.	Government
GPMR	Gross Profit Margin Ratio
i. e.	That is
L	Loss

Ltd.	Limited
M/S ratio	Margin of Safety Ratio
MOS	Margin of Safety
No.	Number
NPMR	Net Profit Margin Ratio
P	Profit
P. E.	Probable Error
P/V ratio	Profit Volume Ratio
PPC	Profit Planning & Control
Prod^{n}.	Production
PV	Profit Volume
Pvt.	Private
r	Correlation
Regd.	Registration
Rs.	Rupees
S.D.	Standard Deviation
SPPU	Selling Price per Unit
SR	Sales Revenue
T	Tax Rate
TC	Total Cost
VC	Variable Cost
VCPU	Variable Cost per Unit

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INTRODUCTION

1.1 GENERAL BACKGROUND OF STUDY

Located in the central part of Asia, Nepal is still in the list of least developed countries. It covers about 0.3 percent area of Asia and 0.03 percent area of the world. Nepal is a sovereign independent kingdom between 8000 and 8812 East longitudes and 2602 and 3027 North latitude is bounded on the north by Tibet Autonomous reign of People's Republic of china, the east, south and west by India. It has a total area of one lakh forty – seven thousand one hundred eighty one (1,47,181) square kilometer, extended from east to west with a length of about eight hundred and eighty five (885) kilometer and with average width of one hundred and ninety – three (193) kilometer from north to south. The country can be divided into three main geographical regions Himal, Pahad and Terai.

Nepal has per capita income of only $400 per annum. It has predominantly agrarian economy. Where more than eighty percent of the economically active population is estimated to be involved in agriculture. This sector contributes about forty to forty - four percent of GDP. It is the main source of employment and national income too. About thirty – eight percent of the population lives below absolute poverty line. Since per capita income, saving, capital formation is very low the living standard of people is in decreasing trend. The economic growth rate is only 3.9 percent per annum. Majority of the population lie below the poverty line. The agro – dominated economy is further worsened by complex geographical situation. Various factors like landlocked situation, poor resource mobilization, lack entrepreneurship, lack of institutional commitment, erratic government policies, political instability etc are responsible for the slow pace development in Nepal.

Industrialization is a major instrument of progress, modernization and social change. It is one of the major tools with the aid of which vicious circle of backwardness and poverty can be broken. (Gorgy Cuker, 1970:9)

Industrialization is universally accepted as a strategy of economic development as well as fundamental goal of most developing countries. Like most other developing countries one of the important aspiration of Nepal has been to bring about a structural change that would transform its agricultural economy into and industrial one.

Industrialization not only provides goods and services but also creates employment opportunities. It facilitates an effective mobilization of resources of capital and skill one, which might otherwise remain unutilized. It also acts as a vehicle for fostering innovation and technological improvement. Thus, industrialization development has a multiplier effects on the economy. The prevailing state of under development is commonly contributed to lack of adequate industrialization, it is because most of the economically advance nations of the contemporary world reached their living through successful thrust of industrialization. Industrialization the major tool; with the aid of which the vicious of backwardness and poverty can be broken. Industrialization helps the unemployed especially from the agricultural sector to find the alternative models of productive activity and move into much more productive activities, thereby reducing automatically the pressure on land.

In the context, many manufacturing, trading and commercial enterprises have been established both in public and private sector for the development of the national economy. The private sector and government owned enterprises together help in excluding development efforts simultaneously. However, the role of private sector is more important in the process of national development. Private sector process the characteristics such as entrepreneurship, professional skill, quick decision making process and freedom of management of the private sector enable them to influence the economy constructively and according to the changing situation.

Apart from its natural beauty, Nepal is also known as industrial developing country. Nepal is just moving towards industrialization with very small manufacturing sector. The globalization, privatization and liberalization processes have made a worldwide pressure on planners and policy makers to design towards rapid growth. Nepal can't feel from the phenomenon. Nepal is facing a critical juncture in its modern economic situation. The

industrialization will be the remedy of such disease. Industrialization can be defined in many ways as according to the existing conditions of a nation and their respective situation of the development.

Industrialization is the process of enabling the idle human and other manufacturing resources in order to develop the nation without worsening the economic condition of the nation. Industrialization can play a dominant role in a country like Nepal where agro – dominated economy is prevailing. It is because industrial development helps country in enormous ways; it contributes to the national income, absorbs the growing labour forces to reduce significantly the disguised unemployment, lessens the dependence on imports and promotes exports.

Mixes economy is prevailing in Nepal where we can observe both state control can private participation in the country's economy. Both the government and private sector are putting their efforts to enhance the condition of the economy from their respects. Nepal is lagging behind in the development process of modern, huge and middle scale industries. An industrial sector is the second leading sector of Nepalese economy after agriculture. Most of the modern industries established within the country are in public government sector with foreign collaboration. It reveals that there is a lack of entrepreneur who accommodates industrial investment. There are prevailing practices of measuring the pace of industrial development of the country in the world by taking contribution made by the industrial sector in GDP as chief economic indicator. Thus, the industrial sector is the key of the advancement of any country.

Nepal government has given due emphasis on the industrial sector. The economic survey report (1990 - 91) states that the emphasis on industrialization for the creation of enough job opportunities for the people and for raising their economic levels through a sizable increase in GDP appears quite relevant at a time, when the growth of population of the country is pushing the rural economy down to the substances levels. (Ministry of Finance, 1990/91).

Industrialization founded in Nepal 1936 A.D. first industry was established with the first company Act enacted in the same year, industrial development in Nepal how ever started getting regular attention of the government under the aegis of development plans after the down of democracy in 1951 A.D. Particularly after the introduction of first five year plan in 1956. Nepal witnessed the development with quite a large number of manufacturing industries in the public sector, particularly in area like leather, sugar, paper, brick, cigarette, tiles, soaps, agricultural tools and textiles etc. the industrial development strategy of the government however changed after mid 1980's. The government then shifted its development strategy from state – led development to market led opened economy's. The government decided to speed up and support regular industrial development in the country. Then different acts and policies were enacted to encourage the industries to come up and regulate the industrial system. Now the manufacturing industry employs about three (3) percent of the total employment in the country. The management challenges are growing industries in the country. Industrialization is in increasing trend : manufacturing trading and commercial business enterprises are operated by government as well as by individuals. If organized developed, motivated and managed properly the manufacturing industries like "NEBICO Pvt. Ltd." can contributes much more to the enlistment of the country.

1.2 PROFILE OF NEBICO Pvt. Ltd.

1.2.1 Company's Introduction

NEBICO Private Limited established in the year 1966 A.D. and started its operation in 1967 A.D. It is the oldest confectionery industry in Nepal. It is started in Balaju Industrial state from the early beginning days of its manufacturing it has gained a special status among the Nepalese competitors as a qualitative confectionery company.

With the semi automatic machine the NEBICO company is the first to manufacture biscuit and confectionery. At the time of its establishment its capacity was only two metric tons a day on eight hours a day basis. In the year 1968 A.D. the company changed its name from national Biscuit and confectionery limited to NEBICO

Private Limited and was registered accordingly. In 1978, NEBICO increased its capacity from two metric tons to five metric tons per day. The pioneer biscuit manufacturer of India named Britannia Industries Limited Joined hands in technical collaboration and production with the NEBICO Company in 1980 A.D. Presently the production of biscuit is done on two shifts each of eight hours basis with a capacity of five metric tons per shift. The products are marketed throughout the country and the marketing territories are divided into seven territories of the country. Such as: General, Western, Midwestern, Far-western, Eastern, Kathmandu, Sub – Kathmandu.

NEBICO Pvt. Ltd. Has also adopted different strategies for different strategies for different marketing territories accordingly. Market demand sales of the product of open the door of success. NEBICO has been manufacturing different types of biscuits and confectionery. All the products have their own tastes, value as well as market demand. Mostly there are three types of taste available for the biscuits: Salty, Sweet and premium sweet. Directly and indirectly people working can be categorized as administrative department and production department.

The authorized capital of NEBICO Pvt. Ltd. Is ten million (Rs 10,000,000) and paid up capital is Rs 60,35,000/- divided into 2146 and 3859 shares of Rs 1000/- each with private individuals own the shares. The raw materials for the company are wheat, sugar, fats, milk, other chemicals, packing materials etc. Quality goods are the first preference for NEBICO Pvt. Ltd. So it uses only quality raw material for its production. NEBICO Pvt. Ltd. Is the first company in Nepal to get Nepal standard mark since its in 1984A.D. (Chaitra, 2040 B.S.). Due to its qualitative products, it has marked some achievements.

1.2.2 Functions of the company

NEBICO Pvt. Ltd. operates the following necessary activities to achieve mentioned objectives.

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

1.3 OBJECTIVES OF THE STUDY

The basic objectives of the study are to examine Cost- volume-profit Analysis as tool to measure effectiveness of profit planning and control of NEBICO Pvt. Ltd. It also provides suggestions and recommendations for necessary improvement. CVP analysis can be an important and reasonable factor in the success and failure of the company. The objectives of the study are as follows:

1. To explore relationship of Cost-Volume and Profit as tool of budgeting.
2. Tool analyze the Cost-Volume Profit of the company and it's impact in profit planning.
3. To evaluate the sensitivity of profitability.
4. To identify the basic reason for losses.
5. To provide suggestion and recommendation for improvement and better management of Cost- Volume and profit analysis.

1.4 RETIONALE OF THE STUDY

The present research work is the study of Cost Volume Profit analysis in NEBICO Pvt. Ltd. This study will be significant in the following ways:

1. The Examines the application for the of CVP analysis in the company.
2. It provides information for the application of profit planning as a tool in different circumstance.
3. It explores the problems and the potentialities studying the sensitivity of costs.

4. It provides literature to the researcher, who wants to carry on further research in the field.
5. This study is also provides necessary recommendations for the further improvement in NEBICO Pvt. Ltd.

1.5 STATEMENT OF THE PROBLEM

Economic prosperity depends upon a sustainable economic development. For the attainment of accelerated economic development in the country industrialization is equally more important than that of agricultural and other primary sector. The industrialization in the process of value added contributes to the creation of new employment opportunities and economic integration. As long as this sector can not be expanded on a promotional basis proper development of the economy is also not possible.

However, owing to constrains in the supply of raw material, basic infrastructure, low purchasing power of people, underdeveloped capital market, lack of technological advancement and so on. Industrialization has so far been of laggard phenomenon and has not been able to make the desire headway, as long as the private sector investors do not take a leading role in the repaid special industrial development of the country as desired the role of Govt. owned enterprises become very important especially in terms of developing the infrastructure, extending social service and increasing industrial production.

Success is not a matter of hence, profit does not just happen. It is to be planned to manage. Cost-Volume Profit analysis provides the technique of profit planning framework. Based on the annual report published, performances of the Nepalese industries can't be considered as satisfactory. Poor performance is the outcome of poor planning, controlling and decision making. This has raised the questions whether Nepalese managers are competent enough or not? Do they practice Cost Volume Profit Analysis tools and controlling function?

The research question mainly focused to such problems:

1. Whether NEBICO Pvt. Ltd. Is practicing CVP analysis or not?

2. Which parts (i.e. CM, BEP, MOS etc.) of CVP analysis are mostly used and which are not exercised at all?
3. In which major areas of business operation, CVP analysis could be effective for competitiveness in the market and for better results?
4. What are the major difficulties they have to face while using CVP analysis?

1.6 LIMITATION OF THE STUDY

Each and every study has its own limitation, no study can be free from constraints such as economic resources, time etc. all the necessary data may not be available due to business secrecy. This study is confined only to cost volume profit analysis as tool of profit planning and control of NEBICO Pvt. Ltd. Following factors have constricted the scope of this study:

1. The data available in annual reports and other references have been assumed current.
2. The accuracy of this study is based on true response from management of the company.
3. The study is based on only five years published accounting statements from the F/Y 2063/064 to 2067/068.
4. The study mainly focuses as on the sensitivity analysis of cost.
5. Information regarding material and verbal answer given by the manager of NEBICO Pvt. Ltd. are not sufficient from the study.
6. Stipulated time and resources also way have existed as limitation this study.
7. Working days of the industry is assumed 365 days per year.

1.7 ORGANIZATION OF THE STUDY

This research of cost volume profit analysis of NEBICO Pvt. Ltd. has been divided into five major chapters. This is introduction, Review of the literature, Research Methodology, Presentation and Data Analysis and Summary, Conclusion, Recommendation.

Chapter-I : Introduction

Specifically the first chapter includes the general background of study. Profile of the company, Objectives of the study, Rationale of the study, Statement of the problem, Limitation of the study and Organization of the study. Therefore, this chapter is for brief introduction of the topic and it highlights the fundamental objectives.

Chapter-II : Review of the Literature

The second chapter deals the review of relevant literature and studies. This chapter is the backbone of study and conceptual framework where relevant studies have been reviewed. This chapter introduces the conceptual thoughts and terms of CVP analysis.

Chapter-III : Research Methodology

The third chapter research methodology present the methodology used this study. It deals with Research design, Nature and sources of data, population and samples, data processing and methods of data analysis, diagrammatical and graphical representation and hypothesis of the study.

Chapter-IV : Presentation and Data Analysis

The fourth chapter fulfills the objective of the study by presenting thee data and analysis them with the help of various financial and statistical tools followed by methodology.

Chapter-V : Summary, Conclusion and Recommendation

The fifth chapter summarizes the whole study. Moreover, it draws the conclusion and forwards the recommendation for the improvement of CVP analysis of NEBICO Pvt. Ltd.

CHAPTER – TWO

REVIEW OF LITERATURE

This chapter devotes to review some of the existing literature regarding the profit planning and control concepts. In this regard, various books, journals, articles and thesis concerned to this topic have been reviewed.

