**A study on CVP analysis as a managerial tool of profit Planning of Unilever Nepal Limited**

A Thesis

Submitted by

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# RECOMMENDATION

This is to certify that the Thesis

Submitted by:

**Manohar Majhi**

Entitled:

**"A study on CVP analysis as a managerial tool of profit planning of UNL"**

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

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# VIVA- VOCE SHEET

We have conducted the Viva-Voce examination of the Thesis

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Entitled:

**"A study on CVP analysis as a managerial tool of profit planning of UNL"**

And found the thesis to be original work of the student written according to the prescribed format. We recommend the thesis to be accepted as partial fulfillment of the requirement of the Degree of Master of Business Studies (MBS).

**Viva-Voce Committee:**

Head of Research Department ……

Member (Thesis Supervisor) ……....

Member (Thesis Supervisor) ……....

Member (External Expert) ……....

# DECLARATION

I hereby declare that the research work entitled, "**A study on CVP analysis as a managerial tool of profit planning of UNL**" submitted to Shanker Dev Campus, Faculty of Management, Tribhuvan University is my original work done in the form of partial fulfillment of the requirement of the Master Degree of Business Studies (MBS) under the supervision of Mr. Yamesh Man Singh Reader of Shanker Dev Campus.

Date: ……

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Finally I cannot forget the help and suggestions of the personnel of UNL for bringing this study in this excellent form. Efforts have been made to avoid all types of errors and mistakes but human error is obvious and I am no exception of this.

Date: 16/11/2065 Manohar Majhi

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## Abbreviations Used

| | | |
|---|---|---|
| UNL | – | Unilever Nepal Limited |
| CM | – | Contribution Margin |
| MOS | – | Margin of Safety |
| BEP | – | Break-Even Point |
| SPPU | – | Selling Price Per Unit |
| VCPU | – | Variable Cost Per Unit |
| CVP | – | Cost-Volume Profit |
| FC | – | Fixed Cost |
| VC | – | Variable Cost |
| BEC | – | Break- Even Capacity |
| Q | – | Quantity |
| NP | – | Net Profit |
| DP | – | Desired Profit |
| RS | – | Rupees |
| P/V | – | Profit Volume |
| DOL | – | Degree of Variability |
| TC | – | Total Cost |
| F/Y | – | Fiscal Year |
| eg. | – | For Example |
| i.e. | _ | That is |

# Chapter-1

# Introduction

## 1.1. General Introduction

Federal Democratic Republic 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 meters to 8848 meters. Total areas 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 23% of total area. About 40% of the region is under cultivation. Population in this region constitutes 46.70% of the total population of the country. The hilly region covers about 42% of the total area and only 10% area of the region cultivated and Himalayan region covers only 11.30% of the country and occupies only about 19% of the total area of the country. The country is under the vicious circle of poverty and more than 42% 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 400$. Public private manufacturing industries were established with the objective of balanced 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 the well-known phenomenon for economic growth throughout the world. They are the effective means of achieving economic development in the developing countries like Nepal. More than 80% of economical population is dependent on agriculture. Its contribution for GDP is nearly about 40% of total GDP.

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 "Udyog Parishad" was constituted 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 4000 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 competitive in the process of industrialization in 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 o f upgrade and promotion of private industries. It was revised in the year 1960 with a motive to attract foreign investment and to facilitate financing. In this period Industrial Development Center (1957) was established, which was converted into Nepal Development Corporation in 1959 with a view to provide financial and technical assistance to private sector industries.

During the second plan, the industrial estates were established for the promotion of industries in the country. With a view to industrialize enterprises at one spot, overall eleven industrial estates were established until now.

Within the fourth plan in the year 1973, a new industrial policy was formulated in the year 1973. In 1981 a new Industrial Policy was also declared and the main feature of the policy was that all industries were wept open to private sector except for the defense industries. The industrial policy helped the establishment of Industrial Promotion Board. The industrial enterprise act 1982 and Foreign Investment act 1982 were also enacted. During the eighth plan Foreign Investment and One Window Policy 1992 were introduced to attract foreign investment for speeding up industrial development. In the same year in 1992, Trade Policy was enacted with establishing trade relation with more than 70 countries.

Effective implementation of the national economic policies facilitate to the enhancement of manufacturing industries, promotion of export and import of goods and services. To speed up the phase of economic development various act and regulations were enacted with the motive of privatization and liberalization of industries. Government has adopted one window policy to facilitate the industrial investment. But for the proper growth of the industries sufficient infrastructure is a must. Various public enterprises established during the

planning era are not in good condition. Frequent changes in Government policies are one of the basic reasons for the negative performance of industries. Thus, clear and simple policies providing definite facilities for a long period of time are the primary requisites for industrial development.

### 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 to the enhancement of manufacturing industries, promotion of export and import of goods and services. To speed up the phase of economic development various act and regulation 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 sector without any difficulties and hesitation. Many different industries were established in a country with a joint-venture. Out of the different foreign investment 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 Nepal Limited. It was started with authorized capital (3000000 ordinary shares of Rs. 100 each) Rs.300millons and issued, subscribed and paid up capital (920700 ordinary shares of Rs.100 each) Rs.92.07 millions. 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 13st 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. it was

framed as a public ltd company. In 1993, it started producing different household commodities from last Dec. 1994 as the main objective of establishment.

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.

### 1.2. The Corporate purpose of UNL

The company's purposes are as follows:

1. To meet the everyday needs of people everywhere.
   - To fulfill the aspirations of consumers and customers.
   - To respond creatively and competitively with branded products and services which is raised the quality of life.
2. 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.
3. To get sustainable, profitable growth for business and long-term value creation for shareholders and employees.
4. To succeed requires the highest slandered of corporate behavior towards employees, consumers and the society.
5. UNL long-term success required 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.

### 1.3. Performance of the company

The sales of the company in the fiscal year 2063/064 were in Rs. 1818.5275 millions and in units 24974 tones. It was Rs. 1434.942233 millions and units 22409. The sales were increased by 2.6732%. The profit before tax in the fiscal year 2063/064 was Rs. 345.60 millions and profit after tax was Rs. 263.10 millions which was last year 2062/063 Rs. 304.70 millions and Rs. 238.20 million respectively. Earnings per share were Rs. 286 which was Rs.27 more than last year. Return on capital employed also 148% which was 12% greater than last year. It was a radical change to achieve the UNL's objectives.

The company has been awarded "Best Presented Account Award for 2006 by ICAAN and National Excellence Award for 2062 by FNCCI respectively".

#### 1.3.1. 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 millions. It was 10% more than last fiscal year.

#### 1.3.2. 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:

- Detergents
- Sources
- Laundry Soaps
- Toilet Soaps
- Personal Products
- Soap Noodles

- Tea
- Vanaspati

### 1.3.3. 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.

### 1.3.4. 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 were 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.

### 1.3.5. 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 continues 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 c conservation remained a key deliverable and company achieved 15% reduction in Furnace oil consumption per ton of soaps by the end of current year.

### 1.3.6. 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 lunch 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.

## 1.4. 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.

- 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?

## 1.5. Objectives 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:

1. To study relationship of cost, volume and profit as an applicable tools of budgeting.
2. To evaluate the profitability, financial position and sensitivity analysis of UNL.
3. To analyze the cost, volume and profit of the Manufacturing Company and its impact in profit planning.
4. To provide relevant suggestion, recommendation and practical idea for improving competitiveness strength of UNL.

## 1.6. 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.

## 1.7. Limitations of the study

The study is bound in certain limitation, which are as follows.

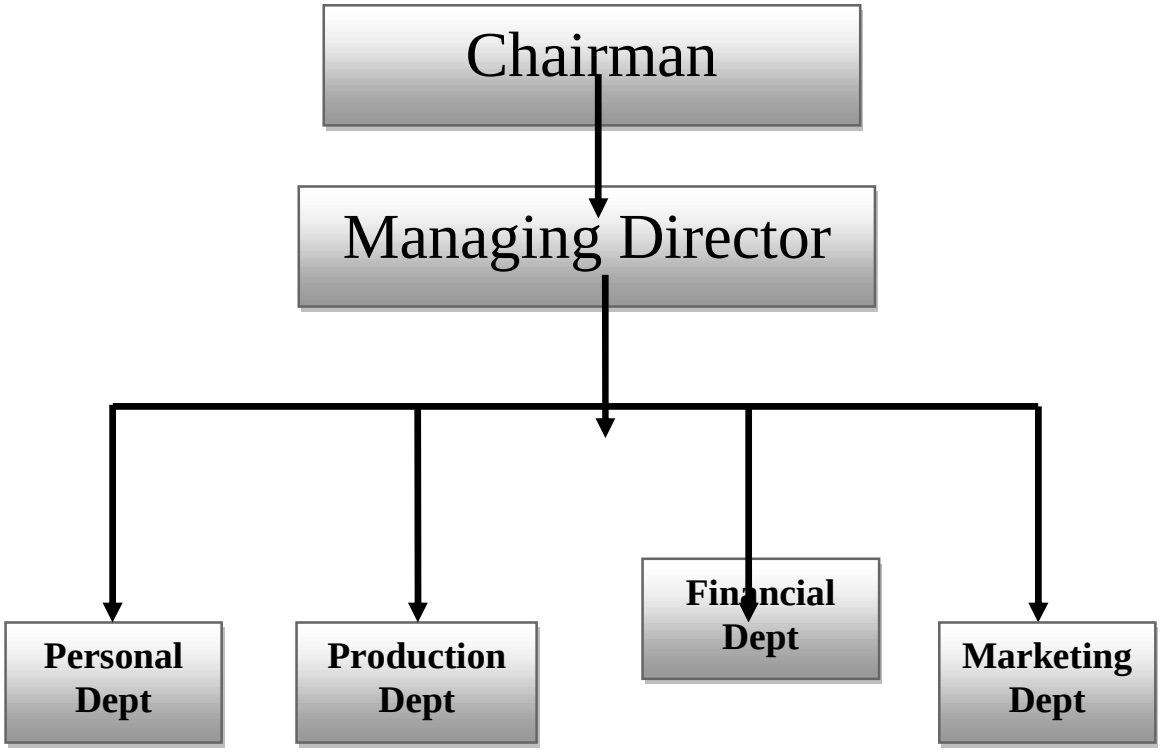
- The study covers the data of six years only i.e. from the FY 2059/060 to the FY 2063/064.
- Primary data based on UNL's staffs only.
- The comprehensibility and accuracy of the study is based on the data available and true response from management of the company.
- Limited tools and techniques were undertaken under the lack of sufficient resources and time, so this study is not comprehensive and extensive.

- This study is based on only UNL as a representative of manufacturing company.

