

CHAPTER-I INTRODUCTION

1.1 General Background of the study

Democratic of Nepal is a small and landlocked country, which is situated in the lap of Himalayas. Powerful river rush out of the Himalayas, beautiful temples, culture and festivals and equally erotic people really make Nepal the more beautiful nation of the world. People republic of China surrounds it on the North and India on the south, East and west. It covers 0.03% land of the world. Geographically, it lies in 26 22 to 30 27 and 84 50 to 88 12 East latitude and elevation ranges from 305 met000ers to 8488 meters. Total area of 147181 sq. km with length 885 km and width ranging from 144 km to 240 km having sailed featuring of land locked. Developing third pole, non-aligned, peaceful and small country.

Nepal is rich in valuable natural resources, e.g. minerals, water, fertile land and valuable herbs found in abundance. It is also divided into three regions, on the basis of its physical features. Terai Region consists of nearly 17% of total area. About 40% of the region is under cultivation. Population in this region constitutes 48.43% of the total population of the country. The hilly region covers about 68% of the total area and only 10% area of the region cultivated. Population in this region constitutes 44.28% of the total population of country and Himalayans region covers 41.15% of the total area of the country. Population in this region constitutes 7.29% of the total population of country. The country is under the vicious circle of poverty and more the 25% of the population lies below the poverty line. Nepal has mixed economy. It is mainly dominated by agriculture. But in recent year the non agricultural sector is contributing more in GDP than the agricultural sector. Its per capita income is \$1112 public private manufacturing industries were established with the objective of balance regional development, public welfare, and employment generation, import substitution and the export promotion for dissemination of the development activities according to national priority. Now a

days, industrialization and foreign trade are well-known phenomenon for economic growth throughout the world.

CVP analysis is the powerful tool of planning and controlling of cost for management. It shows the chain relationship among cost volume profit. Management can get various answer of different question through CVP analysis and can estimate easily that what should be the required sales of the company to get desired profit. Similarly profit can be estimated in different expected sales volume. CVP is a greatly helpful in managerial decision making especially cost control and profit planning. Profit is the basic thing to survive the organization, by the simple mistake the whole firm could reach to the failure. So, CVP analysis provides a lot of information about the alternatives to have the strategies and utilization of resources. Therefore it will be fruitful to know the role of CVP analysis in profit planning and control of manufacturing industries.

1.1.1 Development of Industries in Nepal

Nepal's economy is largely at the pre-industrial state. In 1936, Gharelu Ilam Prachar Adda was established. In 1935 a development agency named "Udhyog Parishad" was contributed for accelerating the industrial and commercial activities in the country. In the following year, In 1936 Nepal company act was enacted. This act was formulated with the aim of establishment of industries by the domestic and foreign private investors. In the same year Biratnagar Jute Mill was lunched as joint venture of India and Nepal and was the first modern industry of Nepal. After that Nepal has more than establishment till now. The flow of foreign capital and technology are an effective means to mobilize capital, human and natural resources in order to make economy monetarily responsive, efficient and comparative in the process of industrialization of Nepal.

The first five year plan introduced industrial policy in 1957. A series of revision was made in subsequent year. It was announced with the purpose of upgrade and

promotion of private industries. It was revised in the year 1960 with a motive to attract foreign investment and to facilitate financing, which was converted into Nepal Development Corporation in 1959 with a view to provide financial and technical assistance to private sector industries.

1.1.2 General Introduction of Unilever Nepal Ltd.

Nepal has taken mixed economy policy. Industrialization is contributing more than other sector to the country. Effective implementation of the national economic policies facilitates the enhancement of manufacturing industries, promotion of export and import of goods and services. To speed up the phase of economic development various acts and regulations were enacted with the motive of privatization and liberalization of industries. Government has adopted one window policy to facilitate the industrial investment and also to attract the foreign investment implementing foreign investment act. These policies helped the investor to invest in different sectors without any difficulties and hesitation. Many different industries were established in a country with a joint-venture. Out of the different foreign investments in Nepal, Unilever Nepal Ltd is an important manufacturing company established after liberal economic policy by the government, which was established in 1992 in the name of Unilever Nepal Limited. It was started with authorized capital (3000000 ordinary shares of Rs.100 each) Rs.300 millions and issued, subscribed and paid up capital (920700 ordinary shares of Rs.100 each) RS.92.07 million. Out of them Himalayan Lever Ltd. India has held 736560 shares, Sibkrim Land and Industry Co. Pvt. Ltd., the Nepal collaborator has held 46035 and public have 138105 shares.

The name was converted from Nepal Lever Ltd. into Unilever Nepal Ltd. on 13th December 2004 in accordance with the law enforced by passing special resolution in general meeting. UNL was framed as subsidiary company of Hindustan lever ltd., India. The factory is situated at Basamadi VDC of Makawanpur district. And corporate office of the co. is in Kathmandu.

Hindustan lever ltd. was formed as subsidiary company of Unilever group of England, with a 51% shares. It was started in 1946 in India. Its head office is in Mumbai. The objectives of Unilever Nepal ltd. are to establish and carry on the business of shops, detergents, cosmetics, toiletries and personal care product, toothpaste and household cleaners to export and otherwise deal with the products and to perform all such other activities, which may be related and to carry out other objectives as set in the memorandum of association and article of association of the company.

1.1.3 The corporate purposes of UNL

The company's purposes are as follows:

- To meet the everyday needs of people everywhere. To fulfill the aspirations of consumers and customers. To respond creatively and comparatively with branded products and services which is raised the quality of life.
- The deep roots in local cultures and markets are unparalleled inheritance and the foundation for future growth. UNL will bring wealth of knowledge and international export to the services of local consumers.
- To get sustainable, profitable growth for business and long term value creation for shareholders and employees.
- To succeed requires the highest slandered of corporate behaviour towards employees.
- UNL long-term success required requires a total commitment to exceptional standards of performance and productivity, to working together effectively and to a willingness to embrace new ideas and learn continuous.

1.1.4 Performance of the company

UNL earn per share Rs.117 in first 6 month of current fiscal year 2066/67. End of Poush company earn rate profit of 10 crore 78 lakh. Company listed 921,000 share in NEPSE.

In comparison to same period of previous year, company increases its profit by 54%. Till Poush 2066 bank earn profit of 7 crore. In comparison of previous year's Poush, company was unable to decrease its cost of sales even company increase its sales. UNL sales reached to near in Rs.70 crore 2 lakh till Poush for which cost of sales were in Rs.41 crore 21 lakh. It was 61 crore 84 lakh sales in previous year and corresponding cost of sales where in Rs.43 crore 71 lakh.

Company's per share net-worth Rs.552. It was Rs.466 in previous year.

Company's Details

Table1.1

Details	Poush 2067 (in lakh)	Poush 2066 (in lakh)
paid up capital	921	921
Reserve fund	4165	3374
Investment	2487	837
Net profit	1078	700

Source: Naya Patrika, 6 Falgun 2067

The company has been awarded best presented account award of 2067 by ICAAN and National Excellence Award for 2062 by FNCCI respectively.

1.1.4.1 Dividend

The board has recommended paying out a dividend of Rs.275 per share for fiscal year 32nd Ashadh 2064. This will amount to Rs.253.20 million. It was 10% more than last fiscal year.

1.1.4.2 Product

The company produces different products with special quality to achieve the company's goals. So at present, the company's current products are as follows:

- Detergent
- Sources

- Laundry Soaps
- Toilet Soaps
- Personal Products
- Soap Noodles
- Tea
- Vanaspati

1.1.4.3 Trade Relations

UNL believes joint business partnering and strives for mutual growth while sharing the rewards. The board wishes to place on record its appreciation for the co-operation and support extended by all company's business partners.

1.1.4.4 Corporate Social Responsibility

- As a corporate citizen, the company operates the following social activities to take a social responsibility of the community.
- A mobile medical units provided by the UNL employment trust is used intensively for providing emergency medical assistance in the Makawanpur District.
- The Miles of Healthy Smiles program that the company runs in conjunction with united mission to Nepal has provided dental hygiene awareness workshop and checkups over 207 schools and 102680 children covered through camps.
- The company also sponsors a Dental Corner at Bir Hospital where along with check-up and consultation by dentist, free samples of peps dent toothpaste and tooth brush are also provided to the patients.
- The company conducted Home Safety workshops where housewives of Basamadi Village participated.

1.1.4.5 Safety, Environment and Energy Conservation

Factory continues with its zero last time accident record for last 10 years. Training to re-emphasize safe operational practice with emphasis on behavioral change toward safety was imparted to all employees during the year. Each staff took responsibility to nature safety behavior to the employees in respective work area with personal engagements and also conducted regular audit to ensure safe working environment for all employees.

Company continuous to be a zero efficient site and ensure that the effluent quality meets all the environment parameters as per Unilever regulations and population control guideline of the country. The company is reducing the water consumption and this has resulted in 9% drop in water consumption by the current year. Energy conservation remained a key deliverable and company achieved 15% reduction in Furnace oil consumption per ton of soaps by the end of current year.

1.1.4.6 Future Outlook

Despite the prevailing difficult business ultimate, growths in tourisms and remittance coupled with low penetration levels of company's products categories makes the company optimistic about the vast potential for growth in Nepal and UNL.s prospects in coming years. It will also launch with wide ranging options of high quality products at affordable price to fulfill drives aspirations and tests for attracting new consumers. And the company has decided to enter the ice in the market with high quality at affordable prices near future.

1.2 Statement of the problem

Every country's economic prosperity depends upon a sustainable economic development for the attainment of accelerated economic development in the country, industrialization is equally more important than the 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 cannot be developed expanded on promotional bases, proper development of the economy is also not possible. However, owing to constraints in the supply of raw material, basic infrastructure, low purchasing power of people, underdevelopment capital market, Lack of technological advancement and so on. Industrialization has so far been of laggard phenomenon and has not been able to make a desired head way.

Public sector manufacturing enterprises are playing a very vital role in the country's economy. Nepalese manufacturing enterprise is small due to small market and no good regulation on international marketing. It is growing steadily. But most of the Nepalese public manufacturing industries are operating at loss. There could be many factors for the failure of the enterprise. These industries are established and operated for the profit as well as service. CVP analysis is a supplementary tool of PPC. Based on annual report published, performance of the UNL can be considered as satisfactory. CVP analysis is useful for proper planning, controlling, organizing and decision making. This study has tried to answer the following research questions:

- What are the major difficulties in application of CVP analysis?
- Whether or not UNL is using CVP analysis?
- In which area of the bank operation CVP analysis can be applied to improve the competitiveness and performance of the manufacturing company?
- Which part (i.e. BEP, CM, MOS etc.) of CVP analysis is mostly practical till now?

1.3 Objective of the study

The planning objective of this study is to identify and evaluate the current practice of CVP analysis and its effectiveness in manufacturing company in Nepal, with special reference to UNL. The special objectives of study are:

- To study the relationship of cost, volume and profit analysis of sample organization.
- To evaluate profitability, financial position and sensitivity of UNL activities.
- To analyze the cost volume profit of the company and its impact on Performance.
- To provide suggestions and recommendation for improving UNL condition for further improvements.

1.4 Significance of the study

CVP is one of the powerful management tools to show relationship between the element of profit planning and use for decision-making in certain situation. Very few studies have been made in the profit planning and control of manufacturing company. CVP analysis as one of the tool of PPC is hardly studies. So this study is significant in the following ways.

- It highlights the relationship of CVP as applicable tools of budgeting.
- This study would be very useful to the potential manager, accountant, policy maker and researcher because it deals with practice of CVP analysis of Manufacturing Company as very important tool of PPC.
- This study is helpful to the related department of the manufacturing company by providing necessary recommendations.
- It is also useful for interested parties, loan investors, shareholder and entrepreneur also.
- This study also directed towards providing necessary recommendations to the related department of the company.
- It provides literature to the researchers who want to carry further research on the similar issue.

1.5 Limitation of the study

- The study is confined only to cost volume profit analysis as a tool of profit planning and control of UNL the following factors have limited the scope of this study.
- Cost volume profit analysis covers the period of five years 2062/63 to 2066/67.
- The study of is mostly based on secondary data.
- The accuracy of this study is based on true response and the data available from management of the company.
- The study mainly focused to keep sensitivity analysis of cost.

1.6 Organization of the study

The whole study is prepared in line with prescribed format and structured in to five sections.

Chapter I: Introduction

This chapter includes background of the study, brief introduction of the company, statements of the problems, objective of the study, need/scope or significant of the study, limitation of the study and organization of the study.

Chapter II: Review of Literature

This second chapter covers the review of available literature in the field of the study being conducted. The various books publications and previous published research worked have been reviewed.

Chapter III: Research methodology

This chapter explains the research methodology employed to conduct the study and tool and technique used in analysis of data. This chapter includes research design, source of data, population and samples, method of data analysis etc.

Chapter IV: Data presentation and analysis

In the fourth chapter data presentation, interpretation, analysis of data was made with the help of selected statistical tools and techniques. Major findings were down on the basis of analysis of data.

Chapter V: Summary, Conclusion & Recommendations

This is the last chapter of the study, the whole picture of the study was presented in a summary. This part consist, issues and gaps, action plans and put forward recommendation to improve the existing situation.

CHAPTER – II

REVIEW OF LITERATURE

2.1 Conceptual Framework

2.1.1 Profit Planning as a Concept

The term comprehensive PPC has recently come into intensive in the business literature. It has its synonyms like comprehensive budgeting, managerial budgeting and budgeting. This term is broadly defined as a systematic and formalized approach for performing sign facet phase of the management planning and control includes the following matters.

- The development and an application of broad range objective for the enterprise.
- The specification of enterprise goals.
- The development of strategic long range profit plan in broad terms.
- The specification of tactical short range profit plan detailed by assigned responsibilities (division, products, project)
- The establishment of a system of periodic performance reports detailed by assigned responsibilities and follow up procedures (Welsh, 1998)

In many of the better management companies, comprehensive PPC has been identified as a way of managing. It focuses directly on rational and systematic approach to performing the management process "profit plan is an estimated and predetermination of revenues and expenses that estimates how much income will be generated and how it should be spent in order to meet investment and profit requirements. In the case of institutional operations it presents a plan for spending income in a manner that does not result in loss" (Ninemeire and Schmidgall, 2000).

"The international management institutions conference on budgetary control held in Geneva in 1980 has defined profit plan as an exact and rigorous analysis of the past and probable and desired future experience with a view to substituting considered intention opportunism in management." (Int'l Mgmt. Institutions Geneva conference) "Profit planning represents an overall plan of operations, covers a definite period of time and formulates the planning definitions of management" (Myers, 1998).

"Profit planning is a well thought out operational plan with its financial implementation impressed at both long and short range profit plans and budgets in the forms of financial statements, including balance sheet, income statement and cash and working capital projections" (Mitz and Milton, 2002).

"Profit plan represents an overall plan of operation, covers a definite period of time and formulates the planning design of the management. It can be viewed as one of the major important approaches that have been developed to facilitate effective performance of the management process. Now a day's profit planning system is especially familiar to business organization but the practicability of it depends upon the size of the business. In common objectives of PPC system whether applies to business administration is to formulate policy as well as with the implementation of policy. And an objective established after the consideration of the probable courses of events in the future. In conclusion PPC is directed towards the final objectives of the enterprises and generally includes all of its important elements. It has main objectives of attaining the optimum profit in the enterprises.