2.1 CONCEPTUAL FRAMEWORK

The profit planning and control can be defined as process/technique of management that enhances the efficiency of management through planning revenues and expenses. Planning is accomplished through the preparation of a number of budgets which includes integrated business activities.

Profit planning and control is an important tool of management for assuring profit in the organization. It is more relevant for profit oriented enterprises, though, it is essential to an organization, it is not an end of management or substitute of management. It facilities the managers to accomplish managerial goals in a systematic way. It is a set of steps that are taken by firms to achieve the desired level of profit.

Planning and controlling are the primary function of business. Without planning and controlling business can't run smoothly in the completive and global environment. In fact, profit planning is a managerial technique in written from in which all aspects of business operation for a defined period. It is a formal statement of policy, plan, objectives and goal established by the management. Profit planning is deciding in advance at present, what to achieve in future.

Comprehensive profit planning and control is a systematic and formalized approach for accomplishing the planning, co-ordination and control responsibilities of management (Welsch, 1986).

The profit planning and control process clearly defines the line and staff responsibilities. The chief financial officer should be assigned the overall staff responsibilities for the

profit planning and control program. Proper co-ordination and communication are pre requisites for a successful implementation of a profit planning program (Bajracharya, et. al., 2008:307)

A profit planning and control can be one of the more effective communication network in an enterprise. Communication for effective planning and control requires that both the executive and the subordinate have the same understanding of responsibilities, ensure a degree of understanding not other wise understanding of responsibilities, ensure a degree of understanding not other wise possible. Full and open reporting in performing reports that, focus on assigned responsibilities likewise enhance the degree of communication essential to sound management (Welsch, et. al., 2000:215).

Planning is the basic managerial function. It helps in determining the course of action to be followed for achieving organizational goals. It is decision in advance; what to do, when to do, how to do and who will do a particular task? Plans are framed to achieve better results. Control is the process of checking whether the plans being adhered to or not, keeping a record of process, comparing it with the plans and then taking corrective measures for future if there is any deviation. Every business enterprise needs the use of control technique for surviving in the highly competitive and changing economic world. There are various control devices in use. Budgets are the most important tool of profit planning and control. They also act as an instrument of co-ordination (Sharma, et. al., 1996:11.1).

A profit plan or budget is the formal expression of the enterprises plans and objectives stated in financial terms for a specified future period of time (Pandey, 1997).

Hence, profit planning and control represents an overall plan of operations, providing guidelines to management and acting as signal light for the management. It is enable the management to correct its policy. Profit planning and control covers a definite period of time and formulates the planning decision of management.

2.2 CONCEPT OF PROFIT

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

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 optimize those corporate source of wealth in which national prosperity depends 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 single 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.

An organization is established to achieve some goals. Its has its objectives. 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. sales price is called profit. It is reward for business activities. Profit is obtained by subtracting the cost from revenue. Profit determines the financial position, liquidity and solvency of the business.

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.

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 increase national income more than they increase national cost (Reeki; 1998: 380-381).

Profit is the ultimate goal of every business house. They involve in business for making profit. Profit cannot be achieved easily. It should be managed well will better managerial skills. So profit is the planned and controlled output of management. By element, profit is the difference of revenue and cost. Profit plan, thus, refers to the planning of revenue and planning of cost. (Ojha & Gautam, 2011:1)

Profit is the dominate goal in business and profit making should be the main objective in term 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 other factors.
- Profit may be negative but rent, wages and interest must be always being positive.

2.3 CONCEPT OF 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 with forecasting and pre-determination of further events. 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 a technique where by the use pattern of resources is carried out.

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

Forward planning is vital in a competitive profit and loss economic system. The success of each enterprise in realizing its optimum profit each year will be determined by the extent, to which it establishes objectives, develops coordinated plans to meet those objectives and exercises control over results to reach or exceed those plans. The entire process constitutes the budgetary planning and control program. The management proper planning for future financial and physical requirements for maintaining productivity and profitability of the business concern. The producer for preparing a plan in respect of future financial and physical requirements. The primary purpose of planning in business is to increase the chances of making profits.

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.

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 involves the specification of the basic objectives that the organization will pursue and the fundamental policies that will guide it. In operational terms, it involves the steps of setting objectives, specifying goals, formulating strategies, and expressing

budgets. Planning should include qualitative narratives of goals, objectives and means of accomplishments. However, if plans were limited to qualitative narratives, the process of comparing actual results to expectations would only allow generalizations and trying to measure how well the organization met its specified objectives would be impossible. Therefore, management translates qualitative narratives into quantitative formats, or budgets (Raiborn, Barfield and Kenney, 19935).

The various activities within a company should be coordinated by the preparation of plans of actions for future periods. These detailed plans are usually referred to as budgets (Durry, 2000).

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 (Filppo, 1996:49).

Planning is the basic foundation of profit planning and 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, 1998:348).

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, relational way and goal oriented task. Primary function of management and planning provides all managerial activities and it is directed towards efficiency.

During the planning process, managers attempt to agree on company goals and objectives and strategies to achieve them. Planning is the process of developing enterprise objectives and selecting future courses of action to accomplish them. It includes:
- Establishing enterprise objectives.

- Developing an analysis of the environment in which they are to be accomplished.
- Selecting a course of action to accomplish the objectives.
- Initiating activities necessary to translate plans into action.
- Re-planning to correct current deficiencies.

2.4 CONCEPT OF PROFIT PLANNING

Profit planning is a comprehensive plan expressed in financial terms by which an operating program is effective for a given period of times. 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 helps for revenues and help for various managerial decision making processes.

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.

Profit planning is, therefore a fundamental part of overall management functions and vital part of the total budgeting process. The management determines the profit goals and prepares budgets that will lead them to realization of these 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, 200:171).

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 presents 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 a comprehensive statement of extension 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 performance. The success of each organization will be determined by reaching or exceeding those targeted plans.

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-ordinate 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 (Lynch & Willianson, 1998:388).

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

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 follow: (Welsch, et. al., 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.

2.5 PROCESS OF PROFIT PLANNING

The profit planning process should involve periodic consistent and in-depth re-planning so t hat 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 broad objective should express the mission, vision, and ethical tone of the enterprises. It tends to provide identify continuing of purpose and identification (Welsch, et.al., 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 basis 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 basis 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 moral 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 owner 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 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, et.al., 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, et.al., 1992:80).

h) Implementation of Profit Plans

Implementation of plan requires that 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 period 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, et.al., 1992:85) .

Statistical reports that gives the basic quantitative internal statistics about the operation of the enterprises

- Special managerial reports about none recurring and special problems.
- Periodic performance report 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 effective, 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, 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, et.al., 1992:88).

2.6 ELEMENTS OF PROFIT PLANNING

The basic elements of profit planning are as follows:

2.6.1 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.

2.6.2 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.)

2.6.3 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.

2.6.4 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 relevant only for some specific period.

2.6.5 Components of Profit Planning

Profit planning and control is a systematic 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, et.al., 1992:74).

2.6.6 The Substantive Plan

This plan represents the following:

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

2.6.7 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.

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) Variable 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.

2.7 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:

2.7.1 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 what 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, et.al., 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. 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, et.al., 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 invented 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 budget 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 production 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 area 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.

2.7.2 Financial Budget

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

i) Budgeted Income Statement

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).

ii) Cash Budget

Cash budget is the details 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 what ever is expected in the way of cash receipt 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.

iii) Budgeted Balance Sheet

Budgeted balance sheet is a statement of assets and liabilities prepared after the operating budget and financing budget. It is based on functional of operating budget, cash budget, income statement and previous year's assets and liabilities. In other words, budgeted balance sheet developed by beginning with current balance sheet an adjusting it for the data contained the other budgets.

2.7.3 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 report.

i) Flexible Budget

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 outflow 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 base budgeting differs than 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 foe 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 of 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 organization 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.

2.8 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 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 in 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 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 is powerful tool in the hands of management for profit planning. Most management decisions require a careful analysis of cost behavior in to output volume.

This is possible only through CVP analysis. Besides, CVP analysis deals with how profit and cost change with change in volume.

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. Variable costs per unit
5. Mixed product sold

Generally cost volume profit analysis provides information regarding (Wagle, et.at., 2067:4.2)

- How much sales should be made to avoid loss?
- What should be the sales volume to earn a desired or target profit?
- What will be the profit or loss at the specified level of sales?
- What will be the effected of change in price, cost and volume on profits?
- How will profits be affected when sales mix is changed?
- What will be the effect of planned expansion on cost- volume-profit relationship?
- Which product is the most profitable and which one is the last profitable?
- Should the sales of a product or operation of a plan be dropped?
- Should the firm be shut down temporarily or not? 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 are operating income as changes occur in the output level, the selling price, the variable cost per unit and fixed cost of a product (Horangren, et.al., 2003:136).

CVP analysis is a systematic method of examining the relationship between change 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 (Bajracharya, et.al., 2008:197).

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 an measuring variation of cost with volume. In the profit planning of a business, cost volume profit relationship 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.

2.9 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 break even 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.

2.10 APPLICATION OF COST VOLUME PROFIT ANALYSIS

Cost volume profit analysis is an important technique of profit planning and control. It is an important managerial tool to show the relationship between cost, volume (sales) and profit. This technique is applicable in the following areas: (Wagle, et.al., 2067:4.3).

- It determines the break even sales volume.
- It helps to find out the relationship between cost, volume and profit.
- It is useful for cost control.
- It is a useful technique to fix the selling price.
- It is useful for taking quick and correct managerial decision.

- It helps to management for performance evaluation.
- It helps to ascertain the range of profitable area or margin of safety.

2.11 APPROACHES OF CVP ANALYSIS

There are three approaches to CVP analysis. They are:
- The contribution margin (CM) approach.
- Cost revenue equation approach.
- Graphic approach.

2.12 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) OR P/V 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 relation between the contribution and sales value. Percentage of contribution margin to total sales is referred to as the cm ratio.

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

$$\text{Or, } = \frac{\text{Contribution Margin}}{\text{Sales Revenue}}$$

$$\text{Or, } = \frac{\text{SPPU - VCPU}}{\text{SPPU}}$$

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

CM Ratio = 1 - Variable Cost Ratio

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

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

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

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

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.

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

2.13 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 which 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.

2.14 COST AND REVENUE EQUATION APPROACH

The cost 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 equality in the above equation will provide useful information for knowing the effect of revenue, cost and volume as operating profit. When the quantity is included in the above equation, its algebraic form will be as follows:

Profit = Total Revenue – Total Variable Cost – Fixed Cost

Or, Profit = (Unit Selling×Price Sales Unit)–(Unit Variable Cost×Sales Unit)-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

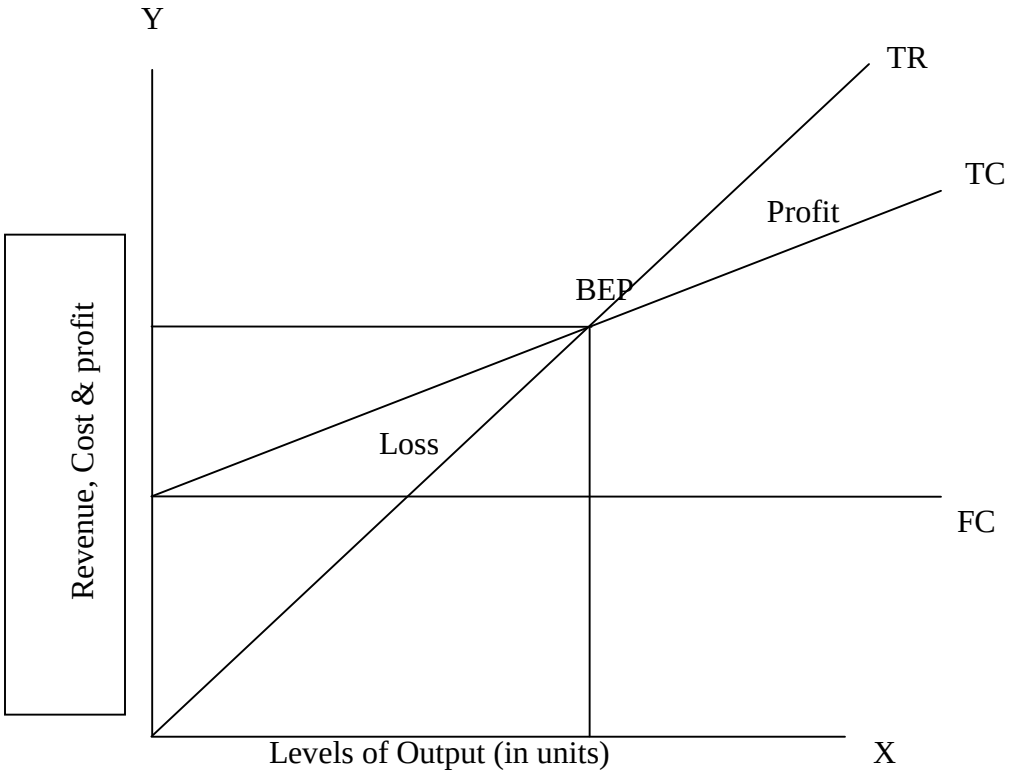
FC = Fixed Cost

2.15 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. (Bajracharya, et.al., 2004:230).

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

2.16 BREAK-EVEN ANALYSIS

Break-even analysis determines the break-even point or a level of sales at which cost and revenue are in equilibrium and net income is zero. Break even point is also termed as no profit point or zero profit point. At this point sales equals to total cost or contribution equals to fixed cost. Thus break-even analysis is a specific way of presenting and studying the inter relationship between costs, volume and profits and is incidental in CVP analysis.

Break even sales volume is that level of sales volume in which a company neither makes a profit nor suffers losses. It will just be able to recover its cost. Break even analysis helps the management to know which sales volume will only recover its cost and after which it starts giving profit. Therefore, it can provide management some insight into profit planning.