**Organizational Structure**

| Managers and Directors | | |
|---|---|---|
| Board of directors | M. K. Sharma | Chairman |
| | Ravi Bhakta Shrestha | Director |
| | Shambhu Prasad Poudel | Director |
| | Dhaval Buch | Director |
| | Umesh Shah | Director |
| | Sanjay Dube | Director |
| Managing Director | Kamran Bakr | |
| Company Secretary | Ambar B. Thapa | |

# Organizational Chart



# Chapter-2

# Review of Literature

## 2.1. Conceptual Framework

## 2.2. 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 functions. Profit planning and control includes the following matters.

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

(Welsh)

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 & Schmidgall)

“The international management institutions conference on budgetary control hell in Geneva in 1980 has defined profit plan as an enact and rigorous analysis of the past and the probable and desired future experience with a view to substituting considered intention opportunism in management.”

(Int’l Mgnt. 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 John)

“Profit planning in fact is a managerial techniques and a profit plan is such a written plan. In which all aspects of business operation with respect to definite future period are included. It is a formal statement of policy, plan, objective and goal established by the top management in respect of some future period. Profit planning is a predetermined detailed plan of action developed distributed as a guide to current operations and as a basis for a subsequent evaluation of performance”.

(Dr. Gupta; S.P.)

“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, F. Usury)

“A profit planning or budget is the formal expression of the enterprises plan and objectives, stated in financial terms for specified future period of time”.

(I.M. Pandey)

“Profit plan represents an overall plan of operation, covers a definite period of time and formulates the panning design of the management. It can be viewed as on at 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 it important element. It has main objectives of attaining the optimum profit in the enterprises.

### 2.3. 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.

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

10. A continuous use of the exception principle.
11. A behavior management program.

## 2.4. Concept of CVP analysis

Huge amount of money is invested by people in the business to earn profit. So they do hard works to expect 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".

(Colin, Drury)

Cost-volume profit analysis examine the behavior of total revenues, total costs and operating incomes as change occur in the output level, the selling price, the variable cost and fixed costs of a product.

(Horngren, Datar and Foster)

It is a management according 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 or services. Profit planning is associated with costs volume profit inter-relationship. 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 profit are far 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 managers to know the interrelationship between cost, sales and profit in an organization by focusing these elements.

- Volume or Sales 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?

## 2.5. Assumption of CVP analysis

CVP analysis is a vital technique that provides supplementary information for profit planning. Every business starts 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 the cost volume profit analysis encompasses the following assumption.

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 developing countries like Nepal has made it very hard to segregate costs as 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.

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 behavior 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 of 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.

3. No effect of the size of inventory on 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.

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.

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.

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.

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.

### 2.6. Purpose of Cost-volume –profit Analysis

Cost volume profit analysis help management in a number ways. The following purpose are served by it: (Dangol, Ratman & Jeetendra 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 contemplate 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.

**2.7. Use or Application of CVP analysis**

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

1. To determine profit and loss at different level of a activity.
2. To determine the optimum selling price.
3. To determine margin of safety, Break-even Point and sales volume in rupees and units.
4. To determine new BEP in rupees and units after changing variable cost or fixed cost or selling price.
5. To determine the most profitable and rest profitable product or project.
6. To help management to find the most profitable contribution of cost and volume.
7. To determine effect on profit after increasing or decreasing sales price, variable cost and fixed cost.
8. It also assists management in performance evaluation for the purpose of management control.

### 2.8. Assess the impacts of the changes in CVP variables

Sensitivity 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.

### 2.9. 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 over a period of time. Depreciation, rent, salaries, insurance etc are the examples of fixed cost. Total cost remains constant but unit cost decreases with 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 maintence etc.

**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.

**Mixed Cost:**

It is includes fixed and variable cost. The cost which remains constant for a given level of output then increases proportionately 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 or factory burden.

**Administration cost:**

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

**Margin of safety**

(Shiva Prasad Munakarmi, Bijaya Prakash Shrestha, Gautam Maharjan)

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 break-even 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:

1. Margin of safety = Actual sales – BEP sales
2. Margin of safety = Profit/profit volume ratio

3. Margin of safety = Profit /CM
4. Margin of safety ratio = (actual sales – BEP sales)/ Actual sales
5. Percentage of margin of safety on sales = Margin of safety/actual sales* 100

**Contribution Margin:**

It is used to determine and evaluate the effects on profits of changes in sales volume, sakes 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.

**2.10. Special problems in cost volume profit analysis**

Cost volume profit analysis is applied to a individuals products or parts of business and all the product or activities combined. There are three problems in CVP analysis as follows:

(Glenn A Welsh, Ronald W Hilton, Poul N Gordon)

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 dollars 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.

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 and 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.

### 2.11. 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 costs., 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.

(Glenn A Welsh, Ronald w Hilton, Paul N Gordon)

1. Break-even Point

The point where neither there is profit nor 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.

2. Application of BEP analysis

BEP can even be used in a changed 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 as follows:

- Sales volume required to produce desired operating 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 change 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 budget 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:

Cash BEP = Cash fixed cost / Cash Contribution per units

= Fixed Cost/ (SPPU-VCPU)

4. Break-even Capacity

Break-even capacity calculated to show the capacity utilization at the break-even sales on the normal capacity available, which contributes to the

management for taking decision within the range of available capacity (normal capacity).

BE capacity = (FC/e)/ normal capacity in units

Or

= ( FC/ Profit volume ratio)/ Sales revenue at normal

Capacity

Where as:

(CM) = Contribution margin

**2.12. 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.

2.12.1. Contribution margin income statement approach

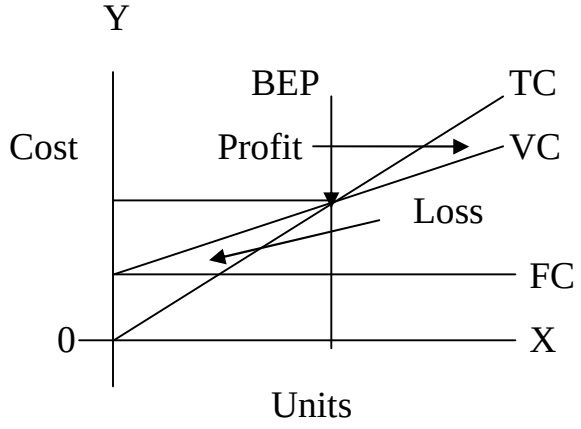
The CM income statement approach of CVP analysis allows the preparation of projected statements from the available information. BEP and other required CVP relationships can be explained through a contribution margin statement. A contribution margin statement is the variable costing income statement whose 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.

2.12.2. 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

Total cost = Total fixed cost + Total variable cost

=TFC + TVC

At volume 'Q'

Total costs = TFC + Q * VCPU

At volume 'Q + n'

Total costs = TFC + (Q + n) * VCPU

ΔTotal cost = Q + n * VCPU

Or

ΔTotal costs = ^Variable costs

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.

### 2.12.3. Formula 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 * VCPU + Fixed cost + Profit (NP)

Solving the equation, we get,

Q = Fixed Cost Profit/ (SPPU – VCPU)

Or

Q = (FC + Profit)/ CMPU

Where, (SPPU – VCPU) = CMPU

Sales Revenue = Q * 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:

Sales revenue (Rs.) = (FC + Profit)/ Contribution Margin ratio

Where, C/M ratio = (sales – variable cost)/ Sales

So, sales revenue (Rs.) = (FC + Profit)/ (S-V)/S

Or

= (FC + Profit) * S/ (S – V)

Therefore revenue (Rs.) = Sales units * selling Price

So, we can recommend that,

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

   Sales in units = (FC + profit)/ CMPU

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

   Sales revenue (Rs.) = (FC + Profit)/ (CM ratio)

3. Sales volume for BEP

   BEP units = FC / CMPU

   BEP Rs. = FC/CM ratio

4. Sales Volume for desired profit

   Required sales (units) = (FC + DP)/CMPU

   Where, DP = Desired profit

   Required Sales revenue (Rs.) = (FC + DP)/ CM ratio

## 2.13. Limitation of BEP

There are main limitations as follows:

1. 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.
2. Fixed cost will not change over the entire capacity range. Sometimes it can be changed when production system or technique is changed.
3. The behavior of costs will be linear and variable costs will change indirect production to change in volume.
4. Variable cost per unit always remains constant. It cannot be entirely true.
5. 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 not true.
6. Constant selling price is not true.
7. Either the firm produced only a single product or product mix ratio remains constant is also obviously quite unrealistic.
8. 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.
9. There is no significant difference between production and sales in the period being analyzed.

## 2.14. Profit volume ratio

Profit volume ratio empresses 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 resold is profit volume ratio. It is presented by

P/V ratio = CM/Sales

Or

P/V ratio = 1 – VCPU/SPPU

Or

P/V ratio = 1 – 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:

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

### 2.14.1. 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:

1. To analyze of break-even point.
2. To calculate of sales amount required to earn a target profit.
3. For ascertaining profit on margin of safety.
4. To determine of selling price.

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

## 2.15. Cost volume profit analysis for multi-product or sales mix

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.

### 2.15.1. Determination of BEP for sales mix/multi product

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

1. BEP sales of even product are computed and total of each product will be the BEP sales of product mix.
2. 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.

1. First calculation of CM per unit or P/V ratio of each product.
2. Calculation of proportion of sales mix units and value as follows:

= Individuals sales unit or value/ Total sales unit or value of all product.

3. Calculation of weighted average of all product sales mix 'X' units contribution margin

   Or,

   = Sales mix * P/V ratio

4. Calculation of BEP

BEP sales mix ( in units) = Total Fixed cost/ Unit weighted average CM

Or,

BEP sales mix (in Rs.) = total fixed cost / Weighted CM ratio

## 2.16. Cost volume profit analysis under condition of uncertainties.

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

1. Selling price per unit
2. Variable cost per unit
3. Total fixed costs
4. 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 certainty 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, P. Ojha, K.P. Goet, J. Sharma. S.)

## 2.17. 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

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

## 2.18. Need of segregation of mixed or semi variable cost for CVP Analysis

For CVP analysis, we 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 segregation 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 method.

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:-

- VCPU = $\frac{\text{(High cost - Low cost)}}{\text{(High unit – Low unit)}}$

  Where, VCPU = Variable cost per unit
- Fixed cost = Total cost – (variable cost per unit * Activity level)
- 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 sub equation shall be

$\sum y = na + b \sum x$

$\sum xy = a \sum x + b \sum x^2$

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.

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

$$\sum y - b\sum y$$

$$a = \frac{\sum}{N}$$

Where,

a = fixed cost

b = variable cost

N = number of observation

x = production units

$\sum$ = 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 expenditures method

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

## 2.19. 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 costs 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:

$$\text{Degree of operating leverage} = \frac{\text{Contribution Margin}}{\text{Net income}}$$

## 2.20. Multi – product CVP analysis with Leaner 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 optimal manner. It is a technique to optimize the allocation scare resources in product mix problems. The tool is used for solving constrained optimization problems. It scare resources may be in terms of labor hours, machine hours, raw materials, finance etc. As such technique is used in selecting optimal plans. It provides a valuable extension to CVP analysis.