2.1.2 Fundamental Concept of PPC

The fundamentals are covered with the effective application of the theory of management process. The mechanics of PPC involved activities as the design of

budget schedules, routine are respective computations and clerical activities related to a PPC as the following.

- A management process that includes planning, organizing, staffing, leading and controlling.
- A management commitment to effective management participation by all levels in the entity.
- An organization structure that clearly specifies assignment of management authority and responsibility at all organization levels. A management control process.
- A management planning process.
- A continuous and consistent co-ordination of all the management functions.
- Continues fed forward feedback follow up and re-planning through defined communication channels.
- A strategic profit plan.
- A tactical profit plan.
- A responsibility accounting system.
- A continuous use of the exception principle.
- A behaviour management program.

2.2 Concept of CVP Analysis

Huge amount of money is invested by people in the business to earn profit. So they do hard works to except from the loss. They need to think about future of action in such a way so that they can accomplish their business objective and act according to today's complex business environment. In order to get a profit, it is necessary to examine whether the capacity is fully utilized or not and if there is any profit to reduce cost. Because minor change in cost may result high difference in profit where the efficient use of resources are may reduce the cost and it may provide opportunity to make more profits. In this type of situation profit planning tools assist them to analyze. Thus the profit planning and control tool CVP analysis uses in all type of organization. "CVP analysis is a systematic method of examining the

relationship between changes in activity and changes in total sales, expenses and net profit. As a model of these relationships CVP analysis simplifies the real world conditions that a firm will face. Like most models, which are abstractions from reality, CVP analysis is subject to a number of underlying assumption and limitations, it is a powerful tool for decision making in certain situation" (Drury, 2000).

It is a management accounting tool to show the relationship between the elements of profit planning. Profit planning is the function of the selling price, demand, variable costs and fixed costs, taxes of a products and services. Profit plan is associated with cost volume profit interrelationship. It is a supplementary tool of planning for developing alternatives strategies in sales planning and the cost estimation. This technique is applicable in all economic sectors. Management will plan future operation with CVP analysis by estimation what the SPPU, VCPU, FC and Sales volume will be the next period. If management believes that profits are low or too high the CVP analysis can be used to determine the likely effects of change, and wish to make in any of the variables. To study cost volume profit relationship, break even analysis techniques to be used. It is concerned with the study of revenues and costs in relation to sales at which the firm's revenues and total costs will be exactly equal or the net income will be zero. It is no profit no loss situation. The aim of CVP analysis is to have fair estimate of fixed cost, total revenue and profit and various CVP analysis provide the management with a compressive overview of the effects on revenue and cost of all kind of short run financial change. CVP analysis helps to managers to know the interrelationship between cost, sales and profit in an organization by focusing these elements.

- Volume or Sakes or Level of activity.
- Per units of variable cost.
- Per units of selling price of a products or services.
- Total fixed cost of a products or services.

Generally CVP analysis provides answer to the question such as.

- What should be the sales level to earn a target profit?
- How will profit be affected when sales mixed is changed?
- What will be the effect of change in price, costs and volume on profit?
- What minimum level of sales need to be achieved to avoid losses?
- Should sales of product or operation of a plant be discontinued?
- Should the firm be shut down temporarily?
- What will be the new break-even point after changes all factor?

2.3 Assumption of CVP Analysis

CVP analysis is a vital technique that provides supplementary information for profit planning. Every business start with the target of break even and then it aims to earn profit over its life. But the business firm passes through many ups and downs. Cost volume profit analysis helps to plan for every set of goals in the short-term. But cost volume profit analysis encompasses the following assumption (Munakarmi, 2002:123).

1. Classification of costs as variable and fixed

When developing and applying cost volume profit analysis including the break even analysis, we have assumed that all costs can be classified into fixed and variable components. In fact, it is extremely difficult to identify each and every cost element as fixed and variable ones. Traditional type of recording costs in fixed and variable. Moreover the flexible policy of the company also makes it more difficult to exactly identify the costs as fixed and variable cost ones (Munakarmi, 2002:123).

2. Linear Behavior of costs within the Relevant Range

Costs volume profit analysis assumes that the total fixed costs don't change in the short-run within the relevant range. Total variable costs are exactly proportionate to sales volume. But in reality cost behaviour may not remain constant. With the

change in the volume of output we change the production setup. With more or less purchase, material costs per unit change due to quantity discounts. Costs change over time owing to inflation. Discretionary fixed costs are not certain in terms what amount will be spent. Therefore our BEP units or any other variable of profit functions do not remain constant over time. And it's useless to compute the BEP and other variable at every moment for the change situation (Munakarmi, 2002:123).

3. No effect of the size of inventory on a net income

The application of the cost volume profit analysis is possible only under the situation of either following variable costing for inventorial product. Cost or all production volume should be sold within the same period. Cost volume profit analysis does not work under the full costing method where inventory change occurs (Munakarmi, 2002:123).

4. Single Product or Constant Sales Mix

Cost volume profit analysis assumes that either a single product is sold or, if more products are sold, the ratio of each product on total sales will be in accordance with a predetermined sales mix (Munakarmi, 2002:123).

5. Treatment of Step Fixed Costs

The relevant range for many costs is very short in that case it becomes very difficult to compute the required volume. Because we can't say that which is the relevant range for our needed volume (Munakarmi, 2002:123).

6. Constant selling price for any volume in the short-run

Indeed, most often we offer a quantity discount for different lots of production. This makes it difficult to determine the CMPU and CM ratio (Dangol and Dangol 2061:160).

7. Short-term time horizon

CVP analysis is a short-term planning tool, because nothing remains stable in the long run. In the condition of changing variables are equations of CVP analysis become impossible (Munakarmi, 2002:123).

2.4 Purpose of cost-volume-profit analysis

Cost volume profit analysis help management in a number ways. The following purpose are served by it: (Dangol et al, 2061:160).

-) To calculate profit resulting from a budgeted sales volume.
-) Calculation of sales volume to break-even.
-) Calculation of sales volume to produce desired profit.
-) Effect of change on price costs and profit.
-) Measurement of effect of changes in profit factors.
-) Choosing the most profitable alternatives.
-) Determining the optimum sales mix.
-) Long term decision on continuance or discontinuance of products.
-) Determination of new break-even point for changes in cost and selling.
-) Price.
-) To complete the increase or decrease in profit due to the change in
-) Method of production.
-) Make or buy decisions on sub-assemble or part.
-) Determination of capacity and equipment management.

2.5 Use or Application of CVP Analysis

CVP analysis can be applied in the following respects: (Bhattarai)

-) To determine profit and loss at different level of an activity.
-) To determine the optimum selling price.
-) To determine margin of safety, break-even point and sales volume in rupees and units.
-) To determine new BEP in rupees and units after changing variable cost or fixed cost or selling price.
-) To determine the most profitable and rest profitable product or project.
-) To help management to find the must profitable contribution of cost and volume.
-) To determine effect on profit after increasing or decreasing sales price, variable cost and fixed cost.
-) It also assists management in performance evaluation for the purpose of management control.

2.6 Assess the impacts of the changes in CVP variables

Sensitively analysis is the measurement of elasticity of the change in CVP factors on break-even point or given profit. The strategist focuses more on the factor which is more sensitive responsive for profit. To measure the senility of cost volume profit factors one can see the impact of certain percentage or amount change in volume, price or cost factor on net profit.

Small change in anyone factors leads the change in profit. Therefore it is needed to know the factor which is more sensitive for profit. As a summary the sensitivity of CVP analysis the impact of certain percentage or amount change in volume, price or cost factors or taxes on net profit (Munakarmi, 2002:123).

2.7 Term uses in CVP Analysis

There are some terms which are important to know CVP analysis as follows:

Fixed cost

It is the permanent cost and incurred even if there will be no production activity. In other word, fixed cost remains constant within relevant range of activity level or over a period of time. Depreciation, rent, salaries, insurance etc are the examples of fixed cost. Total cost remains constant but unit cost decreases wit the increase in output within the range.

Fixed cost which remains constant for a level, then increases for net level with same amount is step fixed cost. It increases in the ratio with the relevant range of activity like 1:2:3 such as supervision, repair and maintenance etc (Manheshweri, 2000:183).

Variable cost

The cost which changes proportion with the level of activity is the variable cost. Total cost changes but unit cost of product remains constant. Variable expenses are activity-based because they are incurred as a direct result of output, activity work done. The examples of variable costs are material, labor and variable overheads (Munakarmi, 2003:25).

Mixed cost

It is includes fixed and variable cost. The cost which remains constant for a given level of output then increases proportionality with the output is semi-variable, semi-fixed cost or mixed cost. It is necessary to segregate mixed cost into fixed and variable different methods such as high low point method; least square method, scattered diagram etc. are available for segregation of mixed cost.

In a summary, the analysis of cost, sales or production volume and profit is known as CVP analysis.

Manufacturing Cost

IT costs are all production costs increased to manufacturing the product and to bring them to saleable condition including the direct material, direct labor and factory overheads. It overhead is known as factory expenses, factory overhead of factory burden

Administration cost

Expenses relating to the overall management of the enterprise are administration costs.

Margin of safety

The margin of safety is the relationship of planned or actual sales to the break even sales. The reduction in the sales equivalent to safety margin will not sustain the losses. The increase in margin of safety implies better situation. Greater margin supports profit even the reduction in the sales within the range of safety margin. A firm should try to maintain the breakeven point at lower level and increase the actual sales level. It is possible through reducing total fixed cost or reduces variable cost per unit or following a dynamic sales policy. The safety margin is determined as:

$$) \text{ Margin of safety} = \text{Actual sales} - \text{BEP sales}$$

$$) \text{ Margin of safety} = \text{Profit} / \text{Profit volume ratio}$$

$$) \text{ Margin of safety} = \text{Profit} / \text{CM}$$

$$) \text{ Margin of safety ratio} = (\text{actual sales} - \text{BEP sales}) / \text{Actual sales}$$

$$) \text{ Percentage of margin of safety on sales} = \frac{\text{Margin of safety}}{\text{actual sales}} \times 100$$

Contribution Margin

It is used to determine and evaluate the effects on profits of changes in sales volume, sales price, fixed costs and variable costs. It focuses on contribution margin, which is sales revenue minus total variable cost. CM enables to meet the fixed cost and add to the profit. Total FC is covered by it and the balance amount is an addition to the net profit. It can be used by management as an analytical tool for managerial decision and profit planning. It assists in increasing the operational profit of a firm. It can be represented as:

Contribution Margin (CM) = Sales revenue – Variable cost

OR

Contribution Margin (CM) = Fixed Cost + Profit

Marketing cost

Expenses needed for sales promotion, actual sales activities and past sales services are included in marketing or selling cost.

2.8 Special Problems in Cost Volume Profit Analysis

Cost volume profit analysis is applied to an individual's products or parts of business and all the product or activities combined. There are three problems in CVP analysis as follows: (Glenn A Welsh, Hilton, Gordon 1998).

1. Activity based

Where two or more products or activities are combined for break-even analysis the activity base is usually net sales dollars. Product units are preferable if the analysis is applied to one product. For multiple products, the activity base must be in addition units using a common denominator of volume or output. Therefore, for the company as a whole, net sales denominators are usually the only satisfactory common denominator because manufacturing, selling and administration activities

are expressed in combination. If flexible expenses budgets are used, they can be summed for cost volume profit purpose. This process may cause some complications because the different departmental flexible budgets are related to different activity base. To add the flexible expenses budget amounts, it must be assumed that the departmental activities factors correlate reasonably well with the overall activity base selected for break-even purpose. The usual procedure in developing BEP analysis based on flexible budget amounts and to treat the remaining costs as variable (Dangol, 2061).

2. Inventory Change

The budgeted changes in inventories are immaterial in amount and they may be disregarded in cost volume profit analysis one the other hand, when the change in budgeted inventory is significant, it should be included in the analysis. Including the effect of inventory changes in cost volume profit analysis requires subjective judgment about what management might do at different volume level in the conceptual precision that is desired. We will consider two practical approaches after used. Disregard the inventory change include the inventory change.

3. Non-Operating Incomes and Expenses

Non-operating incomes and expenses, and extraordinary gains and losses, if material in amount, cause another problem in CVP analysis. The basic issue is whether they should be included or excluded, extraordinary gains and losses are nonrecurring and unusual, and therefore they should be excluded. Non-operating incomes and expenses are recurring but they are not related to ongoing operations. Usually they are excluded from CVP analysis. However, if they are included, it is preferable to include the net of other income and other expenses. If the excess is expenses, it should be added to fixed expenses. When graphed, the effect of these amounts should be indicated with additional lines to show the company's economic characteristics before and after the non-operating items.

2.9 Breakeven Analysis

Cost volume profit analysis includes both contribution analysis and break even analysis. Break even analysis uses the same concepts as contribution analysis, however, it emphasize the level o output or productive activity at which sales revenue exactly totals cost., that is, there is no profit or loss. Break even analysis rests upon the foundation of cost variability separate identification and measurement of the fixed and variable components of the cost. Break even analysis is usually applied on a total company basis (Welsh et al, 1998).

1. Break-Even Point

The point where neither there is profit or loss. The level of output or sales where sales revenue is equal to total cost. At the point a firm neither areas nor sustains losses. Therefore BEP is a point at which the firm is total revenue is exactly equal to total cost, yielding zero income or the point at which losses cause and profit begins. Above the point total fixed cost recovered and the output incurs only variable cost (Munakarmi, 2003:25).

2. Application of BEP Analysis

BEP can even be used in a change of situation in different elements, which affects the analysis. It is used in changing the CVP. The BEP is computed considering areas of changes. The frequent changes in the areas are identified.

These are follows:

-) Sales volume required to produce desired operation profit or target net profit.
-) Operating profit at a given level of sales volume.
-) Effect on operating profit at a given percent increase in sales volume (in Rs.).
-) Sales volume required to produce the desired profit after tax.
-) Required sales volume for increase selling price.

-) Additional sales volume required to offset a reduction in selling price or sales volume needed to maintain present profit or sales volume to offset reducing selling price.
-) Effect of changed in fixed.
-) The common dividend or unhealthy point that is sales amount below which earnings are insufficient to pay the preferred dividends and the expected dividend on the common stock.
-) The sales amount at which earns only the going rate on the investment. The margin of safety is the relationship of budgets sales to break-even sales.

3. Cash Break-even point

Cash break even consider the fixed cost related to cash expenses only and excludes the non-cash expenses, such as depreciation, bad debts etc. It calculates the cash expenses which is equivalent to sales revenues. Company can include depreciation and other non-cash expenses in the short-run. If only the cash costs are included in the fixed costs we get cash BEP. The formula used for calculation of cash BEP is:

$$\begin{aligned} \text{Cash BEP} &= \frac{\text{Cash Fixed Cost}}{\text{Cash Contribution Per Units}} \\ &= \frac{\text{Fixed Cost}}{\text{SPPU} - \text{VCPU}} \end{aligned}$$

4. Break-Even Capacity

Break-even capacity calculated to show the capacity utilization at the breakeven sales on the normal capacity available, which contributes to the management for taking decision within the range of available capacity (normal capacity).

$$\text{BE capacity} = \frac{\text{Fixed Cost}}{\text{Normal capacity in units}}$$

Whereas:

(CM) = Contribution Margin

2.10 Approaches of Cost Volume Profit and Break Even Analysis

The CVP relationship and the BEP can be analysis through different approaches. Mainly, the break-even point and other required cost volume profit relationships could be explained through contribution margin statement approaches or graphic approach or equation/formula approach. A contribution margin statement is a variable costing income statement whose philosophy is all fixed costs are period costs which should be deducted from the contribution margin of the same period. Most often, we use the equation approaches to the solution of CVP analysis and BE analysis instead of the graph or the income statement.