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 boarder interpretation refers to system analysis, which determines probable profit at any level of activity (Maheshwori, 2000:175).

A popular technique to study cost volume profit relationship is break 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.

2.17 APPROACHES TO 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 CVP analysis allows the preparation of pro forma (Projected) Statements from the available information

BEP and other required CVP relationship 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 et.al., 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,

$$Q = \frac{FC + \text{Pr}\,ofit}{CMPU}$$

Where, SPPU – VCPU = CMPU

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

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

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.

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

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

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

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

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. Graphic Approach

A break even chart is used to graphically depict the relationship among revenues, variable costs, fixed costs, and profit (or loss). The no profit or no loss (BEP) is allocated at the point where the total cost and total revenue lines cross. Below this point, the firm incurs losses, and above this point, the firm earns profit.

D. Cash Break Even point

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

BE point tells what volume of sales is required to cover all operating expenses. But, fixed costs include certain non cash expenses like depreciation and amortization, for which no cash is needed in the short-run. Therefore, the company can pay its cash bills even if it does not generate sales costs are included in fixed costs we get cash BEP.

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

$$\text{Cash BEP in Units} = \frac{\text{Fixed cost} - \text{Non} - \text{cash expenses}}{\text{PU - VCPU}}$$

$$\text{Or,} = \frac{\text{Cash Fixed Cost}}{\text{CMPU}}$$

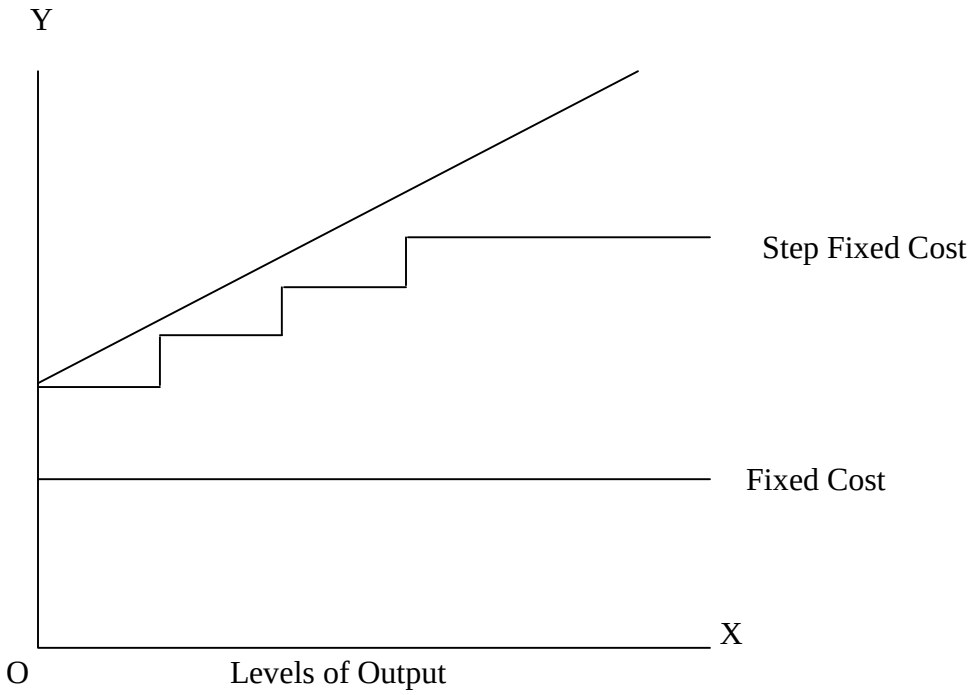
$$\text{Cash BEP in Rs.} = \frac{\text{Cash Fixed Cost}}{\text{CM Ratio}}$$

Step fixed costs & BEP analysis

Step fixed cost are those neither remain the same for all levels of the output nor change proportionately. Step fixed costs jump if the level of activity exceeds a certain level. So, these costs are unknown before estimating the required level of sales. Step fixed costs are to be critically estimated at the problem. It is particularly because these are unknown previously for the required level of activity.

Figure 2.2

Step Fixed Cost



2.18 APPLICATION 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.

2.19 ASSUMPTIONS OF BREAK EVEN ANALYSIS

The assumptions underlying the construction of break even pointers are as follows:

- All costs can be classified into fixed and variable cost. There is no other cost than fixed cost 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.
- Generally 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.

2.20 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 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 is 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.

2.21 REQUIRED SALES FOR DESIRED PROFIT

Desired profit for the firm may be the 'Profit before Tax, Profit aster Tax, % of profit on Sales Revenue, % of Profit on Investment Amount' etc.

1. If the company wants to earn certain amount of profit before tax:

$$\text{Required Sales (Units)} = \frac{\text{FC + DPBT}}{\text{CMPU}}$$

$$\text{Required Sales (Rs)} = \frac{\text{FC - DPBT}}{\text{C/M Ratio}}$$

2. If the company wants to earn certain amount of profit after tax:

$$\text{Required Sales (Units)} = \frac{\text{FC} + \left(\frac{\text{DPAT}}{\text{1-Tax}}\right)}{\text{CMPU}}$$

$$\text{Required Sales (Rs)} = \frac{\text{FC} + \left(\frac{\text{DPAT}}{\text{1-Tax}}\right)}{\text{C/M Ratio}}$$

3. If the company wants to earn certain % of profit before tax on sales revenue

$$\text{Required Sales (Units)} = \frac{\text{FC}}{\text{CMPU} - \left(\frac{\text{PPU}}{\text{1-Tax}}\right)}$$

$$\text{Required Sales (Rs)} = \frac{\text{FC}}{\text{C/M Ratio} - \text{Profit Ratio}}$$

4. If the company wants to earn certain % of profit after tax on sales revenue:

$$\text{Required Sales (Units)} = \frac{\text{FC}}{\text{CMPU} - \left(\frac{\text{PPU}}{\text{1-Tax}}\right)}$$

$$\text{Required Sales (Rs)} = \frac{\text{FC}}{\text{C/M Ratio} - \left(\frac{\text{Profit Ratio}}{\text{1-Tax}}\right)}$$

5. If the company wants to earn certain % of profit after tax on sales revenue:

$$\text{Required Sales (Units)} = \frac{\text{FC} + \text{Investment} \times \text{ROI}}{\text{CMPU}}$$

$$\text{Required Sales (Rs)} = \frac{\text{FC} + \text{Investment} \times \text{ROI}}{\text{C/M Ratio}}$$

2.22 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 extents to which sales may fail before suffering any loss i.e. greater the margin, safer the firm.

Margin of safety ratio is the margin of safety divided by the budgeted sales. The margin of safety ratio indicated how safe the future of the firm is. The higher the M/S ratio the safer is the firm.

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 = Total Sales – BE Sales

Margin of Safety in Rs. = Actual Sales in Rs. – Break Even Sales in Rs.

$$\text{Margin of Safety} = \frac{\text{FC} + \text{Profit}}{\text{CMPU}} - \frac{\text{FC}}{\text{CMPU}}$$

$$\text{Margin of Safety} = \frac{1}{\text{CMPU}} (\text{FC} + \text{Profit} - \text{FC})$$

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

$$\text{Margin of Safety Ratio} = \frac{\text{MOS}}{\text{Total Sales}} = 1 - \frac{\text{BE Sales}}{\text{Total Sales}}$$

$$\text{Margin of Safety in Rs.} = \frac{\text{Profit}}{\text{C/M Ratio}}$$

If margin of Safety is unsatisfactory, it can be improves 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.

2.23 CVP ANALYSIS FOR MULTI PRODUCT FIRM

Sales mix can be defined as the relative combination of two or more products represents 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 revenue. 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 cost for each product is known. The firms will overall break even point can be calculated 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 ratio 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 volume 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 product 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.

2.24 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 weighted average contribution margin by adding product of step-3
Step-5	To find out overall break even units by using formula: $\text{Overall BEP in units} = \frac{\text{Total Fixed Cost}}{\text{Weighted CMPU}}$

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

Some Important Formula

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

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

Product wise BEP in unit = Overall BEP in unit × Respective Proportion (of Sales Unit)

Product wise BEP in Rs.= Overall BEP in Rs.×Respective Proportion (of sales Rs.)

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

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

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

2.25 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.

2.25.1 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 firm's products require the same basic raw materials, then the firms output will be limited by the available quantity raw material. 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 arises when there is only one constraining resource. This can occur if the available on this machine. In this same way, single output is limited by a availability for that material. When there is a constraint for a scare 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.

2.25.2 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 constraints factors rather than single constraint.

In such situation, linear programming technique may used to optimize 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 (Manankarni, 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 as 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.

2.26 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 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 is 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 risky ness 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 means 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.

2.27 ASSUMPTIONS UNDERLYING CVP ANALYSIS

Cost-Volume-Profit analysis should be used with caution and only as an approximate guide for decision making as it rests upon the various over simplified assumptions such as:

- All cost can be segregated into fixed and variable element.
- Fixed cost will remain unchanged and variable cost varies proportionately with activity.
- Single factor affecting costs and revenues are volume.
- There will be no change in technology, production methods, efficiency, and general price level.
- There are no stock level changes i.e. there is synchronization between production and sales.
- There is single product or in case of multi-product, the sales mix does not change.
- Uncertainty does not prevail etc.

However, some of the assumptions listed above will be lifted up in the due course when we proceed further.

2.28 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.

2.29 SPECIAL PROBLEMS IN CVP ANALYSIS

There are three special problems in CVP analysis that 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 is used for single product. The activity base must be in additive units using a common denomination 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 gain 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.

2.30 SENSITIVITY ANALYSIS

Sensitivity analysis is the measurement of absticity 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.

Profit = Total Sales – Total Cost – Taxes

Or, Net Profit = Total Sales Revenue – (FC + VC) – Taxes

Or, Profit = Sales Units × SPPU – Sales Units ×VCPU – Fixed Cost – Taxes

So that, Profit = F (Sales Volume, Variable Cost, Fixes Cost, Taxes etc.)

But none of the factors remain or unchanged, sometime the manager can be intentionally change the price and 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. Et.al., 2004:245).

2.31 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 break even 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 break even point. It shows that fixed costs and operating leverage have direct relationship. Higher the amount of fixed costs higher the operating leverage and break even point and vice versa.

In other words, the firms with relative high operating leverage proportionally high fixed expenses; the firms break even 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 (NOI) or EBIT associated with a given percentage change in sales (Pandey, et.al., 2004).

$$DOL = \frac{\text{Percentage Changes in Net Operating Income or ENIT}}{\text{Percentage Change in sales}} = \frac{\Delta \text{EBIT/EBIT}}{\Delta \text{Sales/Sales}}$$

2.32 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. They 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 data 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 interrelationship with other related 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 (Khan and Jain, 1991:1).

Absolute figures are available but they 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.

2.33 PROFITABILITY RATIOS

Profitability ratios are of utmost importance for a business 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.

2.34 REVIEW OF RELATED STUDIES

2.34.1 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.

CVP 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 models suggested that, within the relevant production range, the total costs and revenue functions are fairly similar (Drury, 1989:215).

2.34.2 Brief Review of the Previous Research Work

Research in the area of a 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 researchers have been made on manufacturing concern expect only a few of them are profound.

2.35 RESEARCH GAP

There is the gap between the present research and the previous researches. Most of the previous researches were conducted in accounting on profit planning & control covered only the budgeting practices of manufacturing company, especially in public enterprises. The previous researches could not give a clear answer to better results through PPC tools. Thus to fill out the gap, the current research is conducted. It examines the practices of CVP, as a tool of profit planning in NEBICO Pvt. Ltd. whether the company can make any drastic changes in its practices through CVP analysis is prime objective of this research.

The main purpose of CVP analysis tools in profit planning is forecasting based on historical data. To fulfill such research gap, this research forecasted sales, variable cost, fixed cost and net profit based on past data. Projected income statements are shown based on these forecasted data.

CHAPTER – THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

"A systematic research study needs to follow proper methodology to active pre-mentioned objective. Research methodology is a sequential procedure and method to be adopted in a systematic study."

"Research methodology is the way to solve systematically the search problem". The study attempts to highlight CVP Analysis of NEBICO Pvt. Ltd. The research methodology of the study includes research design, population sampling and nature of data, source of data, survey methodology, data processing and analysis."

3.2 RESEARCH DESIGN

"The formidable problem that follows in task of defining the research is the preparation of the design of research popularly known as research design." Research design is the main part of the thesis or any research work. In this study, attempt is being made to show the relationship among cost, volume and profit of NEBICO Pvt. Ltd. To accomplish objective, it had adopted the descriptive and analytical for the purpose of the study. A study design is the arrangement of conditions for collection and analysis of data in the manner that aims combine relevance to the study with economy in procedure.

According to Claire Selltiz, "A research design is the arrangement of the conditions or collection and analysis of the data in a manner that aims to combine relevance to the research purpose with economy in procedure." (Selltiz.1959:50). Therefore, we can say that without research design no researcher can conduct the research work. This study is based on the analysis of past financial performance, depending upon the primary data are used.

3.3 POPULATION AND SAMPLE

NEBICO Pvt. Ltd. is a sample and population in itself. This study is based on revenue planning and cost volume profit analysis of NEBICO Pvt. Ltd. Therefore, no specific product or branch is taken for analysis but the whole is considered for analysis through financial data available from F/Y 2063/064 to 2067/068 the covers five years:

3.4 NATURE AND SOURCES OF DATA

Both the Primary and Secondary level of information have been used to meet specified objectives. Personal visit in NEBICO was the most important source of primary data. The company's record as the observation has helped to fill the questionnaire in proper way. Beside this, the secondary levels of data are analysed using accounting, statistical and mathematical tool, charts and graphs as per need are demonstrated. Accounting tools like contribution margin and BEP is used, whereas statistical tool like average mean and standard deviation and utilized.