( Munskarmi, S.P)

## 2.21. 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 is more safety and lower safety margin shows that the business is 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 competitive market.

4. Profit pick up incremental sales

   In a break even level, the firm is in 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 CMPU.

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 behavior and to determine the probable effects of various alternatives which may be considered.

## 2.22. CVP analysis in the computer age

CVP analysis is based on mathematical model. The CVP model is widely used as planning 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 changes in selling price, unit variable costs, fixed costs and desired profits. Many non- profit organization also used computerized CVP modeling, the compute 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 constrict 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 restricted to a relevant range.

Use of computer modeling is a cost benefit issue. Sometimes the costs of modeling are exceeded by the value of better decision made using the models. However, the reliability of these models depends on the accuracy of their underlying assumptions about how revenues and costs will actually be affected.

Moreover, in small organization, simplified CVP models often are accurate enough that more sophisticated modeling is unwarranted.

## 2.23. REVIEW OF RELATED STUDIES

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 done only under the heading of profit planning and control o 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.

**Mr. Chaurbhuj Aryal (2006)**

Mr. Aryal had conducted a research entitled "CVP analysis as a tool to measures effectiveness of PPC (A case study of Herbs production and processing co.l.td.) His had conducted the search to acquire the following objectives.

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

He used primary and secondary sources to data collected and used seven years data from the FY 2054/55 to the FY 2060/61 for analysis.

His research major findings are as follows:

- Budgets were prepared on traditional method.
- HPPCI has high burden of management and administration expenses and interest on loan which is directly influencing the profitability.
- HPPCI 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 as 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 is 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.

**Mr. Tenzin Namdak (2005)**

Mr. Namdk has submitted the thesis on the topic "CVP analysis of Dairy Development Corporation". Theses are to determine the relationship between cost volume and profit and profitability of the DDC. His sub-objective to achieve the main objective is as follows:

- To study the relationship between cost volume and profit as a tool of budgeting.
- To evaluate the profitability and sensitivity of DDC in relation to sales.
- To analyze the productivity of the labor by using different productivity ratios.

- To analyze the CVP of the corporation and its impact on its profit planning.
- To provide necessary suggestions and recommendations .whatever necessary, base on findings.

His research covers the time period of five year from 2055/56 to 2059/60.Research methodology was through primary as secondary sources.

His major findings are as follows:

- DDC has been planning only on short –term basic.
- The practice of CVP analysis has not been used yet.
- There is no practice of segregating cost into fixed and variables.
- Over utilization of capacity resulting in increasing operation and maintenance cost every year.
- DDC has low contribution margin with high variable cost.
- DDC has also high fixed cost with low contribution margin, resulting in high BEP sales.
- The profitability of the DDC is also very poor.
- All the levels of management are not involved in profit planning and decision making of the corporation.

**Mr. Sagar Sharma (2002)**

He has conducted research on the topic "Management accountancy practices in the listed companies of Nepal".

His research main objective was to examine and study the practice of management according tools in the listed companies in Nepal. The specific objectives were:

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

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

Mr. Sharma's research is based on primary data only. Satisfied random sampling with proportionate allocation is followed to draw the sample. Mr. Sharma has pointed out various findings and recommended in his research. Some remarkable findings were as follows:

- 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.

**Mr. Bhesh Raj Bhushal (2006)**

Mr. Bhushal 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. The other specific objectives of this stud y are:

- To study 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 research was based on the secondary data.

The major findings in his research are as follows:

- 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.

**Mr. Madhav Rijal (2005)**

Mr. Rijal 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. To achieve main objectives he set following sub-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.

The major findings observed in his study are as follows:

- 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 of 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.

**Mr. Bijaya Raj Adhikari (2007)**

He 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. The other specific objectives of this study are:

- 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 determents, 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 finding.

Based on different analysis, observation and informal discussion, the followings are major findings at the study.

- 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.

**Mr. Deleshwar Paudel (2008**)

He 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 his study is to examine the use of CVP analysis on the Salt Trading Corporation Limited. The other specific objectives of this study are:

- 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.

Based on different analysis, observation and informal discussion, the followings major findings are:

- Total 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.

## 2.24. 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 researchers 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 be 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.

# Chapter-3

# 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 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.

## 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.

### 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.

### 3.5. 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 and primary data are collected from direct interviews with the related personnel on their own words for any research work, information is considered as the lifeblood. Thus, it is the major 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 central library of T.U., library of Shankar Dev Campus and Websites on related topic.

### 3.8. Period Covered

The presented study covers the time period of five years from 2059/060 to 2063/2064.

# Chapter – 4

# Data Presentation and Analysis

## 4.1. Introduction

Profit planning is the formal expression of the enterprise plan, goals, objectives stated in financial term for specific future period of time. It is one of the most important management tools that can be used to utilize the cost in effective and efficient way. CVP analysis has become a powerful instrument in managerial decision making. The CVP analysis is a specific way of presenting and studying the interrelationship between cost, volume and profit.

The main purpose of the research is to examine CVP analysis as a tool to profit planning , evaluate the present practice of CVP analysis and find the area where CVP analysis could be useful to strengthen manufacturing companies.

To meet the objectives of this study the secondary data is used for sales analysis, cost analysis, profitability analysis, sensitivity analysis, BEP analysis, margin of safety analysis, income statement etc. The secondary data were collected from the company's annual reports. Similarly the primary data were used for segregation of costs into variable cost and fixed cost.

The research has tried to cover the activities of the Unilever Nepal Limited for Last five year data from the fiscal year 2059/2060 to the fiscal year 2063/2064.

## 4.2. Sales Analysis

UNL is the 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 No. 4.2.1

UNL

Actual Sales by Territories

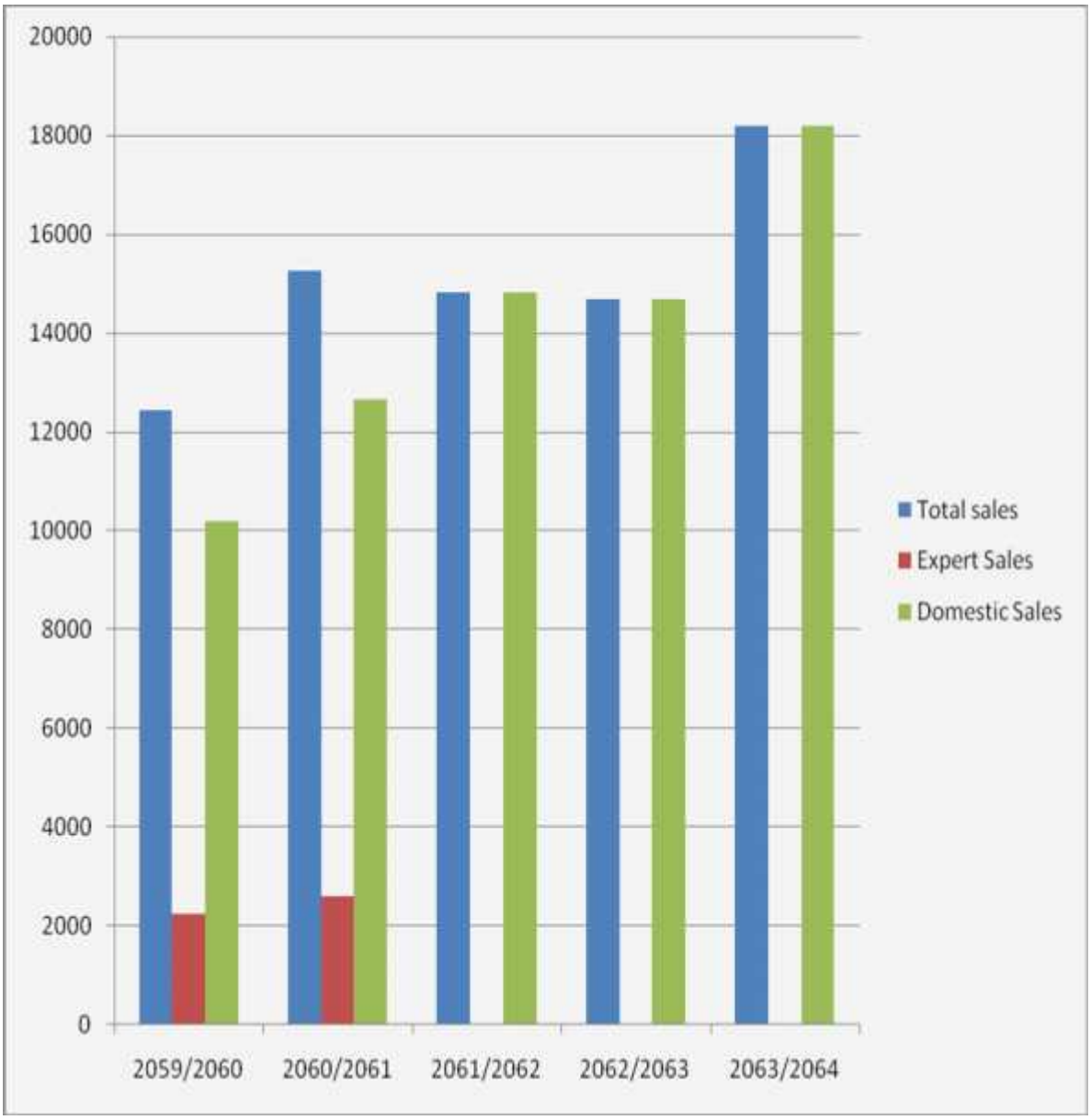
NRs. In Lakhs

| Year | Total Sales | Changes | Export Sales | Changes | Domestic Sales | Changes |
|---|---|---|---|---|---|---|
| 059/060 | 12447 | ---------- | 2247 | ---------- | 10200 | ---------- |
| 060/061 | 15249 | 22.51% | 2596 | 15.53% | 12653 | 24.05% |
| 061/062 | 14815 | -2.85% | ------- | --------- | 14815 | 17.09% |
| 062/063 | 14697 | -0.08% | -------- | --------- | 14697 | -0.08% |
| 063/064 | 18185 | 23.73% | --------- | ---------- | 18185 | 23.73% |

The table no. 4.2.1 shows that total sales of the company from the F/Y 2059/60 to 2063/2064 were not stable. The sales of the company decreased by 6.16% in the F/Y 2061/062. The incremental percentage of total sales showed satisfactory in the fiscal year 2060/061 and 2063/064 by 22.51% and 23.73% respectively. The export sales increased by 15.53% in the F/Y 2060/061. After the F/Y 2060/061 the export sales were made nil. However, domestic sales increased throughout the observation period. The domestic sales increased by 24.05%, 17.09% and 23.73% in the fiscal year 060/061, 061/062,063/064 respectively. It decreased by -0.08% in the fiscal year 2062/064. The sales of the company can be presented in the following graph.

**Presentation of Total Sales, Expert Sales and Domestic Sales**

Figure no. 4.2.1.