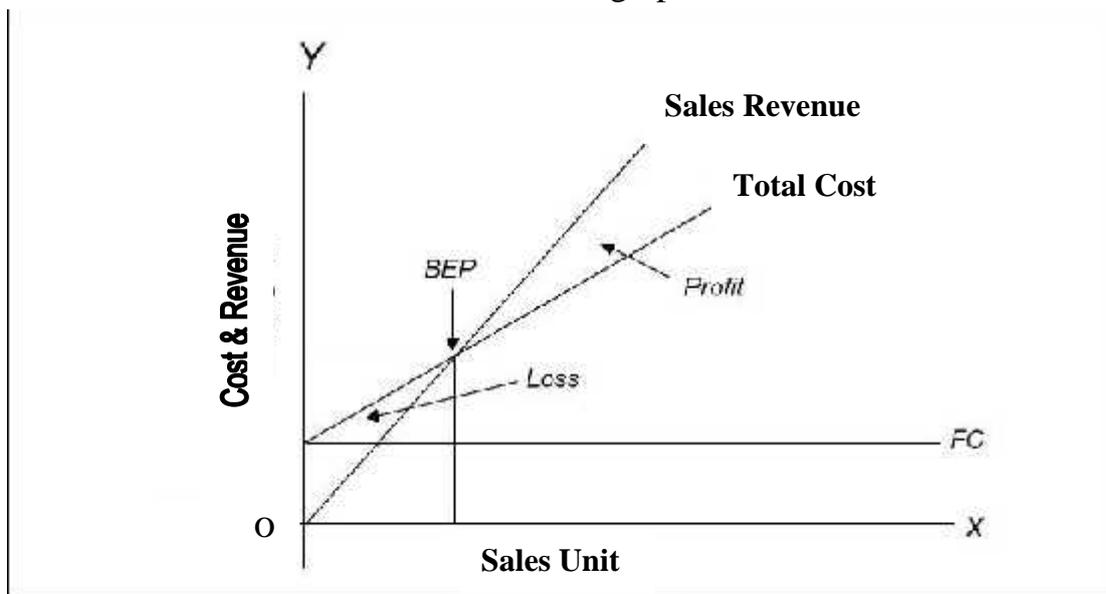
2.10.1 Contribution Margin Income Statement Approach

The CM income statement approach of CVP analysis allows the preparation of projected statements from the available information. BEP and other required CVP relationship can be explained through a contribution margin statement. A contribution margin statement is the variable costing income statement whose philosophy in all fixed costs is period costs that should be deducted from the contribution margin of the same period. Only the variable costs vary proportionality to the level of output or sales.

2.10.2 The Graphic Approach

ABC chart issued to graphically depict the relationships among revenues, variable costs, fixed costs, profit or loses. The no profit or loss point is located at the point where the total cost and total revenues lies cross. Below this profit of the firm in case losses and above this point, the firm each profit.

CVP graph



Since fixed costs remain constant within the relevant range, the fixed cost curve is parallel to ox axis. Variable costs slope upward from the origin to right but the slope depends on variable cost ratio. The costs curve parallel the variable cost curve. So the angle 'O' equals the angle 'V'. It is because

$$\begin{aligned} \text{Total cost} &= \text{Total fixed cost} + \text{Total variable cost} \\ &= \text{TFC} + \text{TVC} \end{aligned}$$

At volume 'Q'

$$\text{Total costs} = \text{TFC} + Q \times \text{VCPU}$$

At volume 'Q + n'

$$\text{Total costs} = \text{TFC} + (Q + n) \times \text{VCPU}$$

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

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

2.10.3 Algebraic Equation Approach

The most popular practiced approach to the BEP and CVP analysis is the formula. It is particularly because the equation provides the most general and easiest to remember approach to any algebraic equation to CVP situation. The formula approach uses algebraic equation to calculate the BEP. The rounding of BEP units is always done upward because this will provide a small profit rather than the small loss that would be shown from rounding down ward.

To develop the CVP equation:

Sales Volume (in units)	= Q
Selling price per units	= SPPU
Sales revenue (Rs.)	= Q × SPPU
Variable cost per units	= VCPU
Contribution margin	= CMPU
Fixed Cost	= FC
Net Profit	= NP
Net profit	= Sales – Variable Expenses – Fixed Cost
	Or
Sales	= Fixed Costs + Variable Cost + Net Profit

The equation can be simplified by using symbols are:

$$= Q \times VCPU + \text{Fixed Cost} + \text{Profit (NP)}$$

Solving the equation, we get.

$$Q = \frac{\text{Fixed Cost} + \text{Profit}}{\text{SPPU} - \text{VCPU}}$$

Or

$$Q = \frac{\text{Fixed Cost} + \text{Profit}}{\text{CMPU}}$$

$$\text{CMPU} = (\text{SPPU} - \text{VCPU})$$

$$\text{Sales Revenue} = Q \times \text{SPPU}$$

For this, first compute sales in units and then multiply it with the selling price per unit to get the sales revenue. But a more simple explanation of sales revenue is offered by the direct approach as:

$$\text{Sales revenue (Rs.)} = \frac{\text{Fixed Cost} + \text{Profit}}{\text{Contribution Margin Ratio}}$$

$$\text{Where, CM ratio} = \frac{\text{Sales} - \text{Variable Cost}}{\text{Sales}}$$

$$\text{So, Sales revenue (Rs.)} = (\text{FC} + \text{Profit}) / (\text{S}-\text{V})/\text{S}$$

$$\begin{aligned} &= \frac{\text{FC} + \text{Profit}}{(\text{S}-\text{V})} \\ \text{Or} & \quad \quad \quad \frac{\text{S}}{\text{S}} \\ &= (\text{FC} + \text{Profit}) \left| \frac{\text{S}}{\text{S} - \text{V}} \right. \end{aligned}$$

$$\text{Therefore revenue (Rs.)} = \text{Sales Units} \times \text{Selling Price}$$

So, we can recommend that,

1. If you are required to compute the sales volume in units

$$\text{Sales in units} = \frac{\text{FC} + \text{Profit}}{\text{CMPU}}$$

2. If you are required to compute the sales volume in Rs.

$$\text{Sales revenue (Rs.)} = \frac{\text{FC} + \text{Profit}}{\text{CM Ratio}}$$

3. Sales volume for BEP

$$\text{BEP unit} = \frac{\text{FC}}{\text{CMPU}}$$

$$\text{BEP Rs.} = \frac{\text{FC}}{\text{CM Ratio}}$$

4. Sales Volume for Desired Profit

$$\text{Required Sales (units)} = \frac{\text{FC} + \text{DP}}{\text{CMPU}}$$

Where, DP = Desired Profit

$$\text{Required Sales Revenue (Rs.)} = \frac{\text{FC} + \text{DP}}{\text{CM Ratio}}$$

2.11 Limitations of BEP

There are main limitations as follows:

-) According to the assumption of BEP, total cost can be divided into fixed and variable cost only which is not practicable in real life. There are some costs which either fixed or variable. Those costs are described as semi-fixed or semi-variable.
-) Fixed cost will not change over the entire capacity range. Sometimes it can be changed when production system or technique is changed.
-) The behaviour of costs will be linear and variable costs will change indirect production to change in volume.
-)
-) Variable cost per unit always remains constant. It can not be entirely true.
-) There are no change in material prices or wages, no design changes in the product, no methods changes in manufacturing, or any significance change in efficient or productivity during the period beginning analyzed. It is true.
-) Constant selling price in not true.
-) Either the firm produced only a single product mix ratio remains constant is also obviously quite unrealistic.
-) The capital invested in business is also a significant element of profit planning and control. However, the place is not given to it in BEP.
-) There is no significant difference between production and sales in the period being analyzed (Munakarmi, 2002: 123).

2.12 Profit Volume Ratio

Profit volume ratio express the relationship of contribution to sales. It is also termed as contribution sales ratio or variable profit ratio. If the contribution margin is divided by sales revenue, the result is profit volume ratio. It is presented by:

$$P/V \text{ Ratio} = \frac{CM}{Sales}$$

Or

$$P/V \text{ Ratio} = 1 - \frac{VCPU}{SPPU}$$

Or

$$P/V \text{ Ratio} = 1 - \text{Variable cost Ratio}$$

Where, CM = Contribution Margin

A business enterprise can improve its profit by improving a profit volume ratio. The management can eliminate the unprofitable volume ratio or low volume. A lower ratio means less profitability and vice versa. The profit volume ratio can be increased by:

-) Increasing sales price per unit.
-) Increasing variable costs.
-) Increasing the production of product which are having a high P/V ratio and vice versa.

2.12.1 Use of the P/V Ratio

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

It uses as follows:

-) To analyze of break-even point.
-) To calculate of sales amount required to earn a target profit.
-) For ascertaining profit on margin of safety.

-) To determine of selling price.
-) For an ascertaining of profit at a budgeted sales volume.
-) To calculate sales amount needed to keep up with previous profit while decreasing selling price.

2.13 Cost Volume Profit Analysis for Multi-Product Company

Most of the business firm produces different types of product for sales. The proportion of each product is the sales mix. Any change in portion of production, total product or sales volume effects the profit, BEP sales and margin of safety. The BEP analysis assists management to fix the proportion of each product or sales mix which makes the firm comfortable in determining the break-even point jointly. Managers try to achieve that combination or mix that will yield the greatest amount of profit. So the company's profit will depend upon the ratio of each products sale to total sales revenues. Profit will be greater if higher margin items make up a relatively large proportion of total sales than if sales consist mostly of low margin items. Change in sales mix can cause great variation in a company's profit (Munakarmi, 2003:25).

2.13.1 Determination of BEP for Multi Product Company

The BEP sales are computed as follows, if the fixed cost of each product is given.

- BEP sales of even product are computed and total of each product will be the BEP sales of product mix.
- The weighted contribution margin or P/V ratio is to be computed in the case of joint fixed cost is given for the product mix. The weighted contribution margin or P/V ratio is the multiple of proportion of each product sales with the contribution or P/V ratio of each product.

Following steps should be followed to calculate BEP sales.

- First calculation of CM per unit or P/V ratio of each product.

- Calculation of proportion of sales mix units and value as follows:

$$= \frac{\text{Individuals Sales Unit or Value}}{\text{Total Sales Unit or Value of All Products}}$$
- Calculation of weighted average of all product sales mix 'X' units contribution margin
 Or,

$$= \text{Sales Mix} \times \text{P/V Ratio}$$
- Calculation of BEP

$$\text{BEP Sales Mix (in units)} = \frac{\text{Total Fixed Cost}}{\text{Unit Weighted Average CM}}$$

Or,

$$\text{BEP Sales Mix (in units)} = \frac{\text{Total Fixed Cost}}{\text{Weighted CM Ratio}}$$

2.14 Cost Volume Profit Analysis under Condition of Uncertainties

The fundamental variables used in the cost volume profit analysis are:

- Selling price per unit
- Variable cost per unit
- Total fixed costs
- Expected sales volume of each product

In above these factors can be uncertain. First we can start with the uncertainties in sales volume assuming other factors 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 certainly equivalents. Normally in cost volume profit analysis, sales volume is treated as a random variable. A random variable can be thought of as an unknown quality. Therefore, the outcome and the decision under cost volume profit are based on the random sales volume of each product. The simplest and widely

adopted approaches to business decision making under uncertainty is to estimate the likelihood that the random variable will take on various possible values. Such an estimate is called a subjective probability distribution. The decision is then made by choosing that alternative which has the highest expected monetary value (Bajracharya, et al., 2005).

2.15 Use of Normal Distribution in Cost Volume Profit Analysis

The normal distribution probability can be used in managerial planning and decision making. The manager in choosing between this product and other products or projects can probably improve his decision by considering the risk involved.

Though all the variables of the CVP analysis may be uncertain and random, still the sales volume is the most uncertain variable. In most of the cases in business the demand is uncertain. Managers use to find out,

- The probability of at least reaching the break even sales.
- The probability of making at least the required amount of profit.
- The probability of incurring losses.

2.16 Need of Segregation of Mixed or Semi Variable Cost for CVP Analysis

For CVP analysis, segregate all costs into fixed and variable cost. Cost segregation helps for management to take profit planning, decision making and control. So the semi variable costs should also be segregated into fixed and variable in different level of sales or activity. Accordingly, the segregation of the semi variable cost is done through one of the following methods.

1. High Low Point Method

This method considers two levels of activity to split the cost. It considers the output at different levels. In this method, the semi variable cost is segregated into fixed and variable components using two data point. The formula we use in this method is:-

$$\text{VCPU} = \frac{\text{High Cost} - \text{Low Cost}}{\text{High Unit} - \text{Low Unit}}$$

Where,

VCPU = Variable Cost per Unit

Fixed Cost = Total Cost – (Variable Cost per Unit × Activity Level) (Goet, et.al, 2003).

2. Least Square Regression Method

1. Regression Analysis

It is an equation that express the relationship between two variables and to estimate the value of dependent variable Y based on a selected variable of the independent variable X. The technique is used to develop the equation for a straight line and to make these predictions.

2. Least Square Straight Line Trend

For estimating fixed and variable cost we should predict the least square regression method. It enables to a linear relationship between two dependent and independent variable. To perform cost prediction and to draw inferences, the ordinary least square regression line is commonly used. It is based on the mathematical technique of fitting and equation with the help of a number of observations. The linear equation can be assumed as:

$Y = a + bx$ and the variable

$$y = na + b x$$

$$y = a + bx$$

Similarly, the equation can be fitted for any number of order or degree depending upon the number of observations available and the accuracy desired. Unit variable cost and fixed cost can be computed by using the following formula.

$$b = \frac{N\sum xy - \sum x \sum y}{N\sum x^2 - (\sum x)^2}$$

$$a = \frac{\sum y - b\sum x}{N}$$

Where,

a = Fixed cost

b = Variable cost

N = Number of Observation

x = production units

= Sum of Observation

3. Degree of Variability Method (DOV)

In this method, the degree of variability is noted for each item of semi-variable expenses. Some may have 70% variability while others may have 30% variability. The method is easy to apply but difficulty is faced in determining the degree of variability.

4. Level of Output Compared to Levels of Expenditure Method

According to this method, the output at two different levels is compared with corresponding level of expenses since the fixed cost remain same or constant, and the variable overheads are directed by the ratio of change in expenses to changes in output.

5. Scattered Graph Method

This method utilizes the scatter diagram drawn from plotting recent observations of the cost at various activity levels. It is easier and simpler to use. But it is more difficult in estimating the costs. In diagram, semi variable expenses are plotted on the vertical axis and activity is plotted on the horizontal axis. Two estimates may find two different results of fixed and variable cost figure (Goet et.al, 2003).

2.17 Cost Structure and Operating Leverage for CVP Analysis

Cost Structure

It refers to the relative proportion of fixed and variable cost in an organization. The relationship of a company's variable and fixed cost is reflected in its operating leverage. The highly labor intensive organization have high variable cost and low fixed costs and thus have low operating leverage and a relatively low break-even point. Such a structure is reflected high operating leverage and relatively high break even points.