3.5 SURVEY METHODOLOGY

The management personnel it the company gave permission to visit and observe the department as well as helped whole heartedly thought out the study fill the questionnaire as well as providing co-operating. When problem arise while making calculation of field study, different information where gathered from the industry.

3.6 DATA PROCESSING

Data have been taken mainly from annual report, balance sheet, profit and loss account; cost detail sheet, previous thesis and all the relevant publication relieving company performance are taken into account of achieving the defined result.

CHAPTER – FOUR

PRESENTATION AND ANALYSIS OF DATA

4.1 INTRODUCTION

Profit planning is an action plan to guide the managers in achieving the objectives of a firm. A profit plan is comprehensive and coordinated plan of an enterprise for same specific period in future. In overall planning of an organization profit planning is an area in which, the financial function plays a major role. Planning is carried out to fulfill the responsibility of forward thinking and future operation of the organization. Cost, volume and profit analysis is an analytical tool for studying the relationship among cost, profit and volume. Cost control and profit planning are possible with the help of cost, volume and profit analysis. It is also considered as a powerful tool in managerial decision-making in profit planning and control. CVP analysis provides management with comprehensive overview of the effect on revenue and cost of all the financial changes. An understanding of cost, volume and profit relation is necessary for the successful management of any enterprise.

The basic objective in this study is to examine the C.V.P analysis as a tool to measure the effective of profit planning and control in NEBICO Pvt. Ltd. Practice of C.V.P analysis and to identify new areas where it can be fruitful to apply will be identified. This chapter is mostly concentrated on analysis and presentation of available data.

Primary data like segregation of fixed and available cost, wages; salary cost analysis is done here. The questionnaire distribution and discussion with different levels of authority persons were done to acquire data. Similarly, the secondary data is used for sales analysis and cost analysis, inventory analysis, profitability analysis, operation leverage analysis and cost, volume, profit analysis etc. Those available secondary data's were Balance sheet. Profit ad Loss Account, cost sheet, cash flow statement etc from the accounts department of NEBICO Pvt. Ltd.

The available information and data where analyzed and interpreted in the following pages accordingly. The study covers the last live fiscal year from 2063/064 to 2067/068 of NEBICO Pvt. Ltd.

4.2 SALES PLAN OF NEBICO Pvt. Ltd.

Realistic sales plan is needed for achieving the company's goal. Only with the help of properly planned budgets the sales target can be achieved. A sales plan is detailed schedule of expected sales for coming year; it can provide basic management decision about marketing. For making a considerable sales plan a proper research of market as well as past trend analysis, study of market opportunities, threats and responsibility etc are needed.

4.2.1 Sales Plan

The previous records of past sales trend to be evaluated to figure out the future sales of the company. In NEBICO'S record there is no abnormal sale, which is beyond ten percent, increase or decrease in sales plan within five years.

Table 4.1

Budgeted Sales Value

(in 000)

Years	2063/064	2064/065	2065/066	2066/067	2067/068
Sales	123,086	125,647	132,824	134,461	138,200

Source: Appendix – I

4.2.2 Sales Value Analysis

Sales values are the total exchangeable market rate that can be obtained from the sold product. On annual basis, the total and confectioneries that are sold in the market, which receives money value, can be shown in the sales analysis of NEBICO Pvt. Ltd. The following table shows the sales trend on yearly basis of NEBICO in units and also in monetary sales value.

Table 4.2

Actual Sales Trend

Details	2063/064	2064/065	2065/066	2066/067	2067/068
Units (in metric tone) Biscuits	1685	1609	1700	1645	1692
Confectionaries	12	10	12	5	4
Amount (In Rs. '000') Biscuits	124,852	120,330	129,540	131,324	123,122
Confectionaries	804	737	1457	426	348
Total Amount	125,656	121,067	130,997	131,750	108,291
Increase/decrease in sales %	16.63%	3.65%	8.2%	0.57%	0.55%

Source: Appendix – I & Annual Records of NEBICO

The above table shows that the fiscal year 2063/064 to 2067/068. It can be said that the difference is caused by various external factors like political instability, government policy, competition, market inflation etc as well as internal factors like lack of consideration of proper plan, product pricing, market researcher etc. Confectioneries contain very small portion of market share in comparison to biscuit market. Even though the market share of confectioneries are increasing un-proportionately.

In the last year 2063/064, the total biscuits produced 1685 metric ton, where as confectioneries was only 12 metric ton. The market value achieved was Rs. 124,852,000 for biscuits and Rs. 804,000 for confectioneries was received. This is the increase in sales value by 16.63% in comparison to the F/Y 2063/064 with 2062/063. But in the F/Y 2064/065 NEBICO has decreasing sales in comparison to 2063/064 by 3.65%. Again in the F/Y 2065/066 the company receives a positive response in sales with an increase in sales by 8.2% and the total sales value of Rs. 130,997,000. In the F/Y 2066/067 the sales trend increase is not up to the satisfactory level because only 0.57% increase in sales can be seen which is very low in comparison to the F/Y 2065/066, which received 8.2% increase in sales. Similarly, in the F/Y 2067/068 the company's sales increased by 0.55% compared to the fiscal year 2066/067. The sales of biscuits were 1692 metric ton and

confectioneries are 4 metric ton only. The total amount received was Rs. 132,470,000 in fiscal year 2067/068.

It can be figure out through sales table that even though the sales of biscuits are increasing trend, the sales of confectioneries are constantly decreasing except in the F/Y 2065/066.

4.2.3 Analysis of Budgeted and Actual Sales

To forecast the future sales, the past sales need to be considered by making future prediction in a correct manner. For this the company needs to closely monitor the past sales and its budgeted sales. Their effective tools for planned sales are to be applied. The table presented below helps to make comparison of budgeted and actual sales for last five fiscal years i.e. 2063/064 to 2067/068.

Table No. 4.3

Budgeted and Actual Sales Value Evaluation

(In Rs. '000')

Details	Years				
	2063/064	2064/065	2065/066	2066/067	2067/068
Budgeted	123,086	125,647	132,824	134,461	138,200
Actual	125,656	121,067	130,997	131,750	132,470
Achievement	102.09%	96.35%	98.62%	97.98%	95.85%

Source: Appendix – I

The above table shows that the sales plan is made on the basis of past year sales because there is no specific or sudden change in sales other than 10% increase or decrease as sales planning policy. So it can be said that there is a great lack of effective sales plan for sales budget. In the fiscal year 2063/064 the company made extra sales by 20.09% and the budgeted sales, but in the later year the company made lesser sales than planned. This shows that the company has not made any such changes except increase or decrease in sales in special cases. All this shows that there is a lack of systematic and attractive sales plan.

To figure out the nature of variability of budgeted and actual sales of different years, in necessary to calculate the arithmetic mean, standard deviation with co-efficient of variation.

Table 4.4

Summary of Statistical Calculation

Details	**Budgeted Sales 'X' (In Rs. '00,000')**	**Actual Sales 'Y' (In Rs. '00,000')**
Mean	1308.436	1283.88
Standard Deviation (±)	56.27	43.78
Co-efficient Variation (C.V.)	4.30%	3.41%
Correlation (r)		**0.865**
Probable error of correlation (P.E.)		**0.0759**

Source: Appendix – I

The above 4.4 table shows the coefficient of variation of budgeted sales (i.e. C.V. 'X') and actual sales (i.e. C.V. 'Y'). Distribution with smaller C.V. indicates less variability or uniformity. In this case, budgeted sales have less variability than the actual sales. The actual sales has higher variability rate showing higher percentage of coefficient of variation. Lower co-efficient variation also verifies the lower efficiency of planning.

To figure out the correlation between actual and budgeted sales, the popular statistical tool known as Karl Pearson's co-efficient of correlation denoted by 'r'. Correlation of co-efficient analyzes the degree and the direction of relationship between budgeted and actual sales variables. There should be positive of perfect positive correlation between the budgeted and actual sales. Negative correlation should be variables are moving in opposite direction i.e. if the value of one variable increase, then the value of other variable decreases and vice versa. While calculating 'r' budgeted figure represented by 'X' are always said to be independent variable where as actual figure 'Y' are represented to be dependent variable.

The problem error (P.E) of the correlation co-efficient (r) is the basis for the interpretation of its value. In other words, the significance of 'r' is tested with probable error of 'r'. The value of 'r' is less than 6XP.E of 'r' (i.e. 0.865>0.455). This indicated that

the value of 'r' is highly insignificant so in brief it can be said that the actual sales and budgeted sales move towards opposite direction.

The regression line can also be fitted to show the degree of relationship between the actual sales and the budgeted sales and to forecast the possible actual sales with the past given budgeted data. For this purpose, the actual sales have been assumed to be dependent on the budgeted sale, which is independent. The regression line of actual sales 'Y' on budgeted sales 'X' i.e. 'Y' on 'X' is as follows:

We have,

$$Y - \overline{Y} = r\frac{X}{Y}\left[X - \overline{X}\right]$$

Y-1283.88= 0.865×43.78/56.27 (x-1308.436)

Y-1283.88= 0.673 'x' – 880.58

Y = 0.673 'x' + 403.3

Through this regression equation, the relation between actual and budgeted sales can be distinguished; which helps to estimate the expected sales achievement for the coming period (i.e. fiscal year 2067/068) with the given value of targeted sales.

Let 'X' (budgeted sales for the fiscal year 2067/068) = 1425.12 lakh

Now, the expected sales,

Y = 0.673 'X' + 403.3

= 0.673x1425.12+403.3

= 1362.40 lakh

4.3 COST PLAN OF NEBICO Pvt. Ltd.

Cost planning and controlling should not focus only on decreasing the future costs or expenses but also need to focus on efficient and better utilization of limited resources. It should also focus the relationship between expenditures and benefits derived from those expenditures. Reduction of cost without considering its effect on benefits can cause higher cost due to break down, inefficient machines, frustrated employees, lower quality of production etc. Mostly costs are categorized into three sectors:

- Cost of Sales
- Administrative Cost
- Distribution Cost

A. Cost of Sales

If is a production cost which is related with raw material, packing material, lab chemical, provident fund, production salary and wages, fuel and oil, water cost, electricity cost, launch cost, rent on land and building, repair of machinery and miscellaneous cost etc.

B. Administrative Cost

It is a management cost. It has not been directly traceable to specific jobs and product; it is related with administrative salary and wages, operative allowances and incentives, provident fund, employee subsidies, employee provident fund, technical and computer fee and other administrative related costs.

C. Distribution Cost

It affects the potential profit of a company. It is a significant portion of total cost. Distribution expenditures include all cost related to selling, distribution and delivery or product to customers. Distribution costs are not product cost and are not allocated to special products. So that minimization of the sales expenses directly creates impact on the selling price and profit.

NEBICO Pvt. Ltd. classified its total cost into fixed cost and variable cost; categorized into cost of sales, administrative cost and distribution cost. For CVP analysis and sensitivity study of available data, the cost can be classified into following heads.

4.3.1 Fixed Cost Analysis

The fixed cost remain unchanged in total despite the changes in output level within a year, the fixed cost on per unit basis decreases as the level of activity increases and vice versa. Fixed cost of NEBICO Pvt. Ltd. has also remains constant in total amount even when there is change in level of activity in each fiscal year. Due to

confusion and difficulty involved in calculating fixed cost it is not expressed in per unit basis. Fixed cost in total varies for different fiscal year because of internal and external environment factor of company. The fixed costs are presented below on the basis of nature of costs.

Table No. 4.5

Fixed Cost Sheet

('In Rupees')

Details	Year				
	2063/064	2064/065	2065/066	2066/067	2067/068
1. Costs of Sales:					
Production salary and wages	3,2,86,871	3,232,854	3,462,832	3,500,560	3,675,587
Provident fund and subsidies	803179	857452	882014	909994	928193
Land and Building Rent	37715	39323	40928	41979	42818
Repairs of Machinery and Building	1264314	1080975	1245670	1215053	1202903
Miscellaneous	227053	217386	236045	237012	238195
Total	**5619132**	**5428000**	**5867489**	**5904598**	**6087696**
2. Administrative Cost					
Salary and wages	3401425	3011982	3271077	3326818	3396811
Launch Cost (time basis)	493415	461116	487365	502503	517562
Provident fund and employee Subsidies	689932	472451	588026	559883	560443
Employees Quarter	149784	102943	127899	121880	124434
Office repairs and Maintenance	68184	71538	71649	75948	73856
Printing and Stationary	115884	115631	118537	124143	128835
Telephone, wire and postage	490562	490088	502074	525996	528550
Advertisement, books and Newspaper	168952	127220	150297	146653	148778
Licenses and Insurance Fees	462376	375647	426263	424206	432607
Hospitality and puja cost	554379	543058	561601	585519	592314
Vehicle Repair cost	533456	414126	481280	473423	465233
Adviser and auditing cost	226000	209798	222612	229070	231581
Bank commission and interest	65728	79235	74663	81738	90353
Training and dress cost	138319	112532	127620	127041	128305
Technical and computer fees	1278972	1180317	1255959	1290549	135922
Security cost	642682	571162	619175	630296	628801
Donation and membership fee	120698	106211	115813	117568	122325
Depreciation	2200978	2146770	2436569	2413390	243028

Interest	3339274	3539756	3197225	328937	3314627
Miscellaneous	34822	31371	33798	34512	36486
Total	**15175822**	**14162952**	**14869500**	**15080973**	**17888129**
3. Distribution Costs	**3796447**	**339267**	**4157138**	**4018190**	**3879578**
4. Total Fixed Cost (1+2+3)	**24591401**	**22950219**	**24894127**	**25003761**	**27855403**
5. Increase/Decrease in %	**27.24%**	**(6.67%)**	**8.47%**	**0.44%**	**11.14%**

Source: Annual Records of NEBICO

The table no 4.5 shows that there are variation in fixed administrative costs, cost of sales and distribution cost for different years because various internal and external factors of company effected to those cost from different angles. All those fixed cost are in fluctuating trend. In the above table, salary and wages, technical and computer fees, depreciation and interest cost contribute increase amount of fixed administration cost for every year. Similarly, production salary and wages, provident fund and subsidies, repairs cost contribute to increase amount of fixed cost of sales for every year.