The amount of domestic sales and export sales and total sales can be clearly presented with the help of multiple bar diagram. In a multiple bar diagram two or more set of interrelated data are presented. The diagram shows that the valuables of domestic sales were more than export sales. Export sales declined due to the fiscal policy change introduced in the Indian budget and with the emergence of many new tax-exempt zones in India. Further withdrawal of the rebate on income tax on profit of exports and the impositions of the new special tax on exports in Nepal have made the export business unviable.

### 4.3. Product wise sales

UNL produces the following six different products.

1- Detergent/Sources/Laundry
2- Toilet Soaps
3- Personal products
4- Soap Noodles
5- Tea
6- Banaspati.

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

Table No. 4.3.1

UNL
Product wise Sales

Rs. In Lakhs

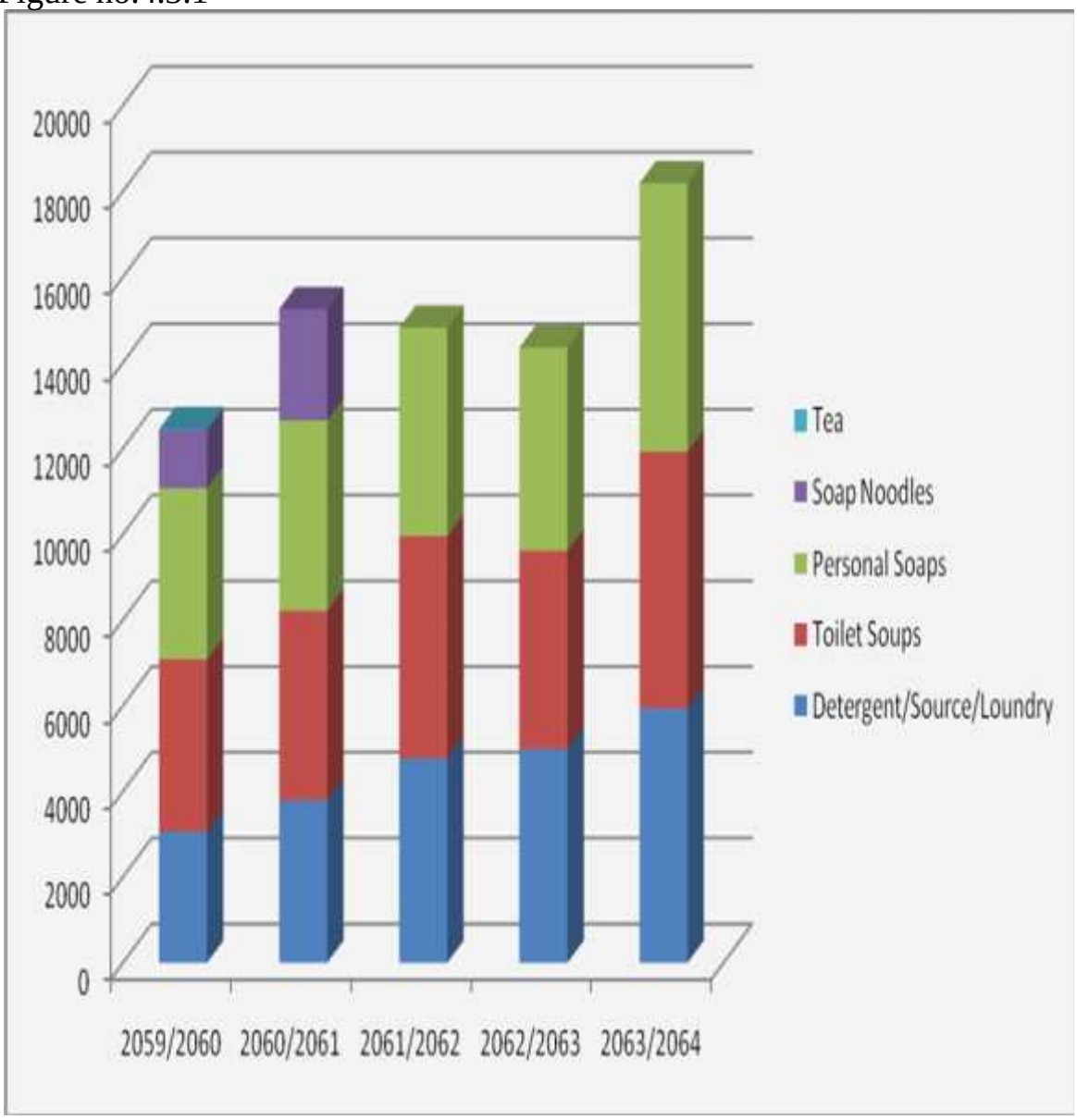
| Years / Products | | 059/060 | 060/061 | 061/062 | 062/063 | 063/064 |
|---|---|---|---|---|---|---|
| Detergents/Source/ Laundry | Rs. | 3058 | 3794 | 4764 | 4985 | 5934 |
| | Change | ------ | 24.07% | 25.57% | 4.64% | 19.04% |
| Toilets Soups | Rs. | 4020 | 4417 | 5187 | 4624 | 5989 |
| | Change | ------ | 9.87% | 17.43% | -10.9% | 29.52% |
| Personal Soaps | Rs. | 3994 | 4442 | 4864 | 4741 | 6262 |
| | Change | ------ | 11.22% | 9.50% | 2.53% | 32.08% |
| Soap Noodles | Rs. | 1359 | 2596 | ------- | -------- | ------- |
| | Change | ------ | 91.02% | -100% | -------- | ------- |
| Tea | Rs. | 16 | ------- | ------- | -------- | ------- |
| | Change | ------ | -100% | ------- | --------- | -------- |

The table no.4.3.2 shows that the total sales of product Detergents/Sources/Laundry increased. The total sales of Tea were available till the F/Y 2059/060 then after that year it was closed. Whereas total sales of other

remaining products like Toilet Soaps, Personal Soaps Noodles were fluctuated. The sale of Detergents/Sources/Laundry increased by 24.07%, 25.57%, 4.64% and 19.04% in Rs. respectively in the F/Y 2059/060 to 2063/064. The Toilet Soap increased by 9.87%, 17.43%, 29.52% in the F/Y 2060/061, 061/062 and 063/064 respectively whereas the Toilet Soap decreased by 10.90% in the F/Y 2062/063. Personal soaps increased by 11.22%, 9.50%, 2.53%, 32.08% in the F/Y 2060/061, 2061/062, 2062/063 and 063/064 respectively. Soap Noodles products sales increased in huge quantity by 91.02% in the F/Y 2060/061 but after that its production was not continued. The total sale of Tea was always in negative trend and it was discontinued after the F/Y 2060/061. And Banaspati products sales were also closed after the F/Y2057/058. The sales trend of each product of the company can be seen from the following graphic presentation.

**Contribution of each product on total sales**

Figure no.4.3.1




The sales of different products can be clearly presented with the help of sub-divided bar diagram. Sub-divide bar diagram are useful for presenting several variable graphically. It also helps to study the relationship between each component. The above figure showed that Detergents/Source/Laundry and Personal soaps made significant contribution in total sales also found countable. But the Tea dropped from production the F/y 2060/061. Similarly a Soap Noodle dropped from production the F/Y 2061/062.

## 4.4. Variable cost Analysis

Variable costs are those costs which vary in direct proportion to change in output or activities level but per unit remains constant within one fiscal year. Variable cost per unit may vary for different fiscal year on account of internal and external environment of the company.

Table No. 4.4.1

Variable Cost Details

For the F/Y 2059/060 to 2063/064

Rs. In Lakhs

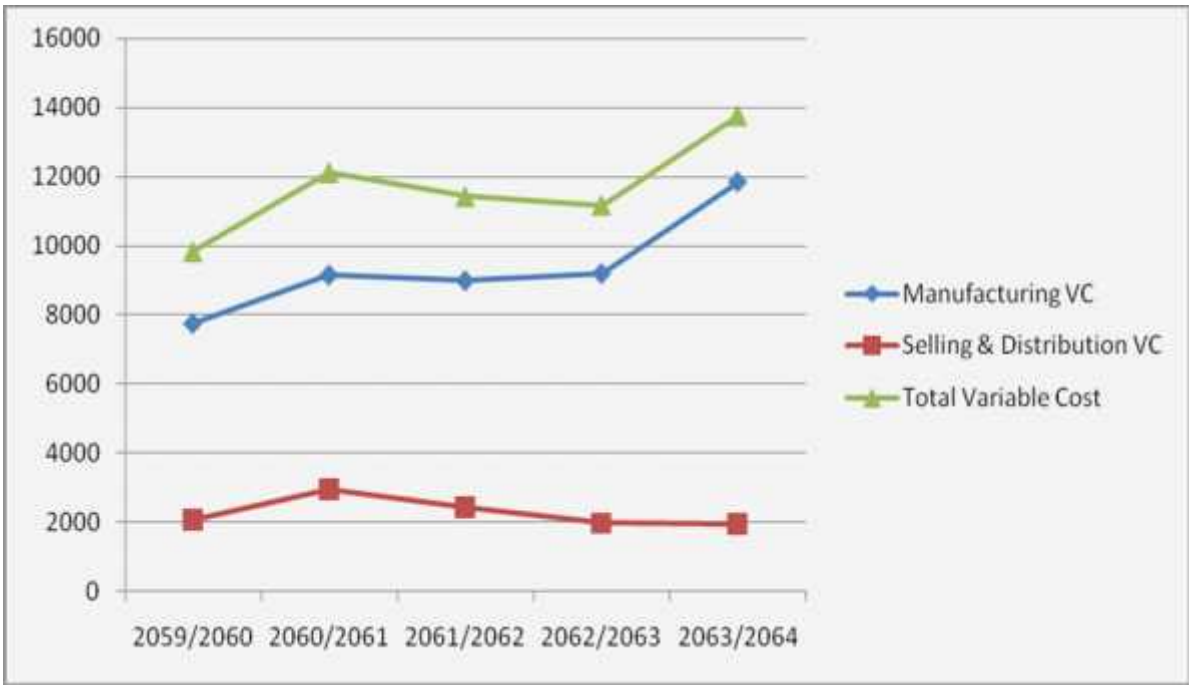
| Cost Details | Years | | | | |
|---|---|---|---|---|---|
| | 059/060 | 060/061 | 061/062 | 062/063 | 063/064 |
| Cost of Materials | 7166 | 8498 | 8241 | 8461 | 10937 |
| Processing charge | 328 | 339 | 360 | 400 | 634 |
| Repair & Maintenance | 155 | 209 | 237 | 187 | 118 |
| Purchase service | | | 43 | 26 | 35 |
| Insurance Charges | 16 | 15 | 16 | 34 | 33 |
| Quality control charge | 3.3 | 6.7 | 4.5 | 6.9 | 1.6 |
| Royalty | 77.5 | 82.5 | 85 | 7.6 | 86 |
| Total Mfg | 7745.80 | 9150.20 | 8986.50 | 9190.90 | 11844.60 |
| Distribution | 441 | 463 | 402 | 274 | 375 |

| | | | | | |
|---|---|---|---|---|---|
| cost | | | | | |
| Promotional Cost | 1643.20 | 2500.80 | 2033.20 | 1705 | 1574 |
| Total Selling | 2084.20 | 2963.80 | 2435.20 | 1979 | 1949 |
| Total VC | 9830 | 12114 | 11421.70 | 11169.90 | 13758.60 |
| Changes | | 23.23% | -5.71% | -2.20% | 23.49% |

The table no.4.4.1 shows that variable costs were in fluctuation. In the F/y 2060/061 variable cost increased by 23.23% it was the huge percentage increase but it decreased by -5.71% in the F/Y 2061/062 and -2.20% by 062/063 Variable costs significantly increased by 23.49% in the F/Y 2063/064. 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 seen from the following graph representation.