Operating Leverage

It is a measurement of the extent to which fixed costs are being used in organization. The relationship of a company's variable and fixed costs is reflected in its operating leverage. Higher the amount of fixed costs higher the operating leverage and break-even point and vice versa. The operating leverage factory is determined as under:

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

2.18 Multi – Product CVP Analysis with Linear Programming

It is a mathematical technique which shows to arrive at the optimum results, allocate available resources in a manufacturing 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 scarce resources in product mix problems. The tool is used for solving constrained optimization problems. It scarce resources may be in terms of labor hours, machine hours, raw materials, finance etc. As such a technique is used in selecting optimal plans. It provides a valuable extension to CVP analysis (Goet, et. al, 2003).

2.19 Managerial Application of CVP Analysis

CVP analysis helps the managers to plan for profit to control cost and make long term and short term decision. It is necessary to decision in greater details its usefulness to management. These are as follows:

1. Management use CVP Analysis to Analyze Past Performance

Management should determine the reason for difference between budget and actual result. CVP analysis can make an important contribution to each activities planning, organizing and controlling. It provides a framework for planning future operation and mean for determining the likely effects of various ways of organizing those operations. CVP can be used to control current operation by company actual results with planned result.

2. To know how much Business Safe

The higher safety margin indicates that the business in more safety and lower safety margin shows that the business in more risky. So margin of safety is used by manager to know business safety and risk.

3. To Determine Selling Price

Selling price is sensitive elements of demand, profit and break-even, selling price of a product covers all costs and profit margin. Sometime, a small percentage change in sales may cause greater change in operating and managing result. Therefore management uses CVP to determine selling price for covering costs and requires profit margin which helps business to sustain in the comparative market.

4. Profit picks up Incremental Sales

In a break-even level, the firm is no gain and no loss position. After this firm earn profit. Each unit sold beyond the BEP contribution towards profit. Beyond BEP fixed costs don't increase. Therefore, each unit sold beyond BEP gives profit equal to CMU.

5. Estimation of Sales for Target Profit

Management uses CVP analysis to estimate of sales for target profit. If management should make decision to earn target profit then management estimated sufficient sales volume to meet the targeted. Therefore firm get easily to earn desired gain.

6. Management uses the Budgeted Amounts to Control Operations through the Certain Period.

During the period of operations, sales and cost figures should incur with those budgeted amounts. Therefore, management uses CVP analysis to separate those budgeted amount into their behaviour and do determine the probable effects of various alternatives which may be considered.

2.20 CVP Analysis in the Computer Age

CVP analysis is based on mathematical model. The CVP model is widely used as planning model. Managers in a variety of organization use a personal computer and a CVP modeling program to study combinations of change in selling price, unit

variable costs, fixed costs and desired profits. Many non-profit organizations also used computerized CVP modeling; the computer quickly calculates the results of changes and can display them both numerically and graphically. In addition to speed and covariance computers a more sophisticated approach to CVP analysis. Computer analysis can construct a model that does not require all the simplification. Computer model can include multiple cost driver non-linear relationship between costs and drivers, varying sales mixes and analysis that need not be restricted to a relevant range.

2.21 Review of Previous Research Works

In context of Nepal, the history of industrial sector is very short. Very few researches on business have been conducted in the context of Nepal. Business firm has not applied the profit planning and control systematically some applied but they are not using all tools of PPC. Many studies have been conducted in the profit planning in the business firm. But in profit planning, CVP analysis has been given less priority than others. Mostly CVP analysis has been done only under the heading of profit planning and control of manufacturing firm. CVP research in the topic of profit planning and control has not been done at service sector like banking and insurance. Some researchers have been reviewed which are as follows.

Sharma (2002) has conducted research on the topic "*Management Accounting Practices in the listed companies of Nepal*". His research main objective was to examine and study the practice of management accounting tools in the listed companies in Nepal.

His main objectives

-) To study and examine the present practice of management accounting tools in the listed companies in Nepal.

-) To identify the areas where management accounting tools can be applied to strengthen the companies.
-) To identify the difficulties in applying management accounting tools in Nepalese countries.
-) To make recommendations to overcome the difficulties in applying management accounting tools in Nepalese companies.

His major findings:

-) Different types of management accounting tools presented in the college curriculum are not found to be applied by the listed company of Nepal.
-) Management accounting is to help managers in overall management activities by providing information and helping in planning controlling and decision making.
-) Nepalese listed companies are in infant stage in practicing of management accounting tool. Such as capital budgeting annual budgeting, cash flow, ratio analysis, zero based budgeting, activity based budgeting, activity costing, target costing and value engineering.
-) Lack of information and extra cost burden are the main reasons behind not practicing such tools.

As Nepal is proceeding towards globalization and get membership of WTO companies are recommended to apply management accounting tools to fit with the global environment.

Rijal (2005) has conducted a research entitled "*Cost Volume Profit Analysis as a tool to measure effectiveness of Profit Planning and Control (A case study of NEBICO Pvt. Ltd)*". He collected data based on primary as well as secondary data. He analyzed CVP of NEBICO only five year's data F/Y 2056/057 to 2061/062. Main objective of this study is to examine CVP analysis as a tool to measure effectiveness of PPC of NEBICO Pvt. Ltd.

His main objectives:

-) To study relationship of volume and profit as a applicable tools of budgeting.
-) To evaluate the profitability, financial position and sensitivity of NEBICO's activity.
-) To analyze the CVP of the company and its impact in profit planning.

His major findings:

-) The company has no detailed and systematic expenses plan. The fixed variable and mixed expenses plan is the necessary elements for PPC.
-) The goal and objectives of the company are not clearly communicated to operation level management.

The company does not apply any appropriate and effective sales forecasting techniques.

-) There is no any special system of taking connective action for the preplanning.
-) There is not proper co-ordination among production, administration, distribution, inventory and sales department.
-) There is no separate costing for each product.
-) Margin of safety is in fluctuating trend.

BEP of the company has been in increasing trend, there is a little gap between actual sales and BEP sales.

Aryal (2006) conducted a research entitled "*CVP Analysis as a tool to measures effectiveness of PPC (A Case Study of Herbs Production and Processing Company Ltd).*

His main objectives:

-) Analyze the variance between target and actual sales of HPPCL.
-) To evaluate the profitability financial position HPPCL
-) To analyze the cost volume profit of HPPCL.
-) To provide suitable suggestions and recommendations based on the analysis for improving of HPPCL's condition etc.

His major findings:

-) Budgets were prepared on traditional method.
-) HPPCL has high burden of management and administration expenses and interest on loan which is directly influencing the profitability.
-) HPPCL adopted traditions pricing method to determine price. Which may not be appropriate in today's competitive market?
-) There was not practice of separating cost into variable and fixed. The costs are roughly classified and the classification is not scientific and appropriate. Thus it is difficult to use financial tools like a flexible budget CVP, cost of goods sold and degree of operating leverage and profit margin ratio.
-) HPPCL is suffering from huge losses. So In year has negative net profit margin ratio.
-) Profit volume ratio of the company in fluctuated trend, which effect on BEP of the company.
-) Margin of safety of the company in negative trend. So the company could not sale property and suffering from losses.
-) BEP of the company is always higher than actual sales. So the company should not maintain its expenses.

Bhusal (2007) has conducted a research entitled *"Use of Cost Volume Profit Analysis to Plan the profit in Nepalese Manufacturing Companies (A case study of*

Bottlers Nepal Ltd)". The main objective of his study is to examine the use of CVP analysis to plan the profit in bottlers Nepal Limited.

His main objectives:

-) To safety the present application of CVP analysis in Bottlers Nepal Limited.
-) To study the profitability and financial position of Bottlers Nepal Limited.
-) To analyze the CVP and its impact in profitability of Bottlers Nepal Limited.

His major findings:

-) The company has not maintained the broad and long-range objectives and periodic report and objectives are limited to the high-ranking official only.
-) Sales and production target are not achieving because there is not an effective forecasting system.
-) There is no any effective plan for cost reduction and control and lack of effective cost control programmed.
-) The profit trend of the company is not satisfactory.
-) The company has no details and systematic expenses plan. The fixed, variable and mixed expenses plan is the necessary elements for profit planning and control.
-) BNL has not proper practice of segregation the costs into fixed and variable or controllable and non-controllable.

Adhikari (2008) has presented a Dissertation on the topic of "*Cost Volume Profit Analysis of Nepal Lube Oil Limited*". The main objective of his study is to examine the use of CVP analysis to plan the profit in Nepal Lube Oil Limited.

His main objectives:

-) To produce and refine oil and chemical in the country itself, substitute import of refined goods and purchase necessary new materials from other countries.
-) To make necessary contract and agreement with different national and international governments departments, office and bodies to increase production, Capabilities and improve quality.
-) To study the relationship between cost volume and profit as a tools of budgeting.
-) To manage the non-technical and technical manpower from outside or inside the company and given necessary training inside on outside the company.
-) To sell the product in direct part of the company.
-) To provide necessary suggestion and recommendation wherever necessary base on findings.

His major findings:

-) Company has usually very low margin of safety and also negative in some fiscal year.
-) Sales amount of the company are fluctuating and in increasing trend.
-) The budgeted sales are more than actual sales inequality.
-) BEP is in increasing trend due to decrease in PV ratio.
-) Correlation coefficient between budgeted sales quantity and actual sales quantity is negative; this shows that is moderate degree at negative correlation coefficient.
-) In flexible budget the company suffers from loses below 100% capacity utilization. Here % capacity indicates current utilized capacity is average.

Paudel (2009) has presented a Dissertation on the topic of "*Cost Volume Profit Analysis tool used to Projected Profit by Salt Trading Corporation Limited*". The main objective of this study is to examine the use of CVP analysis on the Salt Trading Corporation Limited.

His main objectives:

-) To analyze the cost and profit and loss of STCL.
-) To study the relationship of cost volume profit.
-) To analyze the impact of CVP of the corporation on Productivity.
-) To provide suggestion and recommendation for improving the condition of STCL for further improvement.

His major findings:

-) Tool sales of the corporation were unstable.
-) The company sold different products among them agricultural material and Machine equipment on total sales were found nominal. But other products made highest contribution on total sales.
-) Expenses of Salt Trading Corporation Limited were fluctuated. Variable cost as well as fixed cost increased or decreased during the period.
-) The corporation has no details of systematic expenses plan. The fixed, variable and mixed expenses planning are essential for profit planning and control.
-) Variable cost volume ration of the Salt Trading Corporation is nearly 85% on average. It means that the contribution margin of the company is about 15% of total sales.
-) Contribution margin of the corporation were not satisfactory. Low contribution margin may be problem to the corporation.
-) From the correlation analysis, it was found that there was high degree of positive correlation between sales and net profit. Change in sales, made change in profit but change was not in the same ratio.
-) This corporation has higher BEP ratio. Higher BEP indicates weak position of the company.
-) Contribution margin of the company were not stable and satisfactory.

Ghimire (2010) had conduct the research entitled "*A Comparative Analysis of Cost Volume Analysis of Manufacturing Organization (A case study of Dabar Nepal Private Limited and Himalayan Distillery Ltd)*". He had conducted the research to acquire the following objective:

His main objectives:

-) To study and analyze different component of cost as per cost behavior.
-) To evaluate the impact of profit of HDL and NPL.
-) To assess break even point of overall firm as well as individual product.
-) To show the relationship of cost volume and profit between the product.
-) To provide necessary suggestion and recommendation of the basic.

His major findings:

-) Practices of cost volume profit analysis tools are not mostly used to forecast and evaluation CVP in the manufacturing companies.
-) Management of the companies are not in favor of segregation of cost in variable and fixed cost mostly used as whatever the nature of cost.
-) Management of the both companies not taking interest for BEP analysis.

Both of companies facing political problem. So government should take attention for this decision.

Yadav (2011) had studies on the topics "*Cost Volume Profit Analysis of Nepal Aushadhi Ltd*"

His main objectives:

-) To analyze different components of cost as per cost behaviors.
-) To study the application of CVP analysis of NAL.
-) To evaluate the sensitivity of probability.

- J To analyze the CVP and impact in profitability of NAL.
- J To study profitability and financial position of NAL.

His major finding:

- J Sales plan of NAL is not properly maintained. The industry has not use scientific method of sales plan.
- J Sales trend of NAL shows the negative trend which can further increase the net loss.
- J Break even sales have more than actual sales the industry was suffering from loss an every year.
- J The profitability of the industry is very poor. Every year the industry is suffering from loss and which is accumulated to Rs.230.3764184 to fiscal year 2065/066.
- J The industry imports the raw material from India and other countries.

2.22 Research Gap

All the previous research which was studied above was done on PPC of manufacturing company. The research have recommended for effective implementation of PPC. Some racehorses were on CVP analysis as an important tool of PPC and have recommended CVP analysis will be used necessarily. These studies can't show the managerial tool of profit plan of a manufacturing company. Now a day's companies have emphasized for application of CVP analysis as a managerial tools of PPC to improve competitiveness and performance in the time of globalization. So this study has played an important role to fulfill the gap between previous study and research need to done on the CVP analysis of manufacturing company. This study would be of different value as it focused on specific area of overall PPC. It examines the current practice of CVP analysis in the company as managerial tools of PPC to improve the performance of the company. It has contributed to enhance the fundamental understanding and knowledge, which is required in making study meaningful and purposive. So this study also be fruitful to those interested, scholars, studies, teachers, civil society, stakeholders, businessman and Government for academically as well as policy perspectives.

CHAPTER – III

RESEARCH METHODOLOGY

3.1 Introduction

It states the method with which data have been extracted and discuss the tools of that have been used in the interpretation of such data to fulfill the objectives. More specifically, it describes about research design. And also refers to systematic and objective attempt, which is used to study a problem for the purpose of driving general principles and it has been guided by previously collected information, aims to add to the body of knowledge on the subject. The population and the sample, nature and source of data and tools will be used to analyze the data.

An attempt has made to give detail description about the research methodology. This chapter research includes the study of methodological aspects. It may be designed as a systematic process that is adapted by the researcher in studying problem with certain objectives in a view. In other words, research methodology describes that methods and process applies in the entry aspect of the study as focus of data gathering instrument and procedure data tabulating and processing and methods of analysis.

Research methodology is one of the crucial aspects of the thesis writing. It is a systematic and scientific method of identifying problems, collecting facts and information tabulating the data, setting, hypothesis, analyzing the facts and researching certain conclusion with view of finding answer to the problem.

3.2 Research Design

The study was based on the micro study of the role of CVP analysis to plan the profit in Nepalese manufacturing industries by selecting Unilever Nepal Ltd. This study was mostly descriptive and analytical in nature. So descriptive research design was used in this study mostly and analytical approach is followed to

parametric and non-parametric test of data. It is the process of micro analysis and appraisal of the data.

3.3 Population and sample

For a case study purpose, the judgmental sampling was used because of various reasons regarding the respective manufacturing industries and UNL is selected as sample for the evaluation. Financial statement of 5 years are covered as sample for the purpose of the study and also according to the informant's position, knowledge and experience in the field data were collected by the managing directors (chairperson) and others were used as key informants by purposive sampling.

The large group about which the generalization is made is called population under study. Research population would be all organization of Nepal. Due to various circumstances it would not be possible to attempt all the number of research population regarding in this dissertation.