In the above table, the total fixed cost are in increasing trend in the fiscal year 2063/064, 2065/066, 2066/067 and 2067/068, but the fixed cost in decreasing position in the year 2064/065. Taking the last year as base year for every year, total fixed cost are increased by 27.24%, 8.47%, 0.44% and 11.14% accordingly for the year 2063/064, 2065/066, 2066/067 and 2067/068 respectively. But in the year 2064/065 total fixed cost is decreasing manner by 6.67% compared to base year 2063/064. Fixed cost of NEBICO Pvt. Ltd. is in fluctuating trend as in 2063/064; it has the highest percentage of increment in fixed cost i.e. 27.24% compared to other years of operation and low increment rate percent in the year 2066/067 by 0.44% only compared to 2065/066. The fluctuation is made by various factors like different level of output, changes in the rate of different items every year, proportion of distribution cost and other factors etc.

4.3.2 Variable Cost Analysis

Variable costs are those cost which varies in direct proportion to change in level of activity or output. But per unit cost is constant. NEBICO'S variable costs per unit

are different in different financial year due to internal and external environment of the company. As per company's cost detail sheet the variable costs are presented by nature and cost of sales, administrative cost and distribution cost.

Table No. 4.6

Variable Cost Sheet

(In Rupees)

Detail	Year				
	2063/064	2064/065	2065/066	2066/067	2067/068
1. Cost of Sales					
Raw materials	45394321	47218182	49189253	50423836	51142347
Packing materials	24212798	22673538	24902824	24863983	24991528
Lab chemicals	588099	605431	633929	648171	654527
Production salary and wages	7669365	7543325	8079944	8167973	8252177
Fuel and oil	434176	373386	428940	419023	421824
Electricity cost	6806750	6899248	7279683	7414557	7521636
Water cost	67745	63947	69963	69989	70585
Launch cost (output basis)	1754378	1717661	1844089	1862052	1867188
Miscellaneous	97309	93166	101162	101576	105265
Total	87024932	87187884	92529787	93971160	95027077
2. Administrative Cost					
Salary and wages	1457753	1290849	1401889	1425779	1419537
Employee bonus (out put basis)	258718	177810	220917	210516	217768
Operating allowance and Incentives	513359	465570	499681	511220	509261
Fuel and moving cost	1259851	1141400	1225627	1253621	1279541
Miscellaneous	14924	13445	14485	14791	15263
Total	**3504605**	**3089074**	**3362599**	**3415927**	**3441370**
3. Distribution Costs	**8858375**	**7838290**	**9699987**	**9375775**	**9197457**
4. Total Variable Costs (1+2+3)	**99387912**	**98115248**	**105592373**	**106762862**	**107665904**
Increase/Decrease in %	**12.84%**	**(1.28%)**	**7.62%**	**1.11%**	**0.864%**

Source: Annual Records of NEBICO

The table no. 4.6 shows the fluctuating trend in the variable cost sheet. Variation in variable cost of sales, administrative cost and distribution cost for different year is because of different external and internal factors. Price of raw material are in increasing manner, electricity cost, fuel oil, salary and wages etc has greater contribution towards increase in amount of cost of sales every year. Similarly, the

administrative cost: salary wages, fuel and moving cost, operating allowance and incentives has greater influences over the increment of variable cost each year.

Variable cost is in increasing manner in fiscal year 2063/064, 2064/065, 2065/066, 2066/067 and 2067/068 by 12.84%, 1.28%, 7.62%, 1.11% and 0.846% respectively taking last year as base year. But in the year 2063/064 the total variable cost is decreased by 1.28% i.e. Rs. 1272.664 then the fiscal year 2063/064, sub – factor cost of sales and distribution cost has greater contribution towards increment of total variable cost.

Even though administrative variable cost is in increasing trend, it has lower proportion in total variable cost then cost of sales and distribution cost of variable cost.

4.3.3 Semi–Variable Cost Analysis

Costs containing both the element of fixed variable are considered as semi-variable or mixed cost. In semi-variable cost some portion is of fixed nature and the rest are of variable nature. According to the nature and uses the semi-variable cost of NEBICO Pvt. Ltd. are listed below:

Table No. 4.7

Semi-Variable Cost Sheet

(In Rupees)

Detail	Year				
	2063/064	2064/065	2065/066	2066/067	2067/068
1. Cost of Sales					
Salary and wages	10956236	10776179	11542776	11668533	11827610
Miscellaneous	324362	310552	337207	338588	340232
Total	**11280598**	**11086731**	**11879983**	**12007121**	**12167842**
2. Administrative Costs					
Fuel and oil	434176	373386	428940	419023	421824
Electricity cost	6806750	6899248	7279683	7414557	7521636
Water cost	67745	63947	69963	69989	70585
Launch cost (output basis)	1754378	1717661	1844089	1862052	1867188
Miscellaneous	97309	93166	101162	101576	105265
Total	87024932	87187884	92529787	93971160	95027077

2. Administrative Cost					
Salary and wages	10956236	10776179	11542776	11668533	11827610
Miscellaneous	324362	310552	337207	338588	340232
Total	**11280598**	**11086731**	**11879983**	**12007121**	**12167842**
3. Distribution Costs	12654822	11197557	13857125	13393965	13604516
4. Total Mixed Cost (1+2+3)	28844344	26631935	30458357	30202986	30639083
5. Increase/Decrease	39.13%	(7.67%)	14.37%	(0.84%)	1.45%

Source: Annual Records of NEBICO

The classification of cost into fixed and variable is very important to plan and control of cost. It helps to determine the volume of operation required maintaining the desired profitability. There are various methods to segregate the mixed cost, but 'Degree of variability method' contain 30% and 70% proportion is suitable for the organization like NEBICO. NEBICO has not maintained any clear- cut boundaries about cost classification into fixed and variable component.

On the above table 4.7, semi-variable production salary and wages are segregated by 70% of variable cost and 30% of fixed cost in proportion. On the other hand, administration salary and wages are segregated by 30% of variable cost and 70% of fixed cost portion. Similarly, cost of sales Miscellaneous cost and administration Miscellaneous cost are segregated into 30% variable and 70% of fixed cost in proportion. The semi-variable distribution cost is segregated by 70% of variable cost and 30% of fixed cost proportion. All the segregated semi-variable cost are included in above variable cost sheet and fixed cost sheet table. All the semi-variable cost is classified into fixed and variable proportion using 'Degree of Variability method'. The degree of variability is determined by the NEBICO'S staffs intuition, hunches, prediction, judgment and nature of expenses.

As per NEBICO'S employee and manager's its major costs are operating, administrative and distribution cost because of difference in variable cost are fixed cost in every fiscal year. Mixed cost is segregated only through 'Degree of variability method'. Practice of other segregation method is almost impossible due to fluctuating nature in NEBICO Pvt. Ltd.

4.3.4 Production Salary and Wages Cost Analysis

On the basis of their Saxes the workers are distinguished into two groups i.e. male and female. Out of 189 employees there are only 31 females in the organization. Distribution of workers as skill-wise and sex wise are given below:

Table No. 4.8

Sex-wise and Skill-wise Workers Distribution

S.N.	Level of Skill	Male	%	Female	%	Total	%
1.	Un-skilled	132	83.54	27	87.10	159	84.13
2.	Semi-skilled	6	3.8	4	12.9	10	5.29
3.	Skilled	20	12.66	0	0	20	10.58
4.	Highly-skilled	0	0	0	0	0	0
	Total	**158**	**100.00**	**31**	**100.00**	**189**	**100.00**

Source: Officials Records of NEBICO

Above table 4.8 represents, large portion of workers are un-skilled i.e. 159 out of 189 workers in total, which contains 84.13% in total. Among that 159 out unskilled workers, male are 132 which is 83.54% and female are 27 which is 87.1% in present distribution of male and female. There are 6 semi-skilled male and 4 semi-skilled female i.e. 3.8% and 10% respectively. Only 20 male are skilled with no skilled female present. Most highly skilled person are present are present in the group. Though highly skilled workers have no mention in the above group, the company might cover them in lowest number. Company lacks presence of skilled workers as well as highly skilled workers and female participation in the work force.

On the basis of amount or wages earned, the workers are divided into four groups. As per company's rules and regulation minimum wages fixed on per month basis for the unskilled workers is Rs3500. Semi-skilled workers as Rs.4000 skilled workers Rs.3630 and highly skilled workers Rs.5400. The distributions of wages to total 189 workers are presented below:

Table No. 4.9

Wages Structure

S.N.	Wages per Month	No. of Workers	% of Distribution
1	Rs. 3500-3825	159	84.13
2	Rs. 4000-4250	10	5.29
3	Rs. 4630-5000	20	10.58
4	Rs. 5400-5960	0	0
	Total	**189**	**100.00**

Source: Official Records of NEBICO

Above table 4.9 describe that only Rs 3500-3825 is earned by majority of the workers which is 84.13% out of total 189 workers. 10 persons earned between Rs 4000-4250 which is 5.29% of the total workers. 20 workers are considered as high pay workers, they earn from Rs 4630-5000 which is 10.58% of the total 100%. Few people are paid the highest amount i.e. Rs. 5400-5960 and they are not mentioned in the pay chart.

Considering the wage payment of the employee, they are very low and not up to the standard so we asked if they are satisfied with the wages or not? The answer we get was mostly negative i.e. they are not satisfied with their pay cheque, only few of them are satisfied. Employees belonging to the low skills are mostly provided with the low groups having income i.e. Rs 4000 to 5000. No any such drastic changes in wages are made from last few years.

4.4 INVENTORY CONSIDERATION OF NEBICO Pvt. Ltd.

Operation of manufacturing company is almost impossible without inventory. Major parts of working capital are invested upon inventory of the company. Stocks in hand of raw material, goods in process, finished goods are all considered as inventory of a company. The main purpose of holding inventories by the manufacturing company is to continue work and supply finish goods regularly without interruption. So we can say inventory is maintained against uncertainties. If there are no adequate raw materials when demand is high in the market, the company can't supply adequate production goods in time then it might lead to failure of the company. The company is always compelled to

meet certain goods as an inventory for awe times. Over investment on inventories may lead to burden on cost price of the production so the company needs to foresee and calculate cost, demand, supply and its effect before making inventories. The investments on inventories need to be minimized at the minimum level. Over investment or under investment or inventories may be a conflicting factor but acute inventory management is the prime necessity or every organization. Through JIT system or Zero based budgeting method the inventories can be maintained at low margin and cost burden is also reduced.

The sales production and inventory are inter-related with each other. If any one of them changes the other will make chance automatically in volume. In NEBICO Pvt. Ltd, the inventories are expressed in total amount Rs and not in volume. Finished good inventories bridge the gap between production and sales. If production is higher than sales, the over production is transferred from inventory supply. So certain exceeds production, the excess sales is recovered from inventory supply. So certain level of inventory is always needs for smooth sales operation of the company. Mostly nature of operating company and its raw material affects the size of inventory. Like for instance wheat flour is the raw material for NEBICO so the company needs to make adequate stock of wheat at its season of wheat production.

If the raw material used for production is seasonal than the production activities are operated only for few months in a year, at this situation the size of finished goods inventory will automatically exceeds. Following table represents the actual inventory amount of NEBICO from the fiscal year 2063/064 to 2067/068.

Table No. 4.10

Total Inventory/Stock Level

(In Rupees)

Fiscal Year	Opening Inventory	Closing Inventory
2063/064	3,080,132	3,005,423
2064/065	3,005,423	2,877,520
2065/066	2,877,520	2,769,716
2066/067	2,769,716	2,769,716
2067/068	2,769,716	4,724,824

Source: Official Records of NEBICO

The above table 4.10 shows that the inventory amount of NEBICO Pvt. Ltd. is in decreasing trend each year. But the inventory in the year 2067/068 shows drastic change in inventory amount by more than 78.56%, it may be due to less sales and other external factors.

The decreasing trend of closing inventory of fiscal year 2064/065 from 2063/064 is by 4.26% closing inventory amount shows decrease by 3.75% in the fiscal year 2065/066 compared to last year. Again in the fiscal year 2066/067 it shows inventory decrease by 4.47% compare to last fiscal year amount. But in the fiscal year 2067/068 closing inventory is increased by 78.56% (i.e. Rs. 4,724,824) it may be due to other factors compare to fiscal year 2066/067 (i.e. Rs.2646,050). The total of inventories during the fiscal year 2067/068 is 3.57% of total sales value (i.e. Rs.132,470,000).

4.5 NEBICO'S PROFITABILITY RATIO ANALYSIS

An analysis of financial statement with the help of ration is termed as ratio analysis. A mathematical relationship between two related items expressed in quantitative forms is also known as ratio analysis. The ratio is the statement connected with each other. Ratio analysis is a technique of analysis and interpretation of financial statement. To evaluate the performance of an organization by creating the ratio from the figure of different accounts consisting in balance sheet and income statement is known as ratio analysis.

From four broad groups of ratios, profitability ratio is of great use. It shows the overall efficiency of the business organization by return generated from sales and investment. Higher the profitability ratio shows greater response. The relation of the return of firm is either its sales or its equity or its assets are known as profitability ratio. It is of two types. Profitability is relation to sales and profitability is relation to investment. But here we are concentrating only on profitability in relation to sales of NEBICO Pvt. Ltd.