**Presentation of Manufacturing, Selling &Distribution and Total VC**

Figure no.4.4.1




The amount of variable cost can be clearly presented with the help of the chart. The figure no.4.4.1 shows that the variable cost moved up ward and down ward during the study period.

## 4.5. Fixed cost analysis

Fixed cost remains constant in total amount despite the change in level of activity within fiscal year. That is fixed cost remains unchanged in total as the output level varies within a year but fixed cost per unit decreases as the level of activity increases and vice versa. Fixed cost in total varies for the different fiscal year because of internal and external environment factors of the company. According to the company annual report, the different types of fixed costs are presented.

**Table No. 4.5.1.**
Fixed cost Details
For the fiscal year 059/060 to 063/064

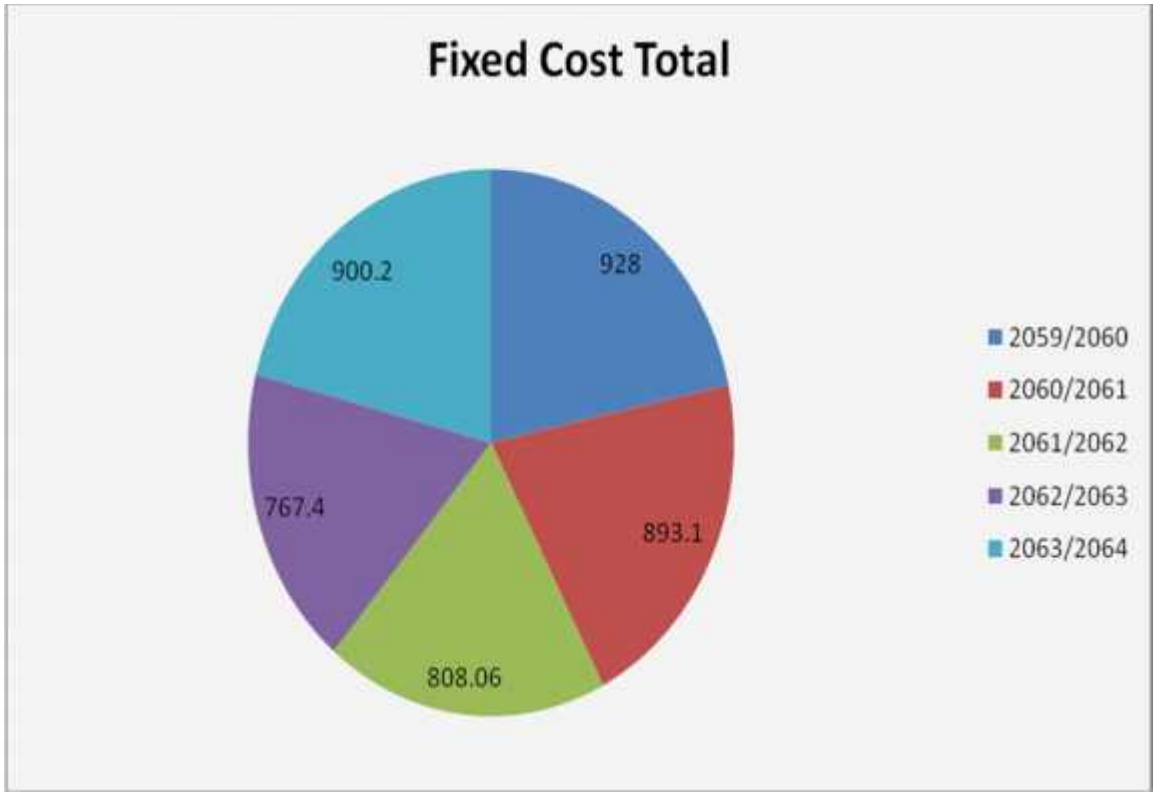
Rs. In Lakhs

| Details | Years | | | | |
|---|---|---|---|---|---|
| | 059/060 | 060/061 | 061/062 | 062/063 | 063/064 |
| Manufacturing | | | | | |
| Salaries & wages | 239.60 | 228.50 | 226.7.0 | 192.70 | 239.60 |
| P/F contribution | 11.70 | 11.80 | 11.80 | 13.10 | 16.80 |
| Transportation of Employes | 33.50 | 24.30 | 21.80 | 24.20 | 26.20 |
| Welfare & canteen | 23.00 | 25.90 | 28.30 | 22.20 | 32.80 |
| Go down rent | 6.00 | 1.30 | 0.50 | 9.60 | 7.00 |
| Depreciation | 202.60 | 168.70 | 152.00 | 179.00 | 184.10 |
| Total | 516.40 | 460.50 | 441.00 | 440.60 | 506.5 |
| Administration | | | | | |
| Salaries | 136.20 | 1154.70 | 165.00 | 162.00 | 207.00 |
| Contribution P/F & pension | 20.60 | 14.30 | 18.70 | 15.20 | 19.20 |
| Rent | 29.40 | 24.00 | 21.90 | 20.40 | 22.20 |
| Travelling | 63.30 | 59.50 | 67.50 | 71.60 | 93.40 |
| Audit fees | 5.70 | 7.00 | 6.00 | 7.00 | 8.50 |
| Taxes & fees | -------- | 0.30 | 0.06 | 0.70 | 0.40 |
| Bank Charges | 36.80 | 48.00 | 18.30 | 1.90 | 1.30 |
| Miscellaneous | 81.80 | 85.90 | 47.40 | 31.00 | 30.70 |
| Depreciation | 37.80 | 28.90 | 22.20 | 17.00 | 11.00 |
| Total | 411.60 | 432.60 | 367.06 | 326.80 | 393.70 |
| Grand Total | 928.00 | 893.10 | 808.06 | 767.40 | 900.20 |
| Change | --------- | -3.76% | -9.51% | -5.03% | 17.31% |

The table no.4.5.1 shows that fixed cost decreased except in the F/Y 063/064. It decreased by -3.76%, -9.51% and -5.03% in the fiscal year 060/061, 061/062

and 062/063 respectively. In the F/Y 2063/064 it increased by 17.31%. Nearly 50% of fixed costs comprised of salaries and wages. Total fixed costs are divided into two portions i.e., manufacturing and administration fixed costs. The position of the fixed cost of the company can be clearly seen from the following pie chart.

Figure no.4.5.1




The amount of fixed cost can be clearly presented with the help of Pie chart. In the above chart, fixed cost of each year is shown separately. The figure no.4.5.1 shows that there is no significant difference in fixed cost in the five fiscal year.

## 4.6. Semi-variable cost analysis

It is the expense that cannot be categorized as purely fixed or variable such cost is termed as semi-variable or mixed costs. Semi-variable costs contain both variable and fixed cost. Classification of cost into variable and fixed is very important to plan and control costs. Power light, fuel and water are semi-variable cost. The semi-variable cost is presented in the following table.

Table No. 4.6.1.

Semi-variable cost Details

For the F/Y 2059/060 to 2063/064

Rs. In Lakhs

| Details | Years | | | | |
|---|---|---|---|---|---|
| | 059/060 | 060/061 | 061/062 | 062/063 | 063/064 |
| Manufacturing Electricity, Fuel, Power & water | 201.20 | 190.60 | 177.20 | 195.61 | 228.61 |
| Administration Electricity, Fuel, Power & water | 5.70 | 3.20 | 2.60 | 1.32 | 1.82 |
| Total | 206.9 | 193.80 | 179.80 | 196.93 | 230.43 |
| Change | | -6.33% | -7.22% | 9.53% | 17.01% |

The table no.4.6.1 shows that semi-variable costs were in fluctuation. It decreased by -6.33% and -7.22% in the fiscal year 060/061 and 061/062 respectively. But it increased by 9.53% and 17.01% in the F/Y 2062/063 and 063/064 respectively. Semi-variable cost can be divided into manufacturing and administrative. Most of the semi-variable cost represents manufacturing expenses and the ratio of administrative expenses is too low. Segregation of semi-variable cost into fixed and variable is essential for managerial decision. Different technique 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 fixed by using least square method. L east square spread sheet isd presented in the following table.

**Least square table**

| F/Y | Sales (X) | Costs (Y) | XY | $X^2$ |
|---|---|---|---|---|
| 059/060 | 12447 | 207 | 2576529 | 154927809 |
| 060/061 | 15249 | 194 | 2958306 | 232532001 |
| 061/062 | 14815 | 180 | 2666700 | 219484225 |
| 062/063 | 14697 | 197 | 2895309 | 216001809 |
| 063/064 | 18185 | 230 | 4182550 | 330694225 |
| N = 5 | ∑X=75393 | ∑Y=1008 | ∑XY=15279394 | $\sum X^2$=1153640069 |

Variable cost per Rupees of sales (b)

$$= \frac{N \quad XY \quad Z \quad X \ . \quad Y}{N \quad X \ \wedge 2 \ Z \ ( \quad X \ ) 2}$$

$$= \frac{5 \ | \ 15279384 \quad Z \ 75393 \quad | \ 1008}{5 \ | \ 1153640069 \quad Z \ (75393 \ )\wedge 2}$$

$$= \frac{400776}{84095896}$$

= 0.00477

$$\text{Fixed Cost} = \frac{Y \ Z \ b \quad X}{N}$$

$$= \frac{1008 \quad Z \ 0 \ .00477 \quad | \ 75393}{5}$$

$$= \frac{648 \ .38}{5}$$

= 129.68≈130

**Fixed cost and Variable costs table after segregation**

Rs. In Lakhs

| F/Y | 059/060 | 060/061 | 061/062 | 062/063 | 063/064 |
|---|---|---|---|---|---|
| FC | 130 | 130 | 130 | 130 | 130 |
| VC | 77 | 64 | 50 | 67 | 100 |

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

## 4.7. Income statement analysis

Income is computed by deducting all expenditure from turnover. It is surplus of sales over-expenditure. Income measures the real performance of the company. High income indicates good performance whereas low income indicates threat to the company. Value of income is received by deducting fixed and variable cost from sales. When variable cost is deducted by sales the result is called contribution margin and net profit can be ascertained deducting fixed cost from contribution margin. Much information can be presented with the help of income statement.