3.4 Tools and Techniques of Data collection

The tools of data collection from key informants were questionnaire. For this self-prepared questionnaire were mailed to the respective company's directors and boards member and others. They were requested to send that back to the research after the fulfillment of the questionnaire for this or personal contact or interview or discussion was performed. Also annual reports, website, historical data were used and financial & statistical tools were used for the analysis of different variables.

3.4.1 Descriptive Techniques

It is a type of study, which is generally conducted to assess the opinions, behaviours or characteristics of a given population and to describe the situation and events occurring at present. Descriptive technique is a process of accumulating facts. It does not necessary seek to explain relationship, test hypothesis, make predictions or get at meaning and implications of a study.

3.4.2 Quantitative Techniques

Describe techniques would not be enough to prepare excellent research report. To fulfill the gap, or make the research report attractive and for better understanding profit planning tool are used.

CVP analysis was included the following techniques:

Contribution Margin (CM) = Sales – Variable Cost

Contribution Margin Ratio = $1 - \frac{\text{variable cost}}{\text{sales}}$

Break Even Point (BEP) in un $\frac{\text{Total Fixed Cost}}{\text{SPPU-VCPU}}$

Break Even Point (BEP) in Rs $\frac{\text{Total Fixed Cost}}{\text{CM Ratio}}$

Safety Margin (in units) = Actual sales units – BEP in Units

Safety Margin (in Rs.) = Actual sales units – BEP in Rs.

Margin of Safety Ratio = $\frac{\text{Actual / Budgeted Sales} - \text{Be Sales}}{\text{Actual / Budgeted Sales}}$

Correlation coefficient = $\frac{N \sum xy - \sum x \sum y}{\sqrt{N \sum x^2 - (\sum x)^2} \sqrt{N \sum y^2 - (\sum y)^2}}$

3.5 Data Collection Technique

Studies of various books, booklets, magazines, published report, computer data and questionnaires are the data collection techniques which are used for the study.

3.6 Data Processing Procedure

Method of analysis is applied as simple as possible. The obtained data are presented in various tables, diagrams and charts with supporting interpretations. The detailed collections which can't show in the body part of the report are presented in appendices at the end.

3.7 Nature and sources of Data

The data used in this study are secondary collected from concerned authorities. It is task to gather the information and data. Secondary data have been taken mainly from the following sources:

Published and unpublished documents and annual reports of the company such as balance sheet, profit & loss accounts and income statements are major sources of data.

Financial statistics of the UNL Journals, leaflets, other supportive book from library of Post Graduate Campus and Websites on related topics.

CHAPTER – IV

PRESENTATION AND ANALYSIS OF DATA

4.1 Introduction

Profit planning is the formal expression of the enterprises plan, goals, objectives stated in financial term for specific period of time. It is one of the most important management tools that are used to develop effective performance and systematic approach for attaining desire goals. CVP analysis, a tool of PPC, can be most important device to utilize the cost with effective and efficient way. CVP analysis has become a powerful instrument in managerial decision making especially cost control and profit planning. The CVP analysis is a specific way of presenting and studying the interrelationship between cost, volume and profit.

The main purpose of this research is to examine CVP analysis as a tool to measure the effectiveness of profit planning and evaluate the present practice of CVP analysis and identify the area where CVP analysis could be applied to strengthen manufacturing industries. For the reason, UNL is selected for the study and data analysis purpose.

To meet the said objectives, the secondary data is used for sales trend analysis. Cost analysis and cost-volume-profit analysis etc. The secondary data are collected from annual report of the company.

The study has tried to cover the activities of the UNL for last five year (i.e. for the fiscal year 2063/64 to fiscal year 2067/68. The information, which has been collected from UNL, are given and analyzed in the coming pages accordingly.

4.2 Sales Trend Analysis

a) Overall Sales

UNL is the India based multinational company as it is the subsidiary of Hindustan lever ltd. The sales territory of the company can be divided into two major groups- domestic and export sales.

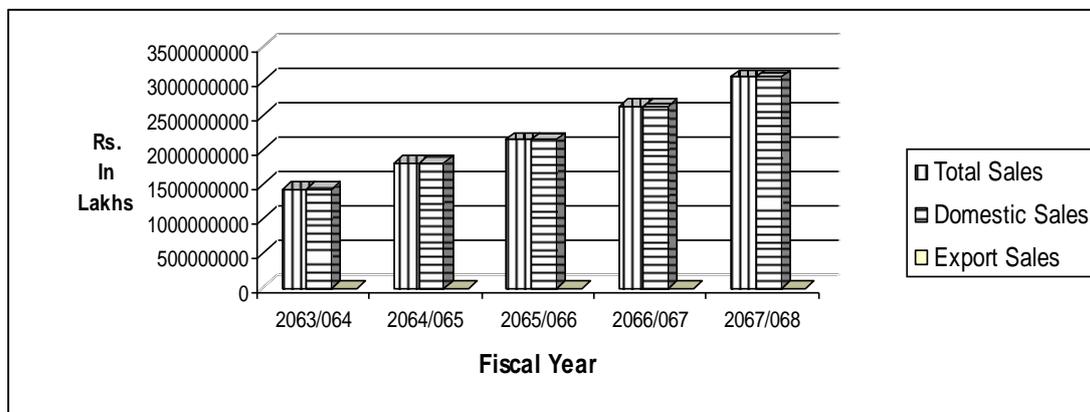
Table: 4.1
Actual Sales by Territories

(NRs. in Lakhs)

Fiscal Year	Total Sales		Growth unit %	Domestic Sales		Growth unit %	Export Sales		Growth %
	Unit	Amt.		Unit	Amt.		Unit	Amt	
2063/064	22409	1434942233	–	22409	1434942233	20.37	Nil	–	(100)
2064/065	26974	1818527500	20.37	26974	1818527500	(2.7)	Nil	–	(100)
2065/066	26243	2144589477	(2.7)	26243	2144589477	(2.7)	Nil	–	(100)
2066/067	26974	2625826797	2.7	26974	2625826797	2.7	Nil	–	(100)
2067/068	31048	3055070869	25.79	31048	3055070869	25.79	Nil	–	(100)

(Source: Annual Report of UNL, 2068)

Figure: 4.1
Actual Sales by territories



The above Table shows that expert sales have been decreased and adversely affected because of different reasons. In spite of this unfavorable condition in export trade domestic sales is in increasing trend. In the fiscal year 2067/068 is has increased by 25.79.

From above diagram we can say that the main market of UNL is domestic market, Reason for that is, there are strong competition in international market as well as in domestic market because of Hindustan Unilever Ltd. Mostly Nepalese people prefer Indian product of Unilever rather than Nepalese product of Unilever, because they believe Indian product is good in quality. So, UNL should focus in quality product rather than quantity product and should try to cover the share of domestic market.

b) Product-wise Sales

UNL produces five different products i.e.

1. Detergents/scourers/laundry
2. Toilet soaps
3. Personal products
4. Soap noodles
5. Tea

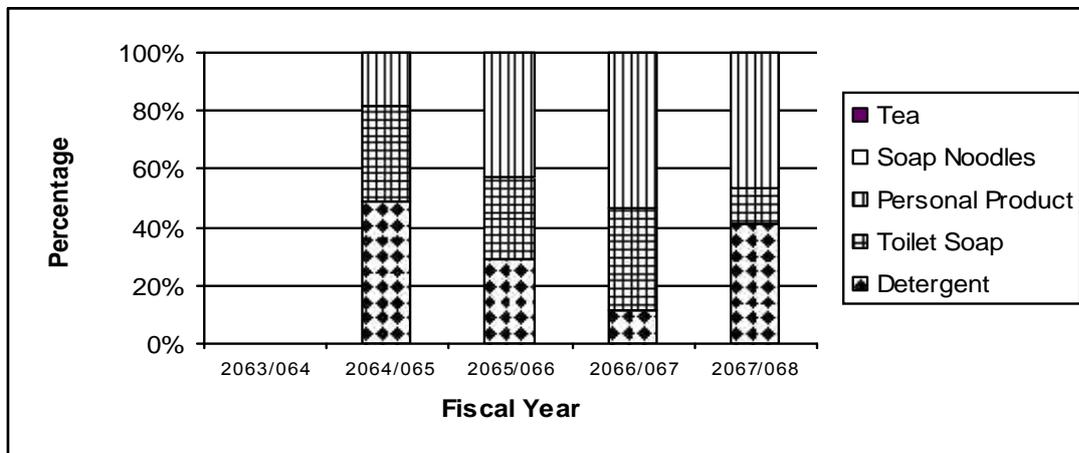
The sales values of each product are presented in the following table.

Table: 4.2
Product Wise Sales

Fiscal Year		2063/64	2064/65	2065/66	2066/67	2067/68
Product						
1. Detergent/ Scourers/Laundry	Amount (Rs.)	3892	4887	6652	7137	8563
	Change (%)	–	25.56	36.11	7.29	19.98
2. Toilet Soaps	Amount (Rs.)	4532	5320	7149	8811	9333
	Change (%)	–	17.38	34.37	23.24	5.92
3. Personal Products	Amount (Rs.)	4556	4990	7643	10309	12654
	Change (%)	–	9.52	53.166	34.88	22.75
4. Soap noodles	Amount (Rs.)	2663	–	–	–	–
	Change (%)	–	–	–	–	–
5. Tea	Amount (Rs.)	–	–	–	–	–
	Change (%)	–	–	–	–	–

(Source: Annual Report of UNL, 2068)

Figure: 4.2
Contribution of Each product on Total sales



The Table 4.2 shows that total sales of product detergents/scourers/laundry increase. The total sales of product tea are in decreasing trend whereas total sales of other remaining products i.e. toilet soaps, personal products and soap noodles fluctuated. The first category of product in the table increased by 25.56%, 36.11%, 7.29%, 19.98% in the fiscal year 064/065, 065/066, 066/067 and 067/068. Toilet soap increased by 17.38%, 34.37%, 23.24% and 5.92% in the fiscal year 064/065, 065/066, 066/067, 067/068 respectively whereas personal product also increases each fiscal year 2064/065 to 2067/068. Total sales of soap noodles reduced to in the fiscal year 2064/065 to 2067/068. The total sales of tea product have been always negative trend and it has been discontinued to product from fiscal year 2064/065. The sales trend of each product of the company can see from the following graphic presentation.

C) Estimation of Total Sales for upcoming Years

Out of the several statistical tools, Time series Analysis is followed here, this tool is able to forecast the future occurrence.

Table 4.3
Analysis of Regression Line

(Rs in Lakhs)

Years (x)	Sales (y)	$x=X-2064/065$	X^2	xy
2063/064	15643	-2	4	-31286
2064/065	18185	-1	1	-18185
2065/066	21445	0	0	0
2066/067	26258	1	1	26258
2067/068	30550	2	4	61100
Total	$\sum y = 112081$	$\sum x = 0$	$\sum x^2 = 10$	$\sum xy = 37887$

(Source: Annual Report on UNL, 2068)

Let the straight line trend be represented by $y=a+bx$(1)

Since, the number of years is 5, i.e. odd. So, the deviations are taken from the middle of the year 2065/066.

Here,

$$\sum x = 0, \quad \sum y = 112081, \quad \sum x^2 = 10, \quad \sum xy = 37887$$

Since,

$$\sum x = 0,$$

$$a = \frac{\sum y}{n} = \frac{112081}{5} = 22416.2$$

So,

$$b = \frac{\sum xy}{\sum x^2} = \frac{37887}{10} = 3788.7$$

From the equation (1)

$$y = a + bx$$

or

$$y = 22416.3 + 3788.7x$$

Now, estimated sales for the F/Y 2067/068

$$= 22416.2 + 3788.7 \times 5$$

$$= 22416.2 + 18943.5$$

$$= \text{Rs.}41360 \text{ in Lakhs.}$$

From the estimation of sales of fiscal year 2070/071

$$x = X - 2065/066$$

$$= 2070/071 - 2065/066$$

$$= 5$$

At where,

Y = Value of dependent variables

a = y – intercept

b = slope of the trend line

x = values of dependent variable (time)

4.3 Analysis of Cost

Cost is the amount of expenditure, incurred or attributed, relating to specific thing or activity. The specific thing or activity may be product, job, service, process or any other activity.

Expenses are expired cost, incurred and totally used up in generation of revenue. Examples of expired costs are cost of goods expenses, administrative expenses and selling and distribution expenses. Expenses need not necessarily have to be paid in

cash immediately; even a promise to pay could be made for the benefits obtained. The manufacturing costs are capitalized in from of finished goods inventory and when a sale is made, they expire (becoming expenses). The cost of unsold inventory which was an assets earlier, now becomes expenses (cost of goods sold) as it has contributed to the generation of revenue.

Conventional CVP analysis requires that cost be classified as fixed or variable. Some costs are definitely fixed in nature. Other is strictly variable. But, when costs are examined, some are observed to be neither completely fixed not completely variable. To fulfill the objectives of the study, costs are classified under.

4.3.1 Variable Cost Analysis

Variable costs are that which varies in direct proportion to changes in output or activities level, but per unit is constant within one financial year. Variable cost per unit may vary for different financial year on account of internal and external environment of the company. According to the company's annual reports, variable cost is classified by nature and uses.

The Table No. 4.3 shows that variable cost significantly increases by 23.49% in the F/Y 2064/065. In the F/Y 2065/066, 2066/067 and 2067/068 it was increased by 15.70%, 18.20%, 31.75%. High portion of variable cost includes cost of material. The company spent huge amount of promotional expenses but lowest amount for quality control. The real situation of variable cost of the company can be seeing from the following graph representation.

Table 4.4
Variable Cost Details

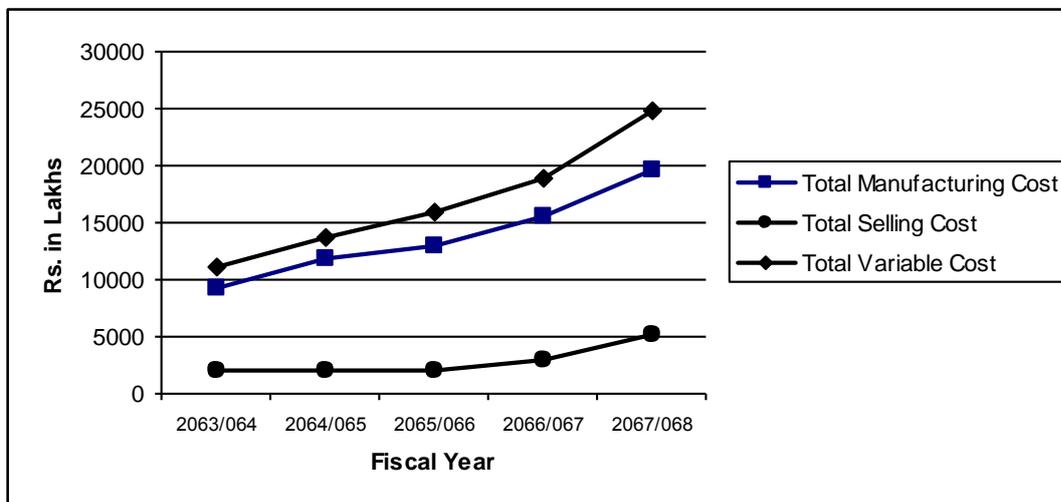
(Rs in Lakhs)

Fiscal Year	2063/64	2064/65	2065/66	2066/67	2067/68
Cost Details					
Cost of material	8461	10937	11967	14513	17389
Processing charge/labor charge	400	634	708	710	842
Repair and maintenance	187	118	171	183	201
Purchase Service	26	35	42	42.9	81.6
Insurance charge	34	33	30	32	34
Quality control	6.9	1.6	7	4	10
Royalty	76	86	90	105	134
Total manufacturing Cost	9190.9	11844.60	12925	15484.9	19604
Distribution Cost	274	375	482	632	738
Promotion Cost	1705	1574	2512	2700	4450
Total Selling Cost	1979	1949	2092	2962	5188
Total Variable Cost	11169.90	13758.60	15919	18816.9	24792
Changes	-2.20%	23.49%	15.70%	18.20%	31.75

(Source: Annual Report on UNL, 2068)

Figure: 4.4

Presentation of Manufacturing Selling and Variable Cost



The amount of variable cost can be clearly presented with the help of history grams. Here in the history grams, time period (fiscal year) is taken as independent variable and variable cost are taken as independent variable. The figure 4.4 shows that the variable cost curve is moving upward and downward haphazardly.