Table No. 4.11

Income Statement

Year / Particular	2063/064	2064/065	2065/066	2066/067	2067/068
Sales Revenue	125,656,000	121,067,000	130,997,000	131,750,000	132,470,000
Less: Cost of Sales					
Variable Cost	(87,024,932)	(87,187,884)	(92,529,787)	(93,971,160)	(95,027,077)
Fixed Cost	(5,619,132)	(5,428,000)	(5,867,489)	(5,904,598)	(6,087,696)
Gross Profit	33,011,936	28,451,116	32,599,724	31,874,242	31,355,227
Less: other Operating Costs					
Administrative Costs:					
Variable Cost	(3,504,605)	(3,089,074)	(3,362,599)	(3,415,927)	(3,441,370)
Fixed Cost	(15,175,822)	(14,162,952)	(14,869,978)	(15,080,973)	(17,888,129)
Distribution Costs:					
Variable Cost	(8,858,375)	(7,838,290)	(9,699,987)	(9,375,775)	(9,197,457)
Fixed Cost	(37,96,447)	(3359,267)	(4157,138)	(4018,190)	(3879,578)
Gross profit Margin ratio	26.27%	23.50%	24.89%	24.19%	23.67%
Net Profit Margin ratio	1%	0.00095%	0.29%	-	-
Operating ratio	98.67%	99.99%	99.61%	100.013%	119.5%
Operating leverage	5.24	6.48	6.85	7.63	7.99

Source: Appendix – II

A. Gross Profit

Gross profit margin ratio expenses the relationship between gross profit margin and the sales amount during the year. Gross profit margin ratio can be expressed as:

Gross profit margin ratio (GPMR) = Gross Profit/Sales Amount

"GPMR" for the base year 2063/064 = 33.11,936/1256,56,000

= 26.27%

Higher ratio percent of base year 2063/064 shows positive sign towards good management of NEBICO. But company has low gross profit ratio in 2067/068, that reflects higher cost of goods sold and inefficiency of the company comes out.

To avoid low gross profit company need to purchase goods at favorable terms and prices.

In the base year 2063/064, NEBICO'S data represents favorable gross profit margin ratio if 26.27%. Gross profit margin of last five years from 2063/064 to 2067/068 and 26.27%, 23.50%, 24.89%, 24.19% and 23.67% respectively for 2063/064, 2064/065, 2065/066, 2066/067 and 2067/068.

B. Net Profit Margin Ratio

Net profit margin ratio establishes a relationship between net profit after tax and the sales amount. Net profit margin ratio can be expressed as follows in formula:

Net profit margin ratio (NPMR) = Net profit after tax/sales Amount

"NPMR" for the base year 2063/064 = (Net profit before tax – Tax Amount/ Sales amount)

= 1676,687 – (25% of 1676.687) / 125,656,000

= 1%

Data of base year 2063/064 shows that the company has low percentage of net profit margin ratio i.e. 1%, which shows low overall efficiency of the business. To achieve higher net profit the company needs to utilize all the resources available. Net profit margin is in fluctuating trend i.e. 1%, 0.00095%, 0.29% in the fiscal year 2063/064, 2064/065, 2065/066. But it is nil in past two years i.e. 2066/067 and 2067/068.

C. Operating Ratio

Operating ratio expresses the relationship between total operating expenses and the sales amount. Operating ratio shows the operational efficiency of the management. This ratio is calculated by:

Operating ratio= Total operating cost/ Sales amount

Operating ratio for the base year 2063/064= (cost of goods sold + other operating expenses) / Sales Amount

= (92,644,064+31,335,249) / 125,656,000

= 123,979,313 / 125,656,000

= 98.67%

In the fiscal year 2063/064, the company's data presents high percentage of operating ratio, which leads to low operating profit. Low operating ratio indicated the higher operating profit. So, minimum percentage of operating ratio is preferable. But it is in increasing trend for the past five year i.e. 98.67%, 99.99%, 99.61%, 100.13% and 119.5% for 2063/064, 2064/065, 2065/066, 2066/067 and 2067/068 respectively.

4.6 OPERATING LEVERAGE OF NEBICO Pvt. Ltd.

A ratio between contribution margin and earning before interest and tax (EBIT) is known as operating leverage. A ratio between the percentage change in EBIT and percentage change in sales amount is known as operating leverage. Operating leverage of NEBICO Pvt. Ltd. can be expressed as:

Degree of operating leverage (DOL) = (Sales-Variable Cost) / EBIT
DOL for the base year 2063/064 = (125656000-99387912) / (1676687+3339274)
= 5.24

The greater degree of operating leverage indicates the greater amount of business risk. For the base year 2063/064 operating leverage of NEBICO is 5.24 times, which indicated that if sales increases by 100%> the amount of EBIT increases by 524 time more. It shows that NEBICO need to absorb more fixed cost to aim for more profit. This indicates that return efficiency area is covered by capital structure. Degree of operating leverage for 2064/065 is 6.48, 2065/066 is 6.85, 2066/067 is 7.63 and 2067/068 is 7.99. This indicates that degree of operating leverage is in increasing manner.

4.7 COST-VOLUME-PROFIT ANALYSIS OF NEBICO Pvt. Ltd.

The cost-volume-profit analysis is the process of studying relationship between cost, volume and profit. CVP analysis is a power instrument in managerial decision making. CVP analysis deals with how profit and cost changes with the changes in volume it helps to determine sales requirement to avoid loss, especially helps in cost control, cost reduction and profit planning. In other words, CVP analysis helps to analyze the

interrelationship between costs, volume, profit and to attain the objective of profit maximization and control program.

Table No. 4.12

Income Statement for the year 2063/064 to 2067/068

(In Rupees)

Detail	Years				
	2063/064	2064/065	2065/066	2066/067	2067/068
1. Sales Amount	125,656,000	121,067,000	130,997,000	131,750,000	132,470,000
2. Variable Costs					
Costs of Sales	87,024,932	87,187,884	92,529,787	93,971,160	95,027,077
Administrative Costs	3,504,605	30,890,074	3,362,599	3,415,927	3,441,370
Distribution Costs	8,858,375	7,838,290	9,699,987	9,375,775	9,197,457
Total Variable Cost	99,387,912	98,115,248	105,592,373	106,762,862	107,665,904
3. Contribution Margin (1-2)	26,268,088	22,951752	25,404,627	24,987,138	24,804,096
4. Fixed Costs					
Cost of Sales	5,619,132	5,428,000	5,867,489	5,904,598	6,087,6969
Administrative Costs	15,175,822	14,162,952	14,869,500	15,080,973	17,888,129
Distribution Costs	3,796,447	3,359,267	4,157,138	4,018,190	3,879,578
Total Fixed Cost	24591401	22950219	24894127	25003761	27855403
Less: Other Income	(817627)	(683601)	(628562)	(867325)	(804674)
Net Fixed Cost	23773774	22266618	24265565	24136436	27050729
5. Profit (3-4)	2494314	685134	1139062	850702	2246633
6. P/V Ratio= (CM/Sales)	0.2090	0.1896	0.1939	0.1897	0.1872
7. BEP= (Net Fixed Cost/ PV ratio)	113750115	117439968	125144740	127234771	144501758
8. Margin of Safety= (AS-BES)	11905885	3627032	5852260	4515229	12031458
9. % of (BEP/Sales)	90.53%	97.0%	95.53%	96.57%	109.08%
10. % of (MOS/Sales)	9.47%	3.0%	4.47%	3.43%	9.08%

Source: Appendix – II & Official Records of NEBICO

Planning of profit is possible only when the management has desired recent information about the cost of product, both fixed and variable cost as well as sales price of the product. CVP analysis helps to determine the break even point at which total revenue are exactly equal to total cost or the point at which losses and profit begins. CVP analysis helps to determine most profitable alternative margin of safety and profit at different levels of sales. Also develops the optimum combination of product mix at desired profit.

4.7.1 Contribution Margin

Contribution margin is the excess of sales amount over its variable cost. It is the difference between the portions or Rupees that is left after variable expenses are deducted. In other words, fixed cost plus the amount of profit is equivalent to contribution margin. It is particularly useful in determining the break even point and target profit. It can be expresses as:

Contribution Margin = Sales Cost – Variable Cost

CM for the base year 2063/064 = Rs(125,656,000-99,387,912)

= Rs. 26,268,088

The above table no 4.12 shows that the calculation of contribution margin of NEBICO Pvt. Ltd. for the last five year 2063/064 to 2067/068. Contribution margin for year shows that there is fluctuation in trend. They are Rs. 26,268,088, Rs. 22,951,752, Rs. 25,404,627, Rs. 24,987,138 and Rs. 24,804,096 for the fiscal year 2063/064, 2064/065, 2065/066, 2066/067 and 2067/068 respectively. High contribution margin shows positive signal for high profit and low contribution margin leads to no profit or loss situation. Above table shows that in the year 2063/064 there is high contribution margin but in the year 2067/068 there is no profit at all or we can say there is loss in the year 2067/068.

4.7.2 Profit - Volume - Ratio

Profit volume ratio establishes a relationship between the contribution margin and the sales volume. The two factors profit and volume are interconnected as well as dependent with each other. Profit depends upon sales, sales price to a great extent depends upon the volume or production. It can be expressed as:

Profit volume ratio (P/V Ratio) = C.M./Sales

P/V Ratio for the base year 2063/064 = 26,268,088/125,656,000

= 0.2090

From above calculation we figured out the profit volume ratio for the base year 2063/064 of NEBICO is 0.2090 i.e. 20.9%. Similarly, thought table no. 4.12 we can figure out the P/V ratio of last five years i.e. from 2063/064 to 206/067.We can clear see in the table 4.12 that P/V ratios are in fluctuating trend. They are 0.2090, 0.1896, 0.1939, 0.1897 and 0.1872. P/V ratio is maximum in the year 2063/064.

The company always tries to reduce variable cost and increase the value of ratio to achieve more profit. Any increase in contribution margin would mean increase in profit only because fixed cost are assumed to be constant at all levels of production in the year. The ratio would also remain constant at different levels of production since variable costs as a proportion to sales remain constant at various levels too.

4.7.3 Break Even Point

Break even point is a point at which the firm's total revenue are exactly equal to total cost yielding zero income or the point at which losses ceases and profit begins. Through contribution margin approach, break even point can be expressed as:

Break Even Point (BEP) = Net Fixed Cost / P/V Ratio
BEP for the base year 2063/064 = 23,773,774/0.209
= Rs.113,750,115

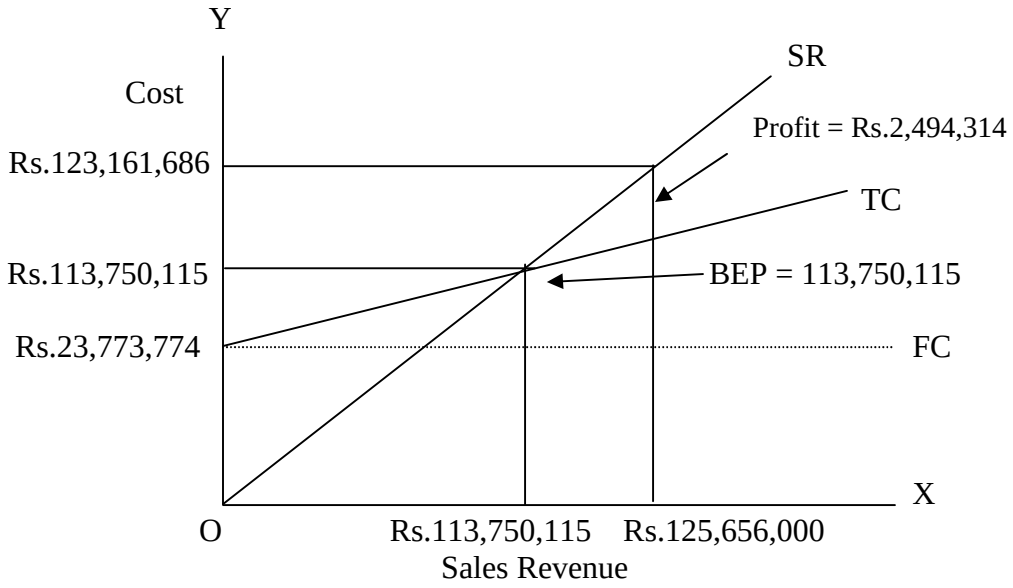
Therefore, the break even point of NEBICO Pvt. Ltd. for the base year 2063/064 is Rs. 113,750,115 from table no. 4.12, we can see the break even point of last five fiscal years i.e. from 2063/064 to 2067/068. The break even points ion rupees are Rs.113,750,115, Rs.117439,968 , Rs.125,144,740, Rs.127,234,771 and Rs.144501758 for the fiscal year 2063/064, 2064/065, 2065/066, 2066/067 and 2067/068 respectively. Break even point is in increasing trend from the past five years. Break even point (in amount) for the fiscal year 2063/064 is the lowest but the break even point for the fiscal year 2067/068 is the highest among the five years BEP. To achieve profit, actual sales revenue needs to exceeds to the break even point (in amount) of the fiscal year. Due to small difference between sales revenue and break even amount of NEBICO, it has been able to receive low amount of

profit every year, but in the year 2067/068 NEBICO fails to achieve the BEP (amount) so the company has to suffer loss in the year.

Through another method popularly known as geographical method the BEP can be determined. With the help of illustration, NEBICO'S break even chart for the base year2063/064 is presented below:

Figure No. 4.1

NEBICO'S Break Even Point Chart



Where sales revenue is shown as 'X- axis' and cost amount shown as 'Y-axis'. In the above chart, total cost curve in sales value. But fixed cost curve is parallel to X-axis because fixed cost curve is in upward direction. Total cost curve of base year 2063/064 starts from fixed cost Rs.23,773,774. When sales revenue is zero, fixed cost is equal to total cost i.e. Rs.23,773,774. Sales revenue curve originate from the origin because when there is no sales volume there is no sales revenue. As the sales volume starts taking size sales revenue starts increasing so the sales revenue line slopping towards upward position at right side. The meeting point of total cost curve and total revenue curve is known as break even point or equilibrium point i.e. Rs.113,750,115. As we know that actual sales revenue need to exceed break even sales point the gain profit. The above table shows that the actual sales are greater

than total cost which generates profit of Rs.2,497,314. But if total cost exceeds the actual sales and lies below break even point the company has to suffer loss.