Table No. 4.7.1

Income Statement

For the F/Y 2059/060 to 2063/064

Rs. In Lakhs

| F/Y | 2059/060 | 2060/061 | 2061/062 | 2062/063 | 2063/064 |
|---|---|---|---|---|---|
| Sales | 12447 | 15249 | 14815 | 14697 | 18185 |
| VC | 9907 | 12178 | 11472 | 11237 | 13859 |
| CM (1-2) | 2540 | 3071 | 3343 | 3460 | 4326 |
| FC | 1058 | 1023.10 | 938.06 | 897.40 | 1030.20 |
| NI (3-4) | 1482 | 2047.90 | 2404.94 | 2562.60 | 3295.80 |
| Net Profit (5-1) | 11.91% | 13.43% | 16.53% | 23.54% | 23.79% |

| | | | | | |
|---|---|---|---|---|---|
| V/V ratio (2/1) | 79.19% | 79.53% | 76.81% | 76.46% | 76.41% |
| % of FC on sales (4/1) | 8.9% | 7.04% | 6.66% | 6.11% | 5.67% |
| % of VC on TC (2/2+4) | 89.90% | 97.87% | 92.01% | 92.60% | 93.10% |
| % of FC on TC (4/2+4) | 10.10% | 8.13% | 7.99% | 7.42% | 6.92% |
| Operating Leverage | 1.75 | 1.52 | 1.40 | 1.35 | 1.31 |

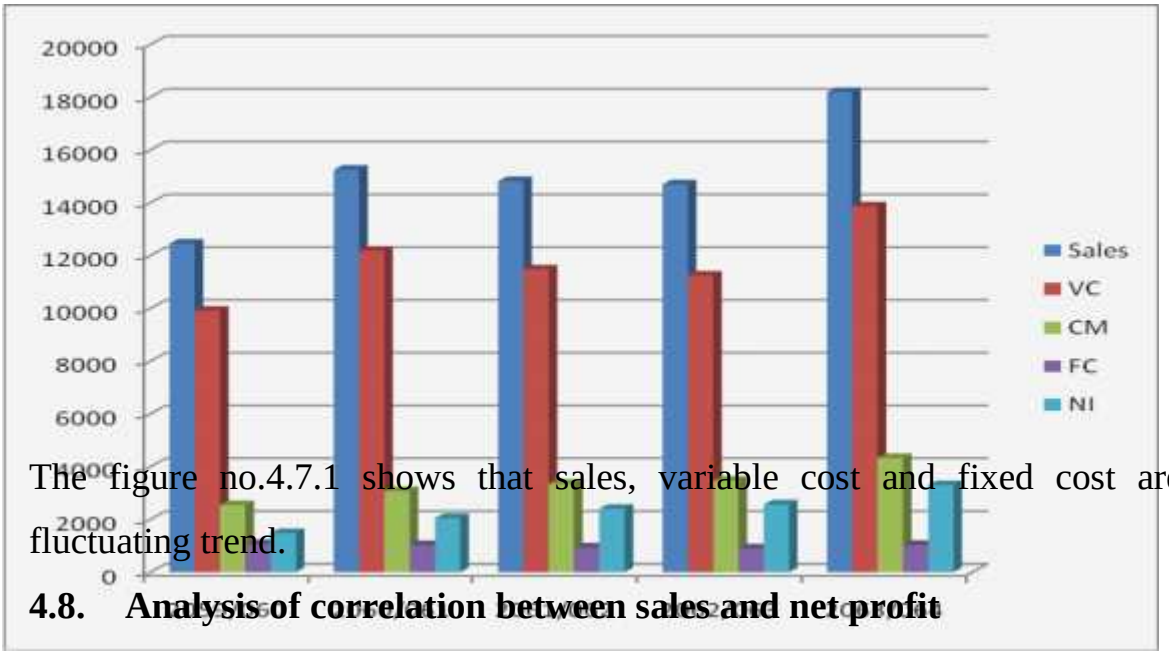
Here net income represents operating income only. The non-operating income and non operating expenses are ignored in this analysis. Net profit margins of the company were 11.91%, 13.43%, 16.53, 23.54% and 23.79% in F/Y the 2059/60, 060/61, 061/062, 062/063 and 063/064 respectively. It indicates that the net profit of the company were in upward trend which showed good performance in the past and can be taken as green signal for future growth and prosperity. The variable costs were 79.19%, 79.93% 76.81%, 76.46% and 76.41% in the F/Y 2059/60, 060/61, 061/062, 062/063 and 063/064 respectively. Nearly 80% of total sales was cover by variables cost but the coverage of fixed cost on sales was below 10%. 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 variable cost increases with level of output but the fixed cost remains constant that is why fixed cost is defined as leverage cost. Therefore the company must maintain higher proportion of fixed cost on its cost structure to increase more profit with increase in sales. The operating leverages of the company were 1.75, 1.52, 1.40, 1.35, and 1.31 in the F/4 2059/60, 060/061, 061/062, 062/063 and 063/064 respectively. From the point of view of profitability, the degree of

operating leverage indicates lower amount of operation risk. The company has low amount of fixed cost so it has lower value of operating leverage.

Similarly the company has lower amount of operating risk. Sales, variable cost, fixed cost and operating profit of the company can be clearly seen in the following graphic presentation.

**Sales, variable cost, fixed and profit**

Figure no.4.7.1




The figure no.4.7.1 shows that sales, variable cost and fixed cost are in fluctuating trend.

## 4.8. 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 relate or link with the change in other variable. Correlation is an analysis of the covariance between two or more variables. It 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. Here, Karl Pearson's Coefficient of correlation, a most popular method is used to determine the coefficient of correlation between sales and net profit.

Table No. 4.8.1

Calculation of correlation Coefficient

| F/Y | Sales(X) | Profit(Y) | XY | $X^2$ | $Y^2$ |
|---|---|---|---|---|---|
| 059/060 | 12447 | 1482 | 18446454 | 154927809 | 2196324 |
| 060/061 | 15249 | 2048 | 31229952 | 232532001 | 4194304 |
| 061/062 | 14815 | 2448 | 36267120 | 219484225 | 5992704 |
| 062/063 | 14697 | 2563 | 37668411 | 216001809 | 6568969 |
| 063/064 | 18185 | 3299 | 59992315 | 330694225 | 10883401 |
| N = 5 | ∑X=75393 | ∑Y=11840 | ∑XY=183604252 | $\sum X^2$=1153640069 | $\sum Y^2$ =298357092 |

Coefficient of Correlation= (r)

$$= \frac{N \quad XY\ Z \quad X.\quad Y}{\sqrt{N \quad X\ ^\wedge 2\ Z(\quad X)2 * \sqrt{N \quad Y\ ^\wedge 2\ Z(\quad Y)^\wedge 2}}}$$

$$= \frac{5 \mid 183604252 Z 75393 \mid 11840}{\sqrt{5 \mid 11583640069 Z(75393)^\wedge 2} \mid \sqrt{5 \mid 29835702 Z(11840)^\wedge 2}}$$

$$= \frac{25368140}{\sqrt{84095896} \mid \sqrt{8992910}}$$

$$= \frac{25368140}{27500301.53}$$

= 0.922

The value of correlation coefficient is 0.922. This indicates that there is high degree of positive correlation between sales and net profit. The value of correlation coefficient suggests that if sales increases net profit also increases.

Coefficient of Determinant = $r^2$

= 0.922×0.922

= 0.8501

Therefore, the coefficient of determent between sales and profit is 85.01%.

## 4.9. 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, there 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 or profit volume (P/V) ratio. Total contribution margin and contribution margin ratio are presented in the following table.

Table No.4.9.1

UNL

Contribution Margin Details

| F/Y | CM | CM or P/V ratio |
|---|---|---|
| 059/060 | 2590 | 20.81% |
| 060/061 | 3121 | 20.47% |
| 061/062 | 3436.31 | 23.19% |
| 062/063 | 3460 | 23.54% |
| 063/064 | 4326 | 23.79% |

Both contribution margin and P/V ratio were in increasing trend. The P/V ratio of the company were 20.81%, 20.47%, 23.19%, 23.54% and 23.79% in the F/Y 2059/060, 060/061, 061/062, 062/063 and 063/064 respectively. The P/V ratio is very low due to the huge amount of variable cost.

## 4.10. Break-even Analysis

Break analysis is most widely form of CVP analysis. BEP is that point at which neither profit nor is loss made. It is concerned with the study of revenues and costs in relation to sales volume to ascertain the volume of sales at which the firm's revenues and total costs will exactly be equal. BEP is that point at which

loss ceases and profit begins. The BEP of the firm both in units and Rs. are presented in the following table.

Table No. 4.10.1

Break Even Point

Details

| F/Y | BEP (Rs.) | BEP (Tone) | BEP ratio |
|---|---|---|---|
| 059/060 | 5324 | 7926 | 42.77 |
| 060/061 | 5242 | 7782 | 34.38 |
| 061/062 | 4259 | 6073 | 28.75 |
| 062/063 | 3868 | 5413 | 26.96 |
| 063/064 | 4456 | 6877 | 24.56 |

Where,

BEP (Rs.) = Fixed cost/Weighted Average (Rs.)

BEP (Units) = Fixed cost/ Weighted Average Units

Weighted Average (Rs.) = ∑P/V ratio of each product * sales mix

Weighted Average (Units) = ∑CMPU of each product * Sales mix

BEP ratio = BEP sales (Rs.)/ Actual sales (Rs.)

The table no.4.10.1 shows that the BEP in Rs, ton and ratio are in decreasing trend. The main reason of decreasing BEP is the decreasing trend of fixed cost. The increasing contribution margin is also the root cause of reduction in BEP. Break even point (Rs.) of the company were 5324, 5242, 4259, 3868, 4456 in the fiscal year 2059/060, 060/061, 061/062, 062/063 and 063/064 respectively. Similarly, break- even point in ton of the company were 7926, 7782, 6073, 5413 and 6877 in the fiscal year 2059/060, 060/061, 061/062, 062/063 and 063/064 respectively. This indicates that the company has to make sales above BEP (Rs.) and (ton) to cover the total cost of the company. The BEP ratios were 42.77, 34.38, 28.75, 26.95 and 24.56 in the F/Y 2059/060, 060/061, 061/062, 062/063 and 063/064 respectively. It provides information about how many percentages

of total sales are utilized to meet the total cost. The company meets its total cost through the lower volume of sales to generate more profit.

### 4.11. 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 of safety is the amount that sales can drop before reaching the breakeven point and thus provides a certain amount of cushion. The formula for its calculation is

Margin of safety = Total sales – Break Even sales.

The large margin of safety indicates better profitability. A low margin of safety is the result of high operating cost. The margin of safety can be expressed as a percentage which is computed by dividing margin of safety by actual sales. Margin of safety and safety margin ratio of the company are presented in the following table.