4.3.2 Fixed cost analysis

Fixed cost remains constant in total amount despite the changes in the level of activity within a fiscal year. That is, fixed cost remains unchanged in total as the output level varies within a year, but fixed cost unit basis decrease as the level of activity increase and vice versa. Fixed cost in total varies for different fiscal year effected by internal and external environment factors of the company. According to the company annual report, fixed costs are classified by nature and use of them and which is presented in the following table.

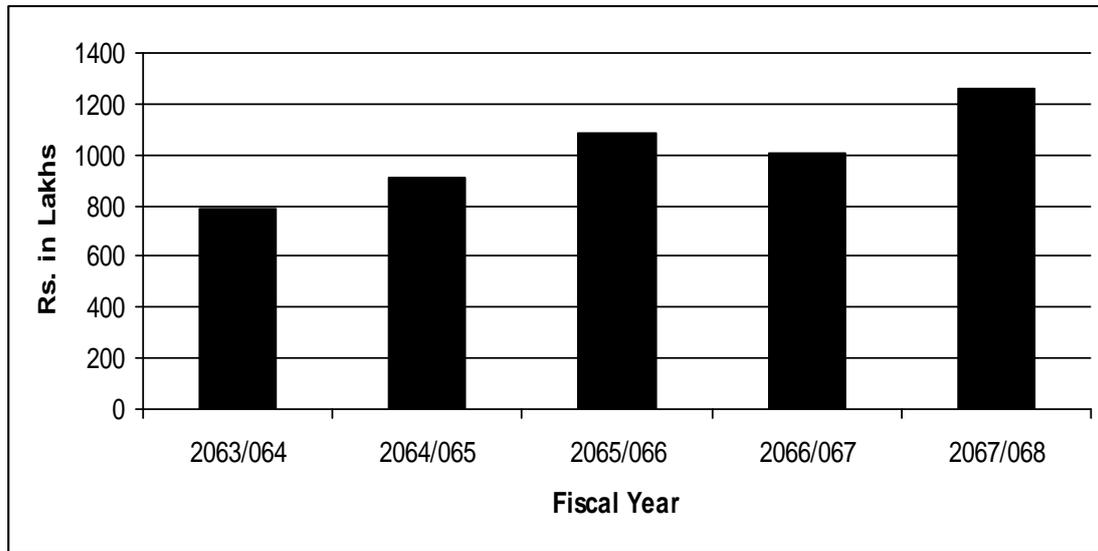
Table: 4.5
Fixed Cost Details

(Rs. in Lakhs)

Details	Years				
	2063/64	2064/65	2065/66	2066/67	2067/68
Manufacturing:					
Salaries and wages	192.70	239.60	303	299.35	373
P/F contribution	13.10	16.80	22.5	20.91	22.42
Transportation employee	24.20	26.20	28.42	–	–
Welfare and canteen	22.20	32.80	36.72	43.54	58.84
Go down rent	9.60	7.00	11.02	15.75	17.41
Depreciation	179	184.10	194.74	110.88	119.38
Total	440.8	506.5	596.4	490.43	591.05
Administration:					
Salaries	162	207	215.74	247.63	317.35
Contribution to P/F pension	15.20	19.20	18.33	15.27	21.69
Taxes & fees	0.70	0.40	0.20	0.07	0.10
Rent	20.40	22.20	28.70	26.98	28.93
Travelling	71.60	93.40	133.31	84.78	108.42
Audit fee	7.00	8.50	8.26	7.66	12.76
Bank charge	19	13	15.9	9.00	14.8
Miscellaneous	31.00	30.70	49.39	105.58	144.15
Depreciation	17.00	11.00	20.28	15.80	17.33
Total	343.9	405.4	490.11	512.77	665.53
Grand total	784.70	911.90	1086.4	1003.2	1256.58
Changes	–	16.19%	19.25%	- 7.65%	25.25%

(Source: Annual Report of UNL, 2068)

Figure: 4.5
Position of Fixed Cost



The Table 4.5 showed that fixed cost increased by 16.19%, 19.25% and 25.25% in F/Y 2064/065, 2065/066 and 2067/068. In the F/Y 2066/067 decreased by -7.65%. Total fixed costs are divided into two portions i.e. manufacturing and administration fixed cost. The position of the fixed cost of the company can be clearly seen from the following chart.

The amount of fixed cost can be clearly presented with the help of simple bar diagram. Simple bar diagram is the simplest of the bar diagrams and is used frequently in practice for the comparative study of values and single variable. The figure 4.4 shows that there is no such significant different in fixed cost in different F/Y.

4.3.3 Semi-Variable Cost Analysis

Expenses that cannot be categorized as purely fixed or variable are termed as semi-variable or mixed costs. Semi-variable costs contain both variable and costs components. Classification of cost into variable and fixed is very important to plan

and control of costs. In our study we identify power light, fuel and water as semi-variable cost. The value of semi-variable cost is presented in the following table.

Table: 4.6
Semi-Variable Cost Details

(Rs in Lakh)

Details	Years				
	2063/64	2064/65	2065/66	2066/67	2067/68
Manufacturing expenses:					
Electricity, fuel, power & water	195.61	118.61	171	183	201
Administrative:					
Electricity, fuel, power & water	1.32	1.82	8.26	7.66	3.56
Total	196.93	120.43	179.26	189.86	204.56
Changes	–	-38.84%	4.09%	51.45	7.74%

(Source: Annual Report of UNL, 2068)

The Table 4.6 shows that semi-variable cost is increase in every year. It increases by 4.09%, 51.45% and 7.74% in the F/Y 2065/066 to 2067/068 and decrease in the fiscal year 2064/065 respectively. Semi-variable cost represents manufacturing expenses and the ratio of administrative expenses. Segregation of semi-variable cost into fixed and variable is essential for crucial managerial decision. Different techniques can be used for cost segregation. One of the most popular and reliable method is least square method. Here, semi-variable cost is segregated into variable and by using least square method. Least square spread sheet are presented in the following table.

Table: 4.7
Variable Cost Details

(Rs. in Lakhs)

F/Y	Sales (x)	Semi-variable cost (y)	xy	X ²
2063/064	14697	197	2895309	216001809
2064/065	18185	120	2182200	330694225
2065/066	21445	179	3838655	459888025
2066/067	26258	190	4989020	689482564
2067/068	3055	205	6262750	933302500
Total	111135	891	20167934	2629369123

(Source: Annual Report of UNL, 2068)

Variable cost per rupees of sales (b)

$$= \frac{\sum xy}{\sum x^2} = \frac{20167934}{111135^2}$$

= Rs.124 lakhs (From Appendix No. 1)

Although fixed cost remains constant within one F/Y, here fixed cost is assumed as fixed during whole of the observation period due to the lack of sufficient information. Remaining portion of cost after deducting fixed cost is assumed as variable.

4.4 Income statement analysis

Income is computed by deducting all expenditure from turnover. Income measures the real performance of the company. High income indicates the good performance whereas low income gives threatens to the company. Value of the income is received deducting fixed and variable cost from sales. When we deduct variable cost from sales the result is called contribution margin and then deducting fixed cost from contribution margin we can get net profit. Much information can be presented with the help of income statement in the following.

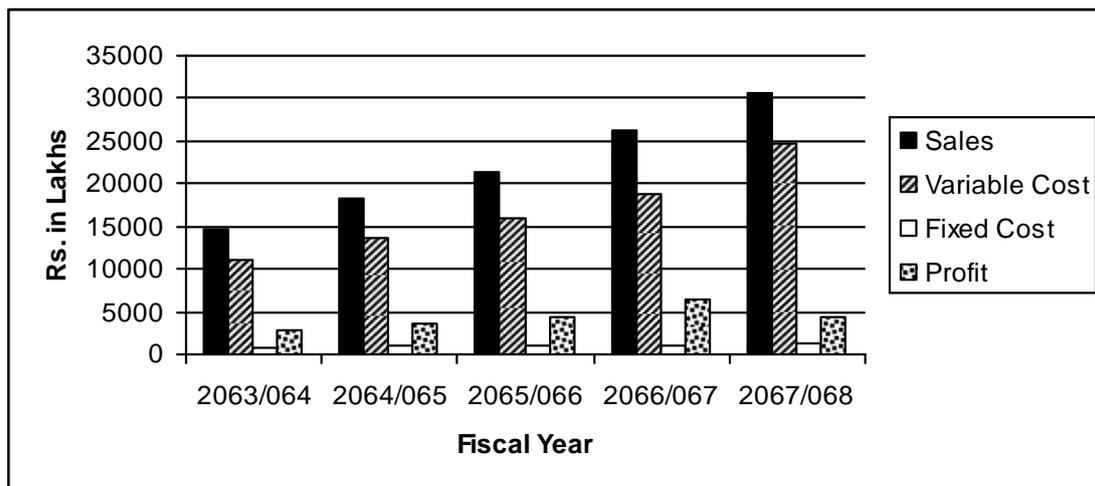
Table: 4.8
Income Statement Details

(Rs in Lakhs)

S.N.	F/Y	2063/64	2064/65	2065/66	2066/67	2067/68
1	Sales	14697	18185	21445	26258	30550
2	Variable Cost	11169.90	13758.0	15919	18816.9	24792
3	Contribution Margin (1-2)	3527.1	4426.4	5526	7441	5758
4	Fixed Cost	784.70	911.90	1086.4	1003.2	1256.58
5	Net Income (3-4)	2742.3	3515	4440	6438	4501.42
6	Net Profit Margin%	18.66	19.33	20.70	24.52	14.43
7	VC Ratio%	76.00	75.65	74.23	71.66	81.15
8	% of the FC on sales	5.34	5.012	5.07	3.82	4.11
9	Operating Leverage	1.29	1.26	1.24	1.16	1.28

(Source: Annual Report of UNL, 2068)

Figure: 4.8
Sales, Variable cost, fixed cost and profit



Here net income represents operating income only. We totally ignore non-operating income and non-operating expenses in the analysis. Total fixed cost and total variable cost are also included those fixed and variable cost which are segregated from semi-variable cost. Net profit margins of the company are 18.66%, 19.33%, 20.70%, 24.52% and 14.48% in the F/Y 2063/064 to 2066/067 respectively. It indicates that year by net profit of the company is going upwards which showed good performance in the past and predicts green signal for future growth and prosperity.

The percentage of fixed cost on sales are 5.34%, 5.012%, 5.07%, 3.82% and 4.11% the F/Y 2063/064 to 2067/068 respectively. Nearly 80 percentage of total sales cover by variable cost by the coverage of fixed cost on sales is below than 10 percentages. Most of the total cost represents variable in nature and the proportion of fixed cost on total cost is very low. The proportion of variable cost is 8 times greater than the proportion of fixed cost. This indicates that the company is non-leverage organization. Variable cost changes with the change in activity level but the fixed cost remains constant up to the certain level of capacity. If the level of sales increases, variable cost also increases but the fixed cost remains same. That is why fixed cost is defined as leverage cost. Therefore, the company most maintain higher proportion of fixed cost on its cost structure to increase more profit than increase in sales. The operating leverages of the companies are 1.29, 1.26, 1.24, 1.16 and 1.28 in the F/Y 2063/064 to 2067/068 respectively. From the point of view of profitability the degree of operating leverage is not satisfactory. Operating leverage also measures the operating risk of the company. Lower value of operating leverage indicates lower amount of operating risk. The company uses low amount of fixed cost, so it has lower value of operating risk. Sales, variable cost, fixed cost and operating profit of the company can be clearly seen in the following graphic presentation.

The figure 4.5 shows that sales, variable cost and fixed cost are in fluctuating trend. But the profit increases gradually. Although sales decrease, profit increase due to the reduction of fixed cost.

4.5 Analysis of Correlation between Sales and Net Profit

Two variables are said to be correlated if change in the value of one variable appears to be related or linked with the change in other variable correlation is an analysis deals to determine the degree of relationship between variables. The correlation analysis refers to the closeness of the relationship between the variables. The degree of correlation is measured by correlation coefficient. Various

methods can be used to determine correlation. Here, Karl Person's coefficient of correlation between sales & net profit. Calculation table is presented below.

Table: 4.9
Analysis of Correlation between Sales and Net Profit

(Rs. in Lakh)

F/Y	Sales(x)	Profit (y)	xy	x ²	y ²
2063/064	14697	2742	40299174	216001809	7518564
2064/065	18185	3515	63920275	330694225	12355225
2065/066	21445	4440	95215860	459888025	19713600
2066/067	26258	6438	169049004	689482564	41447844
2067/068	30550	4501.42	137518381	933302500	20262782
N = 5	x X11 1135	y X21080. 15	xy X50600 2634	x ² X415200 7123	y ² X101 298015

(Source: Annual Report of UNL, 2068)

Correlation Coefficient (r)

$$= \frac{N \sum xy - \sum x \sum y}{\sqrt{N \sum x^2 - (\sum x)^2} \sqrt{N \sum y^2 - (\sum y)^2}}$$

$$= 0.56 \text{ (From Appendix No.2)}$$

The value of correlation coefficient is 0.56 this indicates that there is low degree of positive correlation between sales and net profit. The values of correlation coefficient suggest that if sales increase, net profit also increase.

4.6 Analysis of Regression between Profit, Sales and Cost

Multiple regression equation is the algebraic relationship between one dependent variable and two or more independent variables. This relationship is used to estimate the value of dependent variable for the given value of independent variables. So the researcher assumes profit is dependent variable and sales and cost assume independent variables.

Let, profit be x_1 , sales be x_2 , cost be x_3

Here profit is dependent variables and cost and sales are independent variables.