4.7.4 Margin of Safety

The difference between the actual sales revenue and the break even sales revenue is known as margin of safety. It is the position above the break even point. Safety margin can be expressed as:

Margin of Safety (MOS)= Actual Sales – Break Even Sales
MOS for the base year 2063/064= Rs.(125,656,000-113,750,115)
= Rs.11,905,885

For better profitability situation larger margin of safety is required. The above calculation shows that the margin of safety for the base year 2063/064 is Rs.11,905,885. But in the table no. 4.12 it shows that the margin of safety is in fluctuating trend for the last five year fiscal year i.e. 2063/064 to 2067/068. The amount of margin of safety are Rs.11,905,885, Rs.3,627,032, Rs.5,852,260, Rs.4,515,229 and (Rs.12,031,758) for the year 2063/064, 2064/065, 2065/066, 2066/067 and 2067/068 respectively. Comparing the last five fiscal years, the fiscal year 2063/064 shows high margin of safety. But in the fiscal year 2067/068 shows negative of safety, which means actual sales is lower than break even sales point. Such situation in NEBICO Pvt. Ltd. is not fruitful so the company needs to increase its sales to achieve greater margin of safety.

4.8 CHANGE EFFECT AND RELATIONSHIP OF CVP ANALYSIS WITH ITS SUB-FACTORS

Profit is the main function among the variety of factors. Factors of CVP analysis can be affected by change in volume, cost and prices. Profit may be affected by the change in prices, volume variable cost, fixed cost and contributions of factors; which shows proportionate relationship, positive relationship, inverse relationship and no relationship.

4.8.1 Change Effect of Fixed Costs

Only change in fixed cost and other factors remaining constant or unchanged shows effect in BEP and profit. If fixed cost rises in any special conditions like charge in management policy, inflation and due to some external factors; the BEP will rise and profit falls. But if profit falls, however, it will lower the BEP and raises profit. Any change in fixed cost does not influence the profit volume ratio. Usually fixed cost does not change much or not in fluctuating position, other than I special circumstances. Lets increase or decrease fixed cost by 10% for the base year 2063/064 and other things remaining constant or same we get the following result.

Table No. 4.13

Income Statement with change in Fixed Cost

For the Base Year 2063/064

(In Rupees)

Detail	Changes of Result		
	Original	10% Increase	10% Decrease
Sales Value	125656000	125656000	125656000
Less: Variable Cost	(99387912)	(99387912)	(99387912)
Contribution Margin	26268088	26268088	26268088
Less: Fixed Cost (Net)	(23773774)	926151151)	(21396397)
Profit/Loss	2494314	116937	4871691
P/V Ratio= (CM/Sales)	0.2090	0.2090	0.2090
BEP= (Net Fixed Cost)/(P/V Ratio)	113750115	125125124	102375105

Source: Appendix- II

Above table 4.13 shows that, with 10% increase in fixed cost leads to again 10% increase in Break even and with 10% decrease in fixed cost it leads to 10% decrease in break even point. So we can say that there is proportionate relationship between break even point and fixed cost, where one leads to change another proportionately.

4.8.2 Change in Effect of Variable Cost

Increase in variable cost decrease contribution margin, profit and increase BEP. Chain effect appears with any change in variable cost towards profit, other things remaining constant if variable cost is lowered then, P/v ratio will increase, BEP will lower and profit rises. But if variable cost is increased then, it will lower p/v ratio,

increases BEP and finally reduced profit. Lets increase or decrease variable cost by 10% for the base year 2063/064 keeping other things same or constant, we achieve the following result:

Table No. 4.14

Income Statement with Change in Variable Cost

For the Base year 2063/064

(In Rupees)

Details	Change of Result		
	Original	10% Increase	10% decrease
Sales Value	125656000	125656000	125656000
Less: Variable Cost	(99387912)	(10932670)	(89449121)
Contribution Margin	26268088	16329297	36206879
Less: Fixed Cost (Net)	(23773774)	(23773774)	(23773774)
Profit/Loss	2494314	(7444477)	12433105
P/V Ratio= (CM/Sales)	0.2090	0.13	0.29
BEP= (Net Fixed Cost)/(P/V Ratio)	113750115	182875185	81978531

Source: Appendix-II

Above table 4.14 shows that, with 10% increase in variable cost, increases BEP by 60.77%, which indicates that there is positive relation between variable cost and break even amount. With 10% decrease in variable cost, it decreases the BEP by 27.93%. There is no proportionate change in BEP with Variable cost like fixed cost.

4.8.3 Change Effect of Sales Value

Any positive change in sales will lead to increase in profit volume ratio, lowering the BEP and finally increasing profit. On the other hand if any negative change appears in sales value, it results decrease in P/V ratio, increases BEP and decreases profit. Increase in sales is mostly desirable whereas decrease in sales is not much thinkable. To see the effect of change in sales value, we increase and decreases sales of base year 2063/064 by 10% making other things constant. We get the following result:

Table No. 4.15

Income Statement with Change in Sales Value

For the Base Year 2063/064

(In Rupees)

Details	Change of Result		
	Original	10% Increase	10% decrease
Sales Value	125656000	125656000	125656000
Less: Variable Cost	(99387912)	(99387912)	(99387912)
Contribution Margin	26268088	38833688	13702488
Less: Fixed Cost (Net)	(23773774)	(23773774)	(23773774)
Profit/Loss	2494314	15059914	10071286
P/V Ratio= (CM/Sales)	0.2090	0.281	0.1212
BEP= (Net Fixed Cost)/(P/V Ratio)	113750115	84604178	196153251

Source: Appendix- II

Above table 4.15 shows that, with the 10% increase in sales value 26% decrease in break even amount is received where as 10% decreases in sales value leads to 72.44% increase in break even amount. So we can say that there is inverse relationship between sales price and break even point.

4.9 MAJOR FINDING REGARDING NEBICO Pvt. Ltd.

The major findings upon analysis of NEBICO Pvt. Ltd. activities for last five years are as follows:

- There is great lack of skilled employees to prepare budgeting and analyze their financial position.
- NEBICO has relatively high fixed cost (i.e. Interest, depreciation, repair, salary and wages, provident fund subsidies etc).
- The company has no detailed lists of fixed, variable, expenses. No specific list is available for mixed expenses planning which is significant in profit planning and control.
- Sales trend of the company is fluctuating and lacks efforts to improve them.
- Variable cost of NEBICO is proportionately higher than fixed or total costs, hampering the overall company's profit.
- Like other manufacturing company of Nepal, NEBICO has no effective plan and technique to reduce costs.

- Goals and objectives of NEBICO are not clearly communicated to all plan and management.
- The company lacks effective inventory policy. Raw material handling, stocking and controlling system are not systematic and efficient.
- Lacks new and systematic techniques of forecasting sales and purchase.
- NEBICO is not utilizing its full capacity. No reasonable practice of segregating costs into fixed and variable or controllable uncontrollable.
- Only one way communication channel is followed in the company and BOD holds the authority to fix prices and recruitment of employees.
- Most-employees are male and employees are classified as per their skill, female participation in work force is very low.
- NEBICO products biscuits and confectioneries are supplied all over Nepal and in foreign countries too. Therefore NEBICO is partially successful to substitute the important of biscuits and confectioneries.
- NEBICO has tries to adopt new technology for improving quality products.
- Financial state of the company is at declining stage and requires new and effective marketing strategies to improve current position through utilizing available resources to the possible extent.
- Proper co-ordination among the production, administrative, distribution, sales and inventory department is required.

CHAPTER – FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 SUMMARY

Efficiency management is the prime necessity in today's world as resources are limited and scarce, proper uses in an effective and efficient way need to be done. As future is uncertain so risk is present in the business world. To avoid or reduce risk proper management is very necessary. Management effectively achieves organizational objective through the efficient use of the scare resources in a changing environment. Cost – volume and profit is an analytical technique which helps to study the relationship between Cost, Volume and profit. Cost volume and profit analysis is helps to manage profit without bearing loss in future business. So profit planning is done as a written plan in every aspect of business operations for definite period. Through inter relationship between Cost, Volume and profit; profit planning is performed in an organization. Without cost, volume and profit planning tools determination of profit planning processes are almost impossible or useless.

The objective this research study is to examine the effectiveness of profit planning and control with the help of cost, volume and profit analysis tools in NEBICO Pvt. Ltd. Focus of this study is to evaluate cost, volume and profit analysis of NEBICO Pvt. Ltd. It is observe that NEBICO has succeeded in living up to the expectation of general position and as man Producer Company of biscuits and confectioneries. As per the nature its requirement, the secondary and primary data with descriptive and analytical approach for cost analysis, sales analysis, inventory analysis, profitability ratio analysis, contribution margin analysis, p/v ratio analysis, break even analysis and salary wages cost analysis etc are used. Table analysis and questionnaire distribution were made for gathering information and tabulating them as per requirement.

From the above study and analysis, CVP analysis shows that NEBICO has low contribution margin, low p/v ratio. High break even point and low margin of safety. The sensitivity test of CVP analysis shows that if variable and fixed cost increase. The break

even point will also increase and if they were decreased then, the break even point also decreases. But at the lime of increase in sales price the break even point will decrease. It indicates that the relationship between cost and break even point is positively correlated where as relationship between sells price and break even point is negatively correlated. To fulfill the company's objective, it makes burden on fixed cost in an uncontrolled manner. Company is facing loss in the year 2066/067 and 2067/068 with the help of other incomes company manages to make small profit in the year 2066/067 which is not satisfactory. Company's condition is very poor and requires effect changes to improve its position. Lack of detailed information and extra cost burden, company is unsuccessful in practicing profit planning and control tools like cost, volume and profit analysis.

5.2 CONCLUSION

NEBICO Pvt. Ltd. has substantial gap between budgets and actual achievement. Company's goals and objectives are clearly communicating with it employees. Various popular profit planning tools like JIT. Zero based budgeting. CVP analysis is not practiced in NEBICO Pvt. Ltd. Cost segregation into fixed, variable and semi-variable are not done. Fixed costs are in increasing trend each year. Long-term liability is also rising; big portion of income is spent over paying interest. Even though the operating and maintenance cost are in rising trend no specific technique is utilized till now to control cost or reduce them. Classification of cost is not maintained no scientific and systematic basic rather they are based on hunches and prediction of employees. NEBICO still lags behind for the realistic budget and not been able to practice CVP analysis as a tools to profit planning and control.

Study of NEBICO Pvt. Ltd. through CVP analysis shows, company has low and decreasing contribution margin affecting profit. Even through company has succeeded to some portion to increase contribution margin by increasing sales revenue but the increasing fixed cost has increased BEP to high level. 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. Through increase i9n sales revenue, the company can increase profit and safety margin. CVP relationship is not considered in

NEBICO while developing sales plan, production plan and pricing strategy. The company is at risky situation as there is a certain percentage decrease in sales revenue and certain percentage increase in total cost. In the year 2064/065 to avoid further losses in coming years NEBICO have has to increase gap between total revenue and total cost; by taking action to stabilize fixed cost and decrease variable cost.

Company's management need to take corrective action as soon as possible by controlling costs and their behavior through effective technique, if not NEBICO have to bear further losses in coming years.

5.3 RECOMMENDATIONS

As per study of NEBICO Pvt. Ltd. Utilizing cost volume profit analysis as a tool to measure effectiveness of profit planning and Control. It is very necessary for the organization to develop and implement the CVP analysis process in the organization. NEBICO is having hard time to adjust profit planning and control as company is going through a tough phase of its life. Nepal is moving towards globalization with membership of WTO, Nepalese company now have to prepare themselves to compete with international market through better management policy and scientific technologies. Application of advance profit planning tools could be a better help while struggling with limited resources and its availability. Profit planning and control also helps organization to achieve goals in a cut throat competition without much difficulty. Nepalese organization lacks effective tools for its improvement. Thus the following recommendations are made accounting to the above research study.

- Like other manufacturing companies in Nepal, NEBICO lacks profit planning and control tools for import substitution and increase in profit. Better planning tools are needed to be utilized like CVP analysis and Budgeting.
- As broad objectives are the basic guideline for the organization, NEBICO needs to clearly define them and assign duties and responsibilities to its staffs.
- NEBICO should follow CVP analysis to reach Break even point which helps in preparation of sales plan, purchase plan, production plan and setting prices of its products.