Table No.4.11.1

UNL

Margin of safety Details

Rs. In Lakhs

| F/Y | 059/060 | 060/061 | 061/062 | 062/063 | 063/064 |
|---|---|---|---|---|---|
| MOS (Rs.) | 7123 | 10007 | 10556 | 10829 | 13729 |
| MOS ratio | 57.23 | 65.62 | 71.25 | 73.37 | 75.50 |

The above table shows that the margin of safety of the company is in increasing trend. The MOS (Rs.) were 7123, 10007, 10556, 10829 and 13729 and the MOS ratio were 57.23, 65.62, 71.25, 73.37 and 75.50 in the fiscal year 2059/060, 060/061, 061/062, 062/063 and 063/064 respectively. Here the higher percentage of MOS ratio indicates that the company is in strong profitability position.

## 4.12. Sales mix and Break even analysis

UNL sells different products. All products are not equally profitable in multi-products business therefore changes in the sales mix can cause interesting variation in company's profits. A shift in sales mix from low-margin items can cause total profit to increases even though the total sales may decrease and vice-versa. Break-even analysis is somewhat more complex if a company sells more than one product. If the sales mix changes the break-even point will also change. Here, UNL has five different products. So the company is defined as multi-product organization. Though it is very difficult to calculate product wise BEP for the company due to different sales price and cost price of the product the following procedure is used to calculate wise BEP.

BEP (Rs.) = Fixed cost/Weighted Average (Rs.)

BEP (Units) = Fixed cost/ Weighted Average Units

Weighted Average (Rs.) = P∑/V ratio of each product * sales mix

Weighted Average (Units) = ∑CMPU of each product * Sales mix

BEP ratio = BEP sales (Rs.)/ Actual sales (Rs.)

The product wise BEP in Rs. And units of the company are presented in the following table.

Table No.4.12.1

UNL

Product wise BEP (Rs.)

| Product | 2059/060 | 2060/061 | 2061/062 | 2062/063 | 2063/064 |
|---|---|---|---|---|---|
| | BEP (RS.) | BEP (RS.) | BEP (RS.) | BEP (RS.) | BEP (RS.) |
| Detergents/Source/ Laundry | 1308 | 1304 | 1370 | 1344 | 1454 |
| Toilets Soups | 1720 | 1519 | 1491 | 1246 | 1467 |
| Personal Soaps | 1708 | 1527 | 1398 | 1278 | 1535 |
| Soap Noodles | 581 | 892 | | | |

| | | | | | |
|---|---|---|---|---|---|
| Tea | 7 | | | | |

Table No.4.12.2

UNL
Product wise BEP (Units)

| Product | 2059/060 | 2060/061 | 2061/062 | 2062/063 | 2063/064 |
|---|---|---|---|---|---|
| | BEP (Units) | BEP (Units) | BEP (Units) | BEP (Units) | BEP (Units) |
| Detergents/Source/ Laundry | 4740 | 4337 | 4357 | 4005 | 4920 |
| Toilets Soups | 1549 | 1356 | 1339 | 1044 | 1417 |
| Personal Soaps | 426 | 411 | 377 | 364 | 530 |
| Soap Noodles | 1192 | 1678 | | | |
| Tea | 19 | | | | |

The above table shows that BEP of the company for each product decreased within the period of five years. Product tea has made lowest and Soap Noodles has remarkable contribution for the company and the company has dropped Soap Noodles and Tea from the fiscal year2060/061 and 2061/062 respectively. In the fiscal year 2061/062 the company produces only three categories of products i.e.,

- Detergents/ Scourers/Laundry
- Toilet Soaps
- Personal Products

## 4.13. Sensitivity of CVP analysis

The analysis of cost behavior facilitates the use of another CVP technique to improve the decision making, known as sensitivity analysis. By determining the profit multiplier, it becomes possible to measure the extent of the impact of

change 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). The management team will not only able to obtain a numerical expression of their business, but in addition will be able to assess a range of issues in relation to product and service profitability, profit improvement and the effectiveness of alternative accounting procedures, control strategies budget preparation methods. The following table provides the insights into the sensitivity analysis.

Table No.4.13

Different factors affecting CVP Analysis

| Factors | Effect in P/V ratio | Effect in BEP | Effect in profit |
|---|---|---|---|
| Sales Revenue | | | |
| Increase | No effect | No effect | Increase |
| Decrease | No effect | No effect | Decrease |
| Variable Cost | | | |
| Increase | Decrease | Increase | Decrease |
| Decrease | Increase | Decrease | Increase |
| Fixed Cost | | | |
| Increase | No effect | Increase | Decrease |
| Decrease | No effect | Decrease | Increase |

### 4.13.1. Effect of change in sales price

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

Table No.4.13.1.1

Income statement with change of sales value

For the F/Y 2063/064

| Details | Original | Change on Sales Value | |
|---|---|---|---|
| | | 10% increase | 10% decrease |
| Sales revenue | 18185 | 20003.50 | 16366.50 |
| Less: Variable cost | 13859 | 15244.90 | 12473.10 |
| Contribution Margin | 4326 | 4758.60 | 3893.40 |
| Less: Fixed Cost | 1030.20 | 1030.20 | 1030.20 |
| Profit | 3295.8 | 3728.40 | 2863.20 |
| CM ratio | 23.79% | 23.79% | 23.79% |
| BEP | 4330 | 4330 | 4330 |
| DOL | 1.31 | 1.28 | 1.36 |

The above table no.4.13.1.1 shows that with an increase in sales price by 10%, the profit of the company will increase and its DOL will be 1.29. Similarly, with the decrease in sales value by 10% the profit of the company will decrease but its DOL will be 1.38. The sales price will change by the same percentage when changes are made in sales by 10%.

### 4.13.2. 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 declines then 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 the following results for the fiscal year 2063/064.

Table No.4.13.2.1

Income statement with change of variable cost

For the fiscal year 2063/064

| Details | Original | Change in Variable cost | |
|---|---|---|---|
| | | 10% increase | 10% decrease |
| Sales revenue | 18185 | 18185 | 18185 |
| Less: Variable cost | 13859 | 15244.90 | 12473.10 |
| Contribution Margin | 4326 | 2940.10 | 5711.90 |
| Less: Fixed Cost | 1030.20 | 1030.20 | 1030.20 |
| Profit | 3295.80 | 1909.90 | 4681.70 |
| CM ratio | 23.79% | 16.17% | 31.41% |
| BEP | 4330 | 6371 | 3280 |

The above table no.4.13.3.1 shows that with 10% increase in variable cost, BEP increases which indicates that variable cost and BEP have positive but not proportionate relationship. Similarly with the decrease in variable cost by 10%, the BEP will decrease.

### 4.13.3. Effect of change in fixed cost

A change in fixed cost does not influence P/V ratio if other factor remain the same, how fixed cost will however lower the BEP and raise profit. An increase in fixed cost will push up BEP but reduce profit. If increased and decreased of fixed cost by 10% with other factors assumed to remain the same, it gets the following results for the fiscal year 20663/064.

Table No. 4.13.3.1

Income statement with change of fixed cost

For the F/Y 2063/064

| Details | Original | Change in Variable cost | |
|---|---|---|---|
| | | 10% increase | 10% decrease |
| Sales revenue | 18185 | 18185 | 18185 |
| Less: Variable cost | 13859 | 13859 | 13859 |
| Contribution Margin | 4326 | 4326 | 4326 |
| Less: Fixed Cost | 1030.20 | 1133.22 | 927.18 |
| Profit | 3295.80 | 3192.78 | 3398.82 |
| CM ratio | 23.79% | 23.79% | 23.79% |
| BEP | 4330 | 4763 | 3897 |

The table no.4.13.3.1 shows that 10% increase in fixed cost, BE will increase by same the percentage and with 10% decreases in fixed cost, BEP amount will decreased by the same percentage. From this situation, it can be concluded that break- even point and fixed cost has get direct proportionate relationship.

**Major Findings**

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

- Total sales of the company were in fluctuating trend. The export sales were made in the F/Y 2059/60 and 2060/61. The company has domestic sales only.
- The company produces Detergent/sources/laundry, Toilet Soaps, Personal Products, Soap Noodles and Tea etc. Soap Noodles and Ten were dropped after the fiscal year 2060/61.

- Total variable cost ratio was not constant. High portion of variable cost includes cost of materials. Variable cost covers nearly 80% on an average of sales.
- Fixed cost did not remain constant in the different fiscal year.
- Semi-variable cost also fluctuated each year.
- Profit of the company increased every year. Though sales decreased in the same year profit increased due to decrease in fixed cost.
- The value of correlation coefficient is 0.922 which shows high degree of positive correlation between sales and profit. It suggests that if sales change, the profit will also change but not in the same ratio.
- Contribution margins and P/V ratio were in increasing trend. It is very low due to the huge amount of variable cost.
- BEP decreased during the period due to the decrease in fixed cost and increase in P/V ratio.
- Margin of safety is in increasing trend. High MOS ratio indicates that the Company is in strong profitability position and the Company might be at lower risk.
- The Company's operating leverage decreased which indicates decreased in operating risk of the Company.

# Chapter- 5

## Summary, Conclusion and Recommendation

### Summary

A comprehensive profit planning and controlling is a systematic and formalized approach for stating and communicating the firm's expectation and accomplishing management in such a way as to maximize the case of a profit plan and to achieve the maximum profit from the resource available to an organization over the particular span of time. It serves basically as tool for management control. The effective operation of a business concern resulting into the excess of income over expenditure fully depends upon as to what extent the management to follow proper planning, effective co-ordination and dynamic control. Organization cannot achieve its goals without proper planning and implementation. So profit planning is one of the most important management tools for planning and controlling business operations. CVP analysis has become a powerful instrument in managerial decision making especially in the context of 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 managerial tool of profit plan and evaluate the present practice of CVP analysis and identify the area where CVP analysis could be applied to strengthen manufacturing firm. For this reason, UNL has been randomly selected for the purpose. It has observed that UNL has succeeded in living up to the expectation of general position. As per the nature of the study, secondary data with descriptive and analytical approach for sales analysis, cost analysis, profitability analysis and contribution analysis were used. And to support the study, primary data were collected informally from employees of the company.

From the analysis, the CVP analysis shows that the company has low contribution margin, low p/v ratio, low BEP and high margin of safety. The

sales of the company were in fluctuating 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 each 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 analysis shows that if cost increases, the BEP will also increase and when the cost decreases BEP will also decrease.

**Conclusion**

CVP analysis is not applied by UNL and company has no clear cut boundaries to separate cost into fixed and variable. The classification of cost is not scientific and systematic. The Company does not recognize valuable product. It started to drop out product rather than to join new product line. The high variable cost and low fixed cost structure of UNL indicates that the Company has lower operating risk.