Table 4.10
Analysis of Regression between Profit, Sales and Cost

(Nrs. in Lakhs)

F/Y	x ₁	x ₂	x ₃	x ₁ x ₂	x ₁ x ₃	x ₂ x ₃	X ₂ ²	X ₃ ³
2063/64	2640	14697	197	3880000080	520080	2895309	21600809	38809
2064/65	3407	18185	120	61956295	408840	2182200	330694225	14400
2065/66	4407	21445	179	94508115	788853	3838655	459888025	32041
2066/67	6325.73	26258	190	166101018.3	1201888.7	4989020	689482564	36100
2067/68	4300.42	30550	205	13137783.1	881586.1	6262750	933302500	42025
Total	21080.15	111135	890	492743339.3	38012488	25486934	2629569123	163375

Let the multiple regression equation of x₁ on x₂ and x₃ be

$$x_1 = a_1 + b_1x_2 + b_2x_3 \dots \dots \dots (1)$$

The values of constants a₁, b₁ and b₂ can be determined by solving three normal equations simultaneously.

$$\sum x_1 = n a_1 + \sum x_2 b_1 + \sum x_3 b_2 \dots \dots \dots (2)$$

$$\sum x_1 x_2 = \sum x_2 a_1 + \sum x_2^2 b_1 + \sum x_2 x_3 b_2 \dots \dots \dots (3)$$

$$\sum x_1 x_3 = \sum x_3 a_1 + \sum x_2 x_3 b_1 + \sum x_3^2 b_2 \dots \dots \dots (4)$$

Find regression equation is

$$X_1 = 8561.23 - 0.0113x_2 - 23x_3 \text{ (from appendix no. 3)}$$

When assume x₂ = 5 and x₃ = 2

Then estimated profit

$$\begin{aligned} X_1 &= 8561.23 - 0.0113 \times 5 - 23 \times 2 \\ &= 8561.23 - 0.0565 - 46 \\ &= 8515.1735 \end{aligned}$$

It concluded that if sales 5 and cost 2 then expected profit is 8515.1735. It shows negative relationship between profit, sales and cost.

4.7 Break – Even Analysis

BEP analysis is most widely known from of CVP. BEP is that point at which neither profit or loss is made. it is concerned with the study or revenues and costs in relation to sales volume and determination of that volume of sales at which loss ceases and profit begins. The BEP is that point at which loss ceases and profit begins. The BEP of the company both in units and Rs. are presented in the following table.

Table: 4.11
Break-Even Points details

(Nrs. in Lakhs)

F/Y	2063/64	2064/65	2065/66	2066/67	2067/68
BEP (Rs)	3699	4192.4	4619	3937	6614
BEP (Tone)	7782	6073	5203	4597	6981
BEP (Ratio)	25.17%	23.06%	21.55%	14.99%	21.65%

Where,

$$\text{a) BEP (Rs.)} = \frac{\text{Fixed Cost}}{\text{Weighted Average PV Ratio}}$$

$$\text{b) BEP (Units)} = \frac{\text{Fixed Cost}}{\text{Weighted Average CMPU}}$$

$$\text{c) Weighted Average PV Ratio} = \frac{\text{(P/V ratio of each product | sales mix (Rs) of each product)}}{\text{Weighted Average PV Ratio}}$$

$$\text{d) Weighted Average CMPU} = \frac{\text{(CMPU ratio of each product | sales mix (units) of each product)}}{\text{Weighted Average CMPU}}$$

$$\text{e) BEP (Ratio)} = \frac{\text{BEP Sales (Rs)}}{\text{Actual Sales (Rs)}}$$

The Table 4.11 shows that BEP (Rs), BEP (tone) and BEP (ratio) are in decreasing trend. The main reason of decreasing BEP is the decreasing trend of fixed cost. The increasing contribution margin and profit volume ratio are also the root cause of reduction in BEP. Break-even-point (Rs) of the company is Rs.3699, Rs.4192.4, Rs.4619, Rs.3937 and Rs.6614 Lakhs in the F/Y 2063/64, 2064/65, 2065/66, 2066/67 and 2067/68 respectively. Similarly break-even- point (tone) of the company are 7782, 6073, 5203, 4597 and 6981 in the F/Y 2063/64, 2064/65, 2065/66, 2066/67 and 2067/68 respectively. This indicates that in the F/Y 2063/064 the company has to makes sales of Rs.3699 lakhs or 7782 tone just to cover the total cost of the company. In the F/Y 2066/067 the company is able to cover all of its cost through sales of Rs.3937 lakhs or 4597 tone. The company enjoys profit beyond the break-even sales. The ratio between BEP sales and actual sales is called BEP ratio. It provides information about how many percentages of total sales are utilized only to meet the total cost. The break-even ratios of the company are 25.17%, 23.06%, 21.55%, 14.99% and 21.65% in the F/Y 2063/64, 2064/65, 2065/66, 2066/67 and 2067/68 respectively. The company has lower percentage of break-even-ratio which indicates the strength of the company. The company meets its total cost through lower volume of sales and major parts of sales are utilized to generate profit.

4.8 Contribution Margin Analysis

Contribution margin is the excess of sales revenue over variable cost. Contribution margin is the balance available to recover fixed expenses and contribution towards profit. If contribution is not sufficient to cover the fixed costs, then the firm suffers from losses. Contribution margin per unit (CMPU) is selling price per unit less variable cost per unit.

Contribution margin expressed as percentage on sales revenue is called contribution margin (C/M) ratio of profit volume (P/V). Total contribution margin and contribution margin ratio are presented in the following table.

Table: 4.12
Contribution Margin details

(Rs in Lakhs)

Fiscal Year	2063/64	2064/65	2065/66	2066/67	2067/68
Contribution Margin	3527.1	4427	5526	7441.1	5758
P/V or C/M Ratio (%)	23.99	24.34	25.76	28.33	18.85

From Appendix 1

Both contribution margin and P/V ratio are increasing trend. The P/V ratios of the company are 23.99%, 24.34%, 25.76%, 28.33% and 18.85% in the F/Y 2063/64, 2064/65, 2065/66, 2066/67 and 2067/68 respectively. The P/V ratios of the company are not satisfactory. These are very low due to the huge amount of variable costs.

4.9 Margin of Safety Analysis

Margin of safety is the excess of actual sales over the break-even sales volume. It is the difference between actual sales and break-even sales. It is a position above the BEP margin. The larger the margin of safety is the result of low operating cost. The margin of safety can be expressed as a percentage which is computed dividing margin of safety by actual sales. Margin of safety and safety margin ratio of the company are presented in the following table.

Table: 4.13
Margin of Safety details

(Nrs in Lakhs)

Year	Actual sales (1)	BE sales (2)	MOS 3 (1-2)	MOS ratio 4 (3÷1)	Be sales ratio 5 (2÷5)
2063/064	14697	3270	11427	77.78	22.25
2064/065	18185	4192.4	13992.6	76.94	23.06
2065/066	21445	4620	16825	78.45	21.55
2066/067	26258	3936	22322	85.01	14.99
2067/068	30550	6614	23936	78.35	21.66

In the above Table we can clearly see the position of the actual sales and BE Sales are increasing in the F/Y 2063/064 to 2067/068. The margin of safety of the company is normally increasing trend. In the F/Y 2063/64, 2064/65, 2065/66, 2066/67 and 2067/68 have margin of safety Rs.11427 lakhs, Rs. 13992.6 lakhs, Rs. 16825 lakhs, Rs. 22322 lakhs and Rs. 23936 lakhs respectively. The margin of safety ratio of the company is 77.78% in the F/Y 2063/064. Similarly MOS ratio are 76.94%, 78.45%, 85.01% and 78.35 in the F/Y 2064/65, 2065/66, 2066/67 and 2067/68 respectively.

4.10 Effect of Changes in Sales Value

An increase of decrease in sales value will have no effect in profit volume ratio and as a result, there will be no effecting break-even point. However there will be changes in profitability as the changes occurs in operating leverage. If increase and decrease of sales value by 10% with other factor assumed remain constant, it gets following result for the fiscal year 2063/064.

Table: 4.14
Income statement with Change of Sales value for the F/Y 2063/064
(Nrs. in Lakhs)

Details	Original	Changes on Sales value	
		10% increased	10% decreased
Sales Revenue	14697	16166.7	13227.3
Less: Variable cost	(11169.90)	(12286.89)	(10052.91)
Contribution Margin	3527.1	3879.81	3174.39
Less: Fixed cost	(784.70)	(784.70)	(784.70)
Profit	2742	2992.41	2286.99
VC ratio	0.7600	0.7600	0.7600
BEP	-	1167.63	1167.63
DOL	1.336	1.297	1.388

The above Table 4.14 shows that with the increase in sales value by 10% the profit of the company will be increased by 13.36% its DOL is 1.336.

4.11 Effect of Change in Variable Cost

The impact of change in variable cost on profit is straight forward if it does not cause any change in sales revenue and fixed cost. An increase in variable cost will lower P/V ratio, push up the BEP and reduce profit. On the other hand, if the variable cost decline, P/V ratio will increase. BEP will be lowered and profit will rise. If the increase and decrease of variable cost by 10% with other factor assumed to remain same. it gets following results for the fiscal year 2063/064.

Table: 4.15
Income statement with change of Variable Cost for the
Fiscal Year 2063/64

(Nrs. in Lakhs)

Details	Original	Changes on Sales value	
		10% increased	10% decreased
Sales Revenue	14697	14697	14697
Less: Variable cost	(11169.90)	(12286.89)	(10052.91)
Contribution Margin	3527.1	2410	4644
Less: Fixed cost	(784.70)	(784.70)	(784.70)
Profit	2742	1625	3859
CM Ratio	0.24	0.16	0.32
VC ratio	0.7600	0.8360	0.6840
BEP (Rs.)	3270	4904	2452

Above the Table 4.14 showed that with 10% increase in variable cost break-even point have increased by 49.97% which indicates that variable cost and break-even point have positive relationship. Similarly, with decreased in variable cost by 10%, the break-even point has been decreased 25.02%.

4.12 Effect of Changes in Fixed cost

A change in a fixed cost not influence P/V ratio. Other factors remaining uncharged, a fall in fixed cost will however lower the BEP and raise profit. An increase in fixed cost will push up BEP but reduce profit increased and decreased of fixed cost by 10% with other factors assumed to remain same, it gets following same. It gets following results for the fiscal year 2063/064.

Table: 4.16
Income statement with change of Fixed Cost for the F/Y 2063/64

(Nrs. in Lakhs)

Details	Original	Changes on Sales value	
		10% increased	10% decreased
Sales Revenue	14697	14697	14697
Less: Variable cost	(11169.90)	(11169.90)	(11169.90)
Contribution Margin	3527.1	3527.1	3527.1
Less: Fixed cost	(785)	(863.5)	(707)
Profit	2742	2550.96	2728.45
CM Ratio	0.24	0.24	0.24
VC ratio	0.7600	0.7600	0.7600
BEP (Rs.)	3270	3598	2944

Above table 4.15 showed that 10% of fixed cost increase, break-even amount is increased by same percentage i.e. 10% and with 10% decrease in fixed cost, BEP amount is decreased by 10%. It can be concluded that break-even-point and fixed cost has get positive relationship.

4.13 CVP Analysis with Change Context/Sensitivity Analysis

The analysis of cost behaviour facilitates the use of another CVP technique to improve the decision making activities, known as "sensitivity analysis". By determining the profit multiplier profit of a business it becomes possible to measure the extent of impact (sensitivity) of changes in key factors (such as price, volume, variable cost, fixed cost and combination of factors which shows proportionate relationship, positive relationship, inverse relationship and no relationship on profit). With this technique the management teams are not only able to obtain a numerical expression of their business orientation, but in addition are able to assess a range of issues relation to product and service profitability, profit improvement and the effectiveness of alternative accounting procedures, control strategies and budget preparation methods. the following table provides the insights into the "sensitivity analysis".

Table: 4.17

Different Factors Affecting CVP Analysis

Factors	Effect in P/V ratio	Effect in BEP	Effect in profit
Sales revenue			
Increase	Increase	Decrease	Increase
Decrease	Decrease	Increase	Decrease
Variable cost			
Increase	Decrease	Increase	Decrease
Decrease	Increase	Decrease	Increase
Fixed cost			
Increase	No effect	Increase	Decrease
Decrease	No effect	Decrease	Increase

4.14 Sources of Data

A. Primary Data Analysis

Primary data investigation has been conducted to find out various aspect of product of UNL. The major tools use for this purpose is an opinion questionnaire which has depend on consumer the questionnaire included the various aspect of companies activities, rule, regulations and other information about product of UNL. The questionnaire asks for a yes/no response of ask for ranking of choice according to number of alternatives where a first choice was most important and last choice was least important. Information receives from respondent described in to the following paragraph and they were expressed in percent of total number or point them analysed in to descriptive way. Here primary data analyzed in the following way:

– Questionnaire for consumer

From the primary data analyzed it is investigation has been conducted in find out various aspect of UNL product. The major tools use for consumer to analyze of primary data analysis to find out actual result for UNL. The researcher collected field 17 respondents the questionnaire asked Yes/No question.

In order to know the respondents opinions about the product of UNL and its impact of their life a question was asked "Are you satisfied with the product of UNL?" The response was received from 100% consumer in the case 80% of consumer

respondent were satisfied with the product of UNL and 20% weren't. So, it can be concluded that the consumer were positive towards the UNL product.

In the other questions for consumer it "Is the price of UNL product is reasonable?" In the above question 68% of them weren't agreed with the UNL product price and 32% of them were satisfied. It shows that the price and consumer relationship is negative.

The company provides many facilities to give their consumer to find the products of their company easily. So to know the opinion about the difficulties to purchase products a question was asked "Is there any difficulties to purchase the product of UNL?" In above question respondent were about the purchase of products 70% consumer agrees with the question and 30% consumer disagrees with the questions. The research find that no more difficulties to purchase of product of UNL.

In other questions for consumer "Do you always use product of UNL?" 60% of the response was received for the choice of Yes and 40% of the respondents do not. In this case 100% respondent do not always use product of UNL. In the market other company's product's position is also strong.

In order to know the attitude towards the company's products to ask question "Do you have any side effects from UNL products?" In the above question 100% respondents responded to the answer 'No'. In this case consumers do not find any error of products of UNL. All respondents view was positive for the products of UNL. Thus, it can be concluded that there are no any side effects of the products of UNL.

In order to know the consumers behavior for UNL products to ask question "Have you received any prize from the company?" In the question 30% respondents have

prize from company and 70% don't. So, it can be concluded that the prize is not sufficient.

In another question for respondents "What types of fund you use to purchase the UNL products?" 70% respondents are dependent to purchase of products from their salary and 30% respondents purchase the products taking loan. It shows that consumer purchase products to fulfill their requirement.

In another question "Is there any change by using UNL products?" In the response of the question 50% respondents were agreed and 50% disagreed or they were felt and such changes during the use of UNL products. It shows medium response for the UNL products.

For the respondents another question was asked "What suggestions do you have to the UNL Company to make products quality best? 80% of them were unable to provide the suggestion for improving UNL products whereas 20% provide some suggestions as follows:

-) Price of the products should be minimized and affordable.
-) More impressive prizes should be encouraged to impress the consumers.
-) The quality of the products should be increased more so the consumers do not have any side-effects.
-) UNL Company should have conducted regular interact with their consumers about their products and ways for their improvement.

B. Secondary Sources

The secondary data of this research were collected from the following sources:

- a. Published and unpublished reports, articles and dissertations of the concerned subjects.
- b. Published documents of National Planning Commission.
- c. Publication and annual report of Unilever Nepal Ltd.

- d. Different publication of Central Bureau of Statistics.
- e. Various books written by Unilever Ltd.
- f. Newspapers, such as, Gorkhapatra, The rising Nepal, Kantipur Daily and so on.
- g. Websites

4.15 Major Findings of the Study

On the basis of the different analysis, observation and informal discussion, the following major findings have been drawn.