- Classifications of controllable, uncontrollable, fixed and variable expenses are needed to be done within a specific frame work of time period.
- Big portions of investments are done over fixed costs which stress profit so NEBICO need to diversify its investments and make optimum use of fixed costs to generate maximum profit.
- Separated cost control department need to be established to control cost, which will divide the cost by product and can give suggestion on dropping or developing new products at time.
- Lacks effective inventory policy, therefore effective tools like JIT system, zero base budgeting etc need to be implemented for efficient inventory management and controlling.
- Decentralization of decision making power and two way c communication channel is required.
- Lack of better training programs is hampering employee's proficiency and productivity so regular training need to be introduced and produce more skilled workers in the organization.
- Wages payment is not at satisfactory level.
- To increase profit, NEBICO need to minimize wasteful expenses and adopt new effective planning processes.
- Market research is required for the company's products for better market opportunities.
- Company need to restructure its capital structure as huge amount is paid as interest on long term loan every year. Such burden could be minimized through internal financing.
- Regular market surveys need to be performed for products demand. Supply and pricing under market research and development department new product line and opportunities could be captured.
- Profit can't happen immediately so systematic approaches need to be made towards comprehensive profit planning.
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APPENDIX-I

Nebico Pvt. Ltd., Kathmandu

Sales and Target Achievement

Year	Target Sales ('X' in '00000')	Actual Sales ('Y' in '00000')	$u = (X - \bar{X})$	$u^2 = (X - \bar{X})^2$	$v = (Y - \bar{Y})^2$	$v^2 = (Y - \bar{Y})^2$	uv
2063/064	1230.86	1256.56	-77.576	6018.04	-27.32	746.38	2119.38
2064/065	1256.47	1210.67	-51.966	2700.47	-73.21	5359.70	3804.43
2065/066	1328.24	1309.97	19.804	392.20	26.09	680.69	516.69
2066/067	1344.61	1317.50	36.174	1308.56	33.62	1130.30	1216.17
2067/068	1382.00	1324.70	73.564	5411.66	40.82	1666.27	3002.88
N=5	∑X=6542.18	∑Y=6419.4	0	15,830.93	0	9583.34	10659.55

$$\bar{X} = \frac{\sum X}{N} = 1308.436$$

$$\bar{Y} = \frac{\sum Y}{N} = 1283.88$$

Calculations of mean, standard deviation and coefficient of variation

Suppose, 'X' is target sales and 'Y' is actual sale.

For target Sales

$$Mean(\overline{X}) = \frac{\sum X}{N} = \frac{6542.18}{5} = 1308.436$$

Standard Deviation ($¢_x$)$= \sqrt{\frac{1}{N}\sum (X - \overline{X})^2} = \sqrt{\frac{1}{5} \times 15830.93} = 56.27$

Coefficient Variation (C.V.$_X$) $= \frac{S.D.}{Mean} = \frac{¢_X}{\overline{X}}$

$$= \frac{56.27}{1308.436} = 4.30\%$$

For Actual Sales

$$Mean(\overline{Y}) = \frac{\sum Y}{N} = \frac{6419.4}{5} = 1283.88$$

Standard Deviation($¢_Y$)$= \sqrt{\frac{1}{N}\sum (Y - \overline{Y})^2} = \sqrt{\frac{1}{5} \times 9583.34} = 43.78$

Coefficient Variance (C.V$_Y$)$= \frac{¢_Y}{Y} = \frac{43.78}{1283.88} = 3.41\%$

Now,

Correlation coefficient (r) $= \frac{\sum uv}{\sqrt{\sum u^2}\sqrt{\sum v^2}}$

$$= \frac{10.659.55}{\sqrt{15830.93}\sqrt{9583.34}} = 0.865$$

Problem Error (P.E.) $= \frac{0.6745 \times (1\text{-}r^2)}{\sqrt{N}}$

$$= \frac{0.6745(1 - 0.748225)}{\sqrt{5}}$$

$$= \frac{0.1698}{0.236} = 0.0759$$

Coefficient of Determination = r^2

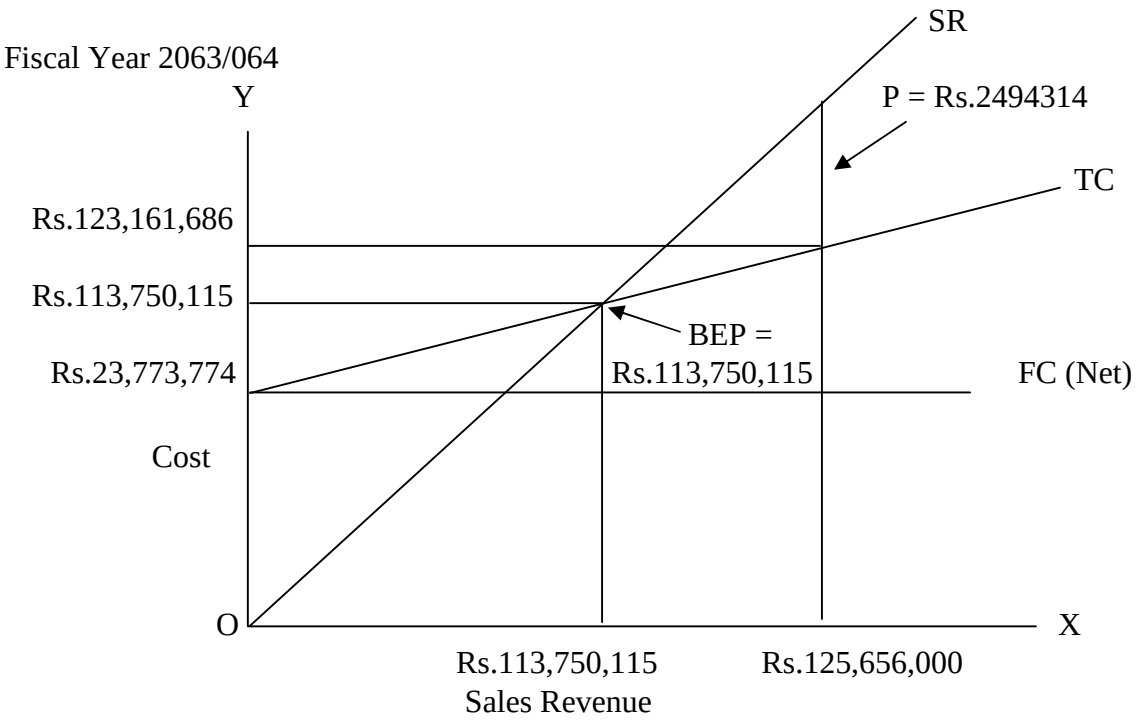
$$= (0.865)^2$$

= 0.748225

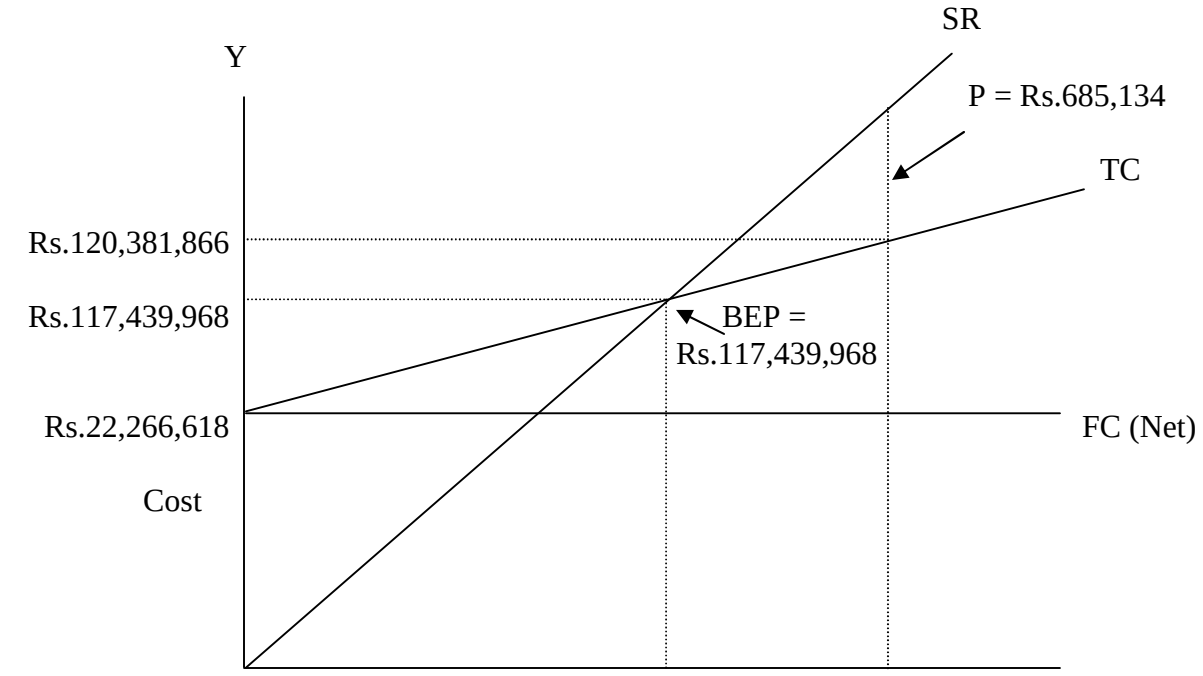
APPENDIX-II

Simple Graphic Structure of Break Even Point (BEP), Sales Revenue (SR), Total Cost (TC), Fixed Cost (FC) and Profit (P)
For the Fiscal Year 2063/064 to 2067/068

Fiscal Year 2063/064

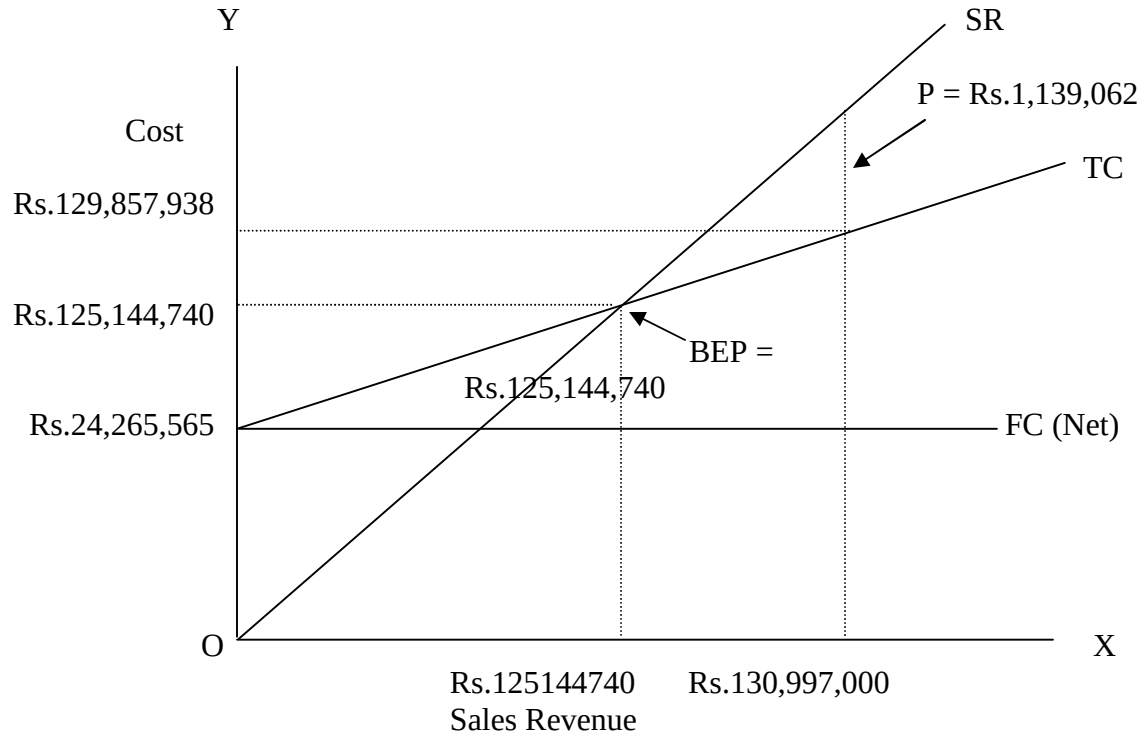


Fiscal Year 2064/065

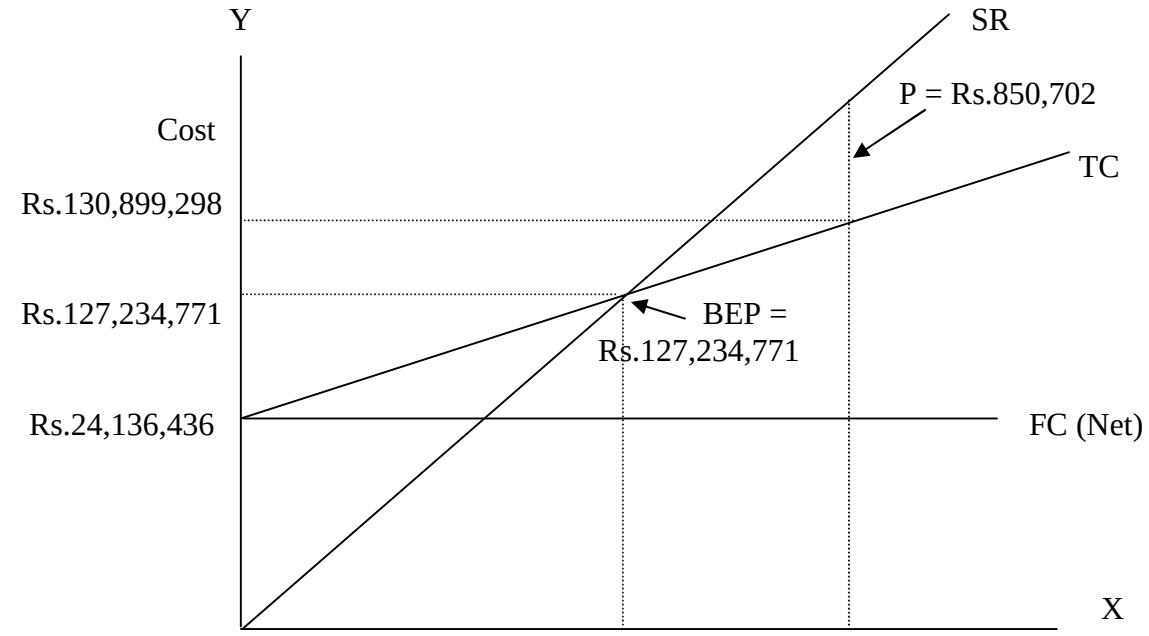


			X
O		Rs.117439968	Rs.121067000
	Sales Revenue		

Fiscal Year 2065/066



Fiscal Year 2066/067



O Rs.127,234,771 Rs.131,750,000
Sales Revenue

Fiscal Year 2067/068