The Company has great stability in net income because its fixed costs are lower and it will not use net profit as rapidly as sales falls out. The Company contribution ratio is low. BEP of the Company has decreased its main reason is due to decrease in fixed cost and increases in P/V ratio. Lower BEP and higher margin of safety indicates that the Company is in a low risk and further investment will be safe. Most of the Company also shows that small changes in sales revenue can change to the Company to get huge profit. The Company is multi-product organization so it uses sales mix often important for CVP analysis.

The Company's objective is that to get reason profit rather than to cover the maximum market shares which emphasis on high margin product to maximize overall profit of the Company. CVP analysis provides vision for planning, controlling and decision making process in profit planning.

**Recommendation**

On the basis of the study of CVP analysis as managerial tool of profit plan of UNL, it seems necessary to develop, implement and improve the process of CVP analysis. Nepal has become member of WTO which helps the country to enter into the globalization. Foreign Companies may be established here and create top competition for the national Companies. Nepalese Companies should fit with the global environment with best fit managerial strategies. As the competition is very top in the context of globalization, company should provide attention towards cost minimization. For this CVP analysis tools can be preferable for the UNL. The recommendations made on the basis of based on the findings of research study are as follows;

- Classification of expenses into variable and fixed or controllable and non-controllable must be made. The effective and scientific method should be used to segregate cost.
- UNL should establish a separate cost control and planning department for effective management of cost.
- Preparation of sales plan, production plan and settling price of its products should be on BEP analysis.
- As a multi-product Company, UNL should produce for the product high with CVP to generate huge profit. Systematic approaches should be following towards comprehensive profit planning.
- Some portion of income should be allocated to research and development program so that new technology could be found which provide more competitiveness in the market field.
- Systems of periodicals performance reports should be followed to take corrective action immediately.

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# APPENDIX

**Calculation of Product wise BEP (Rs.)**

**For the Fiscal Year 2059/060**

| Product | Sales value (Rs.) | Sales Mix Ratio | P/V Ratio | Weighted Av. P/V ratio | BEP of Each Product (Rs.) |
|---|---|---|---|---|---|
| Detergents/Source/ Laundry | 3058 | 0.2456 | 0.2083 | 0.0512 | 1308 |
| Toilets Soups | 4020 | 0.3230 | 0.2080 | 0.0672 | 1720 |
| Personal Soaps | 3994 | 0.3209 | 0.2081 | 0.0668 | 1708 |
| Soap Noodles | 1359 | 0.1092 | 0.2082 | 0.0227 | 581 |
| Tea | 16 | 0.0013 | 0.1785 | 0.0002 | 7 |
| Total | 12447 | 19857 | | 0.2081 | 5324 |

1. Overall BEP (Rs.)
2. Product wise BEP (Rs.) = Overall BEP * Sales Mix
3. Weighted Average P/V ratio = Sales mix * P/V ratio of each product

**Calculation of Product wise BEP (Rs.)**

**For the Fiscal Year 2060/061**

| Product | Sales value (Rs.) | Sales Mix Ratio | P/V Ratio | Weighted Av. P/V ratio | BEP of Each Product (Rs.) |
|---|---|---|---|---|---|
| Detergents/Source/ Laundry | 3794 | 0.2488 | 0.2048 | 0.0510 | 1304 |
| Toilets Soups | 4417 | 0.2897 | 0.2044 | 0.0592 | 1519 |
| Personal Soaps | 4442 | 0.2913 | 0.2046 | 0.0596 | 1527 |
| Soap Noodles | 2496 | 0.1702 | 0.2049 | 0.0349 | 892 |
| Tea | | | | | |
| Total | 15249 | 1 | | 0.2047 | 5242 |

1. Overall BEP (Rs.)
2. Product wise BEP (Rs.) = Overall BEP * Sales Mix
3. Weighted Average P/V ratio = Sales mix * P/V ratio of each product

**Calculation of Product wise BEP (Rs.)**

**For the Fiscal Year 2061/062**

| Product | Sales value (Rs.) | Sales Mix Ratio | P/V Ratio | Weighted Av. P/V ratio | BEP of Each Product (Rs.) |
|---|---|---|---|---|---|
| Detergents/Source/ Laundry | 4764 | 0.3216 | 0.2319 | 0.0746 | 1370 |
| Toilets Soups | 5187 | 0.3501 | 0.2320 | 0.0812 | 1491 |
| Personal Soaps | 4864 | 0.3283 | 0.2320 | 0.0762 | 1398 |
| Soap Noodles | | | | | |
| Tea | | | | | |
| Total | 14815 | 1 | | 0.2320 | 4259 |

1. Overall BEP (Rs.)
2. Product wise BEP (Rs.) = Overall BEP * Sales Mix
3. Weighted Average P/V ratio = Sales mix * P/V ratio of each product

**Calculation of Product wise BEP (Rs.)**

**For the Fiscal Year 2062/063**

| Product | Sales value (Rs.) | Sales Mix Ratio | P/V Ratio | Weighted Av. P/V ratio | BEP of Each Product (Rs.) |
|---|---|---|---|---|---|
| Detergents/Source/ Laundry | 4985 | 0.3474 | 0.2354 | 0.0818 | 1344 |
| Toilets Soups | 4624 | 0.3222 | 0.2310 | 0.0744 | 1246 |
| Personal Soaps | 4741 | 0.3304 | 0.2330 | 0.0770 | 1278 |
| Soap Noodles | | | | | |
| Tea | | | | | |
| Total | 14349 | 1 | | 0.2332 | 3868 |

1. Overall BEP (Rs.)
2. Product wise BEP (Rs.) = Overall BEP * Sales Mix
3. Weighted Average P/V ratio = Sales mix * P/V ratio of each product

**Calculation of Product wise BEP (Rs.)**

**For the Fiscal Year 2063/064**

| Product | Sales value (Rs.) | Sales Mix Ratio | P/V Ratio | Weighted Av. P/V ratio | BEP of Each Product (Rs.) |
|---|---|---|---|---|---|
| Detergents/Source/ Laundry | 5934 | 0.3263 | 0.2379 | 0.0776 | 1454 |
| Toilets Soups | 5989 | 0.3293 | 0.2232 | 0.0735 | 1467 |
| Personal Soaps | 6262 | 0.3444 | 0.2325 | 0.0801 | 1535 |

| | | | | | |
|---|---|---|---|---|---|
| Soap Noodles | | | | | |
| Tea | | | | | |
| Total | 18185 | 1 | | 0.2312 | 4456 |

1. Overall BEP (Rs.)
2. Product wise BEP (Rs.) = Overall BEP * Sales Mix
3. Weighted Average P/V ratio = Sales mix * P/V ratio of each product

**Calculation of Product wise BEP (Units)**

**For the Fiscal Year 2059/060**

| Product | Sales (Units) | Sales Mix Ratio | CMPU | Weighted CMPU | BEP of Each Product (Units) |
|---|---|---|---|---|---|
| Detergents/Source/ Laundry | 11082 | 0.5981 | 0.0575 | 0.0344 | 4740 |
| Toilets Soups | 3622 | 0.1954 | 0.2308 | 0.0451 | 1549 |
| Personal Soaps | 996 | 0.0537 | 0.8343 | 0.0448 | 426 |
| Soap Noodles | 2788 | 0.1504 | 0.1015 | 0.0153 | 1192 |
| Tea | 45 | 0.0024 | 0.0667 | 0.0002 | 19 |
| Total | 18533 | 1 | | 0.1398 | 7926 |

1. Overall BEP (Units)
2. Product wise BEP (Units) = Overall BEP * Sales Mix
3. Weighted CMPU = Sales mix * CMPU

**Calculation of Product wise BEP (Units)**

**For the Fiscal Year 2060/061**

| Product | Sales (Units) | Sales Mix Ratio | CMPU | Weighted CMPU | BEP of Each Product (Units) |
|---|---|---|---|---|---|
| Detergents/Source/ Laundry | 12610 | 0.5573 | 0.0616 | 0.0343 | 4337 |
| Toilets Soups | 3942 | 0.1743 | 0.2291 | 0.0399 | 1356 |
| Personal Soaps | 1195 | 0.0528 | 0.7607 | 0.0402 | 411 |
| Soap Noodles | 4878 | 0.2156 | 0.1091 | 0.0235 | 1678 |
| Tea | | | | | |
| Total | 22625 | 1 | | 0.1379 | 7782 |

1. Overall BEP (Units)
2. Product wise BEP (Units) = Overall BEP * Sales Mix
3. Weighted CMPU = Sales mix * CMPU

**Calculation of Product wise BEP (Units)**

**For the Fiscal Year 2061/062**

| Product | Sales (Units) | Sales Mix Ratio | CMPU | Weighted CMPU | BEP of Each Product (Units) |
|---|---|---|---|---|---|
| Detergents/Source/ Laundry | 15135 | 0.7175 | 0.0725 | 0.0520 | 4357 |
| Toilets Soups | 4680 | 0.2204 | 0.2571 | 0.0567 | 1339 |
| Personal Soaps | 1317 | 0.0621 | 0.8568 | 0.0540 | 377 |
| Soap Noodles | | | | | |
| Tea | | | | | |
| Total | 21232 | 1 | | 0.1627 | 6073 |

1. Overall BEP (Units)
2. Product wise BEP (Units) = Overall BEP * Sales Mix
3. Weighted CMPU = Sales mix * CMPU

**Calculation of Product wise BEP (Unit)**

**For the Fiscal Year 2062/063**

| Product | Sales (Units) | Sales Mix Ratio | CMPU | Weighted CMPU | BEP of Each Product (Units) |
|---|---|---|---|---|---|
| Detergents/Source/ Laundry | 16580 | 0.7399 | 0.0755 | 0.0560 | 4005 |
| Toilets Soups | 4321 | 0.1928 | 0.2672 | 0.0515 | 1044 |
| Personal Soaps | 1508 | 0.0673 | 0.8667 | 0.0583 | 364 |
| Soap Noodles | | | | | |
| Tea | | | | | |
| Total | 22409 | 1 | | 0.1658 | 5413 |

1. Overall BEP (Units)
2. Product wise BEP (Units) = Overall BEP * Sales Mix
3. Weighted CMPU = Sales mix * CMPU

**Calculation of Product wise BEP (Units)**

**For the Fiscal Year 2063/064**

| Product | Sales (Units) | Sales Mix Ratio | CMPU | Weighted CMPU | BEP of Each Product (Units) |
|---|---|---|---|---|---|
| Detergents/Source/ Laundry | 19299 | 0.7155 | 0.0616 | 0.0441 | 4920 |
| Toilets Soups | 5598 | 0.2075 | 0.2308 | 0.0479 | 1417 |
| Personal Soaps | 2077 | 0.0770 | 0.7511 | 0.0578 | 530 |
| Soap Noodles | | | | | |
| Tea | | | | | |
| Total | 26974 | 1 | | 0.1498 | 6877 |

1. Overall BEP (Units)
2. Product wise BEP (Units) = Overall BEP * Sales Mix
3. Weighted CMPU = Sales mix * CMPU