-) Total sales of the company are fluctuating. The domestic is equal with total sales.
-) The company produces different products among them product toilet soaps have made highest contribution on total sales. But the share of product tea on total sales in found nominal.
-) Expenses of UNL are fluctuating variable cost as well as fixed cost increased or decreased haphazardly. But the trend of semi-variable cost decreased every year.
-) The company has no details of systematic expenses plan. The fixed variable and mixed expenses plan is the necessary elements for the profit planning and control.
-) The proportions of variable cost are higher than fixed cost in total cost amount which made for lower contribution margin.
-) Profit of the UNL increased year by year. Though sales decreased in the same year profit increased due to the reduction of fixed cost.
-) From correlation analysis, it is found that there is low degree of positive correlation between sales and net profit. If change is happened on sales, the profit will also change but in the same ratio.
-) The profitability position of the company was satisfactory but not a expected.

-) As the company has high margin of safety, the company might be at lower risk.
-) The company's operating leverage decreased which indicates decreased in operating in operating risk of the company.
-) CVP analysis is very important and popular tools to measure the financial performance of organization. But CVP analysis is not applying to change the financial performance of UNL.
-) An opinion survey was conducted in order find out the various aspect of the company. From the opinion survey of the employees and consumer findings are as follows:
 -) Majorities of respondents perceived that the present status of the company is good.
 -) Company practicing Cost Volume Profit analysis.
 -) In case of decision making system involve their employee.
 -) Main products are Detergent, Tea, Personal product and soap noodles.
 -) Consumer also satisfied the product of UNL.
 -) Above 60% consumer of responded said price of UNL product is reasonable.
 -) Consumers easily find out the product of UNL.
 -) 100% responded are said no any side effect on UNL product.

CHAPTER – V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

Management effectively achieves organizational objectives through the efficient use of scarce resources in a changing environment. Future is uncertain which creates risk and to reduce risk, the only reliable weapon is good management. CVP analysis is an analytical technical for studying the relationship between volume, costs, prices and profit which helps to manage future cost and profit. Profit planning is a management technique and it is a written plan in all aspect of business operation for specific future period. CVP analysis is a device used to determine the usefulness of profit planning has become associated with CVP interrelationship.

The main objective of the present research is to examine cost-volume-profit analysis as a tool to measure effectiveness of profit planning of UNL. So, this study was undertaken to evaluate CVP analysis of the company. It has observed that UNL has succeeded in living up to the expectation of general position and main producer company of cosmetic item. As per the nature of the study, secondary data with descriptive and analytical approach for sales analysis, cost analysis, profitability analysis and contribution analysis are used.

From the analysis, the CVP analysis shows that the company has low contribution margin, low P/V ratio, low BEP and high marginal of safety. The sale of the company is in fluctuation trend. The company has given more emphasis on domestic sales rather than export sales. Profitability position of the company is satisfactory. The trend of profit is increasing year by year. The proportion of fixed cost on total cost is too low. The company has low operating risk and it is defined as non-leverage organization. The company cannot make drastic change on profit with the change on sales due to the small amount of operating leverage. The

sensitivity of CVP s shows that costs increase (i.e. variable and fixed), the BEP will also decrease. As the company not uses scientific technique for the classification of cost, it is very difficult to utilize profit planning tools like CVP analysis.

5.2 Conclusions

Different types of profit planning tools, which are used in the academic field, are not found applied by UNL. It shows the gap between the theory and practice, CVP analysis is not applied by UNL as no segregation of cost into fixed and variable, which is the hard core of CVP analysis. Companies have no clear cut boundaries to separate cost in to fixed and variable. The classification of cost is not scientific and systematic. So UNL has not been able to use CVP analysis and make the realistic and smart budget.

The company does not recognize valuable product. It started to drop out product rather than to join product line. Although the product soap noodles has provided high contribution margin, the company is not able to continue to produce it. The company uses either times greater variable cost than fixed cost on its cost structure. The high variable cost and low fixed cost structure of UNL indicates that the company has lower operating risk. The company has greater stability in net profit rapidly as sales falls off. So the company can be categorized as "cost oriented". The company's C/M ratio is low and increasing although sales decrease which means that variable cost decrease rapidly than sales decrease. BEP of the company has decrease its main reason is decrease in fixed cost and increase in P/V ratio. As the lower BE sales and higher MOS, the business of the company is in low risk, so further investment in this condition is consideration to be safe. The MOS of the company is high so a small percentage increase is sales revenue can lead to the company to generate hung profit. The company is multi-product organization so sales mix is often important for CVP analysis. The company's aim is seem to obtain reasonable profit rather than to cover the market share. Finally, CVP

analysis is useful as a formwork of reference, as a vehicle for expressing overall managerial performance, and as a planning device via break-even technique and sensitivity analysis. The following points highlight the analytical usefulness of CVP analysis as a tool for PPC.

-) A change in either the variable cost or fixed cost alters BEP.
-) The lower BE sales, the less risky the business and the safer the investment, other things being equal.
-) A large MOS means lower operating risk, since a large decrease in sales can occur before losses are experienced.
-) In the multi-product firm, sales mix often more important than overall market share. The emphasis on high margin product tends maximize overall profit of the firm.
-) Better CVP analysis provides vision for planning, controlling and decision making process in profit planning.

5.3 Recommendations:

On the basis of the study of CVP analysis as a tool to measure effectiveness of PPC of UNL, it seems necessary to develop, implement and improve the process of CVP analysis from beginning to end with PPC. Nepal is proceeding toward globalization with membership of WTO. Nepalese companies should fit with global environment with best fit managerial strategies development. As the competition is very high in the context of globalization, company should provide attention toward cost minimization rather than profit maximization. For this, CVP analysis tools can be great help, thus the following recommendations based of the findings of research study are:

-) Expenses planning & controlling should focus on the relationship between expenditure and benefits derived from those expenditure.
-) Classification of expenditure item as variable and fixed or controllable and non-controllable must be made within specific framework of responsibility and time.

-) UNL should consider BEP analysis while preparing sales plan, production plan and products.
-) Separate cost control department should be established for the effective management of cost.
-) UNL should increase the proportion of fixed cost and should reduce the proportion of variable cost on its structure to be leverage organization.
-) As UNL is multi-product company more emphasis should be provided for the product having high contribution margin to general more profit.
-) Company should add new product line to increase its profit. Market studies on demand, supply and pricing of product should be carried out and loss oriented costs identify and control them.
-) As UNL spend huge amount on the topic of salaries & wages, it should like proper man power planning to reduce the cost.
-) Some portion of profit should be allocated to research and development program so that new technology could be found which provide more competitiveness in the market.
-) New market area should be identified for the coverage increase of company.
-) A system of periodicals performance reports should be strictly followed to be conscious about poor performance and take corrective action immediately.
-) A systematic approach should be made toward comprehensive profit planning.

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APPENDICES

Appendix:1

Income Statement Details

(Rs in Lakhs)

S.N.	F/Y	2063/64	2064/65	2065/66	2066/67	2067/68
1	Sales	14697	18185	21445	26258	30550
2	Variable Cost	11169.90	13758.0	15919	18816.9	24792
3	Contribution Margin (1-2)	3527.1	4426.4	5526	7441	5758
4	Fixed Cost	784.70	911.90	1086.4	1003.2	1256.58
5	Net Income (3-4)	27.42	3515	4440	6438	4501.42
6	Net Profit Margin%	18.66	19.33	20.70	24.52	14.43
7	VC Ratio%	76.00	75.65	74.23	71.66	81.15
8	% of the FC on sales	5.34	5.012	5.07	3.82	4.11
9	Operating Leverage	1.29	1.26	1.24	1.16	1.28

(Source: Annual Report of UNL, 2068)

$$\text{BEP Rs.} = \frac{\text{Fixed Cost}}{\text{Weighted Average CM Ratio}}$$

$$\text{BEP Unit} = \frac{\text{Fixed Cost}}{\text{Weighted Average CMPU}}$$

for 2063/64	→	3699	→	7782
for 2064/65	→	4192.4	→	6073
for 2065/66	→	4619	→	5203
for 2066/67	→	3937	→	4597
for 2067/68	→	6614	→	6981

Weighted Average CM Ratio = (PV Ratio of each Producer × Sales Mix
(Rs.) of each product)

for 2063/64	→	25.17%
for 2064/65	→	23.06%
for 2065/66	→	21.5%
for 2066/67	→	14.99%
for 2067/68	→	21.65%

Contribution Margin = Sales – Variable Cost

for 2063/64	→	3527.1
for 2064/65	→	4427

for 2065/66 → 5526
for 2066/67 → 7441.1
for 2067/68 → 5758

$$\text{CM/PV Ratio} = \frac{\text{CM}}{\text{Sales}}$$

for 2063/64 → 24%
for 2064/65 → 24.34%
for 2065/66 → 25.76%
for 2066/67 → 28.33%
for 2067/68 → 18.85%

Appendix: 2
Variable Cost Details

(Rs. in Lakhs)

F/Y	Sales (x)	Cost (y)	xy	x ²
2063/64	14697	197	2895309	216001809
2064/65	18185	120	2182200	330694225
2065/66	21445	179	3838655	459888025
2066/67	26258	190	4989020	689482564
2067/68	30550	205	6262750	933302500
Total	11135	891	20167934	2629569123

(Source: Annual Report of UNL 2068)

Variable cost per rupees of sales (b)

$$\begin{aligned}
 b &= \frac{N \sum xy - \sum x \sum y}{N \sum x^2 - (\sum x)^2} \\
 &= \frac{5 | 20167934 - 111135 | 890}{5 | 2629369123 - (111135)^2} \\
 &= \frac{1929520}{795857390} \\
 &= 0.00242
 \end{aligned}$$

$$\begin{aligned}
 \text{Fixed Cost (a)} &= \frac{\sum y - b \sum x}{N} \\
 &= \frac{891 - (0.00242 | 111135)}{5} \\
 &= \frac{891 - 268.95}{5} \\
 &= \text{Rs. 124.41 Lakhs.}
 \end{aligned}$$

Appendix: 3

Analysis of Correlation between Sales and Net Profit

(Rs. in Lakh)

F/Y	Sales(x)	Profit (y)	xy	x ²	y ²
2063/064	14697	2742	40299174	216001809	7518564
2064/065	18185	3515	63920275	330694225	12355225
2065/066	21445	4440	95215860	459888025	19713600
2066/067	26258	6438	169049004	689482564	41447844
2067/068	30550	4501.42	137518381	933302500	20262782
N = 5	Σx 111135	Σy 21636.42	Σxy 506002634	Σx^2 2629369123	Σy^2 101298015

(Source: Annual Report of UNL, 2068{From Website})

$$\text{Correlation Coefficient (r)} = \frac{N \Sigma xy - \Sigma x \Sigma y}{\sqrt{N \Sigma x^2 - (\Sigma x)^2} \sqrt{N \Sigma y^2 - (\Sigma y)^2}}$$

$$= \frac{5 | 506002634 - 111135 | 21636.42}{\sqrt{5 | 2629369123 - (111135)^2} \sqrt{5 | 101298015 - (21636.42)^2}}$$

$$= 0.56$$

Appendix: 4

Analysis of Regression between Profit, Sales and Cost

(Nrs. in Lakhs)

F/Y	x ₁	x ₂	x ₃	x ₁ x ₂	x ₁ x ₃	x ₂ x ₃	X ₂ ²	X ₃ ³
2063/64	2742	14697	197	38800080	520080	2895309	21600809	38809
2064/65	3515	18185	120	61956295	408840	2182200	330694225	14400
2065/66	4440	21445	179	94508115	788853	3838655	459888025	32041
2066/67	6438	26258	190	166101018.3	1201888.7	4989020	689482564	36100
2067/68	4501.42	30550	205	13137783.1	881586.1	6262750	933302500	42025
Total	21636.42	111135	891	492743339.3	3801248.8	25486934	2629569123	163375

Let the multiple regression equation of x₁ on x₂ and x₃ be

$$x_1 = a_1 + b_1x_2 + b_2x_3 \dots \dots \dots (i)$$

The values of constants a₁, b₁ and b₂ can determine by solving three normal equation simultaneously.

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

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

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

Substituting the sum values in normal equations, we get

$$21636.42 = 5a_1 + 111135b_1 + 891b_2 \dots \dots \dots (v)$$

$$492743339.3 = 111135b_1 + 2629569123b_1 + 25486934b_1 \dots \dots \dots (vi)$$

$$3801248.8 = 891a_1 + 25486934b_1 + 163375b_2 \dots \dots \dots (vii)$$

Multiplying (v) by 2227 and subtracting (vi)

$$468548494.1 = 111135a_1 + 2470197645b_1 + 19782030b_2$$

$$492743339.3 = 111135b_1 + 2629569123b_1 + 25486934b_1 \quad -$$

$$-24194845.2 = -159171478b_1 + 5686719b_2 \dots \dots \dots (viii)$$

Again Multiplying (v) by 178 and subtracting (vii)

$$3752266.7 = 891a_1 + 19782030b_1 + 158420b_2$$

$$3801248.8 = 891a_1 + 25486934b_1 + 163375b_2$$

$$\begin{array}{r} - \qquad - \qquad - \qquad - \\ \hline -45574.1 = -5686719b_1 - 4716b_2 \dots \dots \dots (ix) \end{array}$$

Multiplying (ix) by 1205 and subtracting (viii)

$$-54916790.5 = -6852496395b_1 - 5686719b_2$$

$$-24194845.2 = -159171478b_1 + 5686719b_2 \dots \dots \dots (x)$$

$$\hline -79111635.7 = -7011667873b_1$$

$$b_1 = \frac{79111635.7}{7011667873}$$

$$= -0.0113$$

Substituting the value of b_1 in equation (ix)

$$-45574.1 = -5686719 \times (-0.0113) - 4716b_2$$

Or, $-45574.1 = 64260 - 4716b_2$

Or, $-45574.1 = 64260 - 4716b_2$

$$-109834.1 = -4716b_2$$

$$b_2 = -23.0$$

Substituting the value of b_1 and b_2 in equation (v)

$$21080.15 = 5a_1 + 11135 \times (-0.0113) + 890 \times (-23.0)$$

Or, $21080.15 = 5a_1 - 1256 - 20470$

Or, $21080.15 + 21726 = 5a_1$

$$a_1 = 8561.23$$

Multiple regression equation of x_1 on x_2 and x_3 is

$$X_1 = 8561.23 - 0.0113x_2 - 23x_3 \dots \dots \dots (xi)$$

Appendix: 5
Questionnaire

- 1) What are the Products of your company?
a) b)
c) d)
- 2) Is the company practicing cost volume and profit analysis?
a) Yes b) No
- 3) What techniques does the organization practice for pricing of product?
a) Cost based pricing
b) Going rate pricing
c) Target return on investment pricing
d) Activities based cost pricing
- 4) What are the processes of managerial decision making?
a) Top to bottom b) Bottom to top
c) Participating all staffs
- 5) What criteria area does the management adopt to classify semi-variable cost?
a) High-low method b) Least square method
c) Range method d) Others
- 6) What are the major difficulties faced to conduct CVP analysis?
a) b)
c) d)
- 7) What are the major difficulties regarding sale expansion?
a) b)
c) d)
- 8) What are the channels of distribution adopted?
a) b)
c) d)
- 9) What kinds of raw materials are being used by your organization?
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10) Who are the suppliers of raw materials?

- a) Domestic b) Foreign c) Both

11) What is your expected sale in this year?

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12) Is your company going to drop any product or launch any new product?

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13) Which parts of CVP analysis are mostly practices and which are not practiced till now?

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