

## CHAPTER-I

### INTRODUCTION

#### 1.1 Background of the Study

BNL is one of the manufacturing and processing companies. It is established in 1979 AD under the company Act 1964 A.D. It is initially started as a private enterprise in 1985 by issuing shares to public. It was established with the objective of producing and bottling soft drinks under the brand name of Coca Cola Sabco Asia Ltd. The company also makes and sales soft drinks under the registered trademarks of Coca Cola managed by Dubai based Coca Cola Sabco Asia Ltd. The company is located at Balaju, Kathmandu; in an area covering 10.648 square meters of land and the buildings of the company covers 5,828 squares meters. The company has been launching various types of promotional activities with financial and technical support from the Coca cola Sabco Asia Ltd. Dubai (*BNL Annual Report 2003/04:21*).

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

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

given the name profit planning programmers; profit planning is a part of overall planning process of an organization. Cost volume profit analysis serves as a powerful tool in the hands of management for profit planning (Welsch, Hilton, Ronald and Gordon 1995).

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

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

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

In Nepalese context, manufacturing organizations are facing so many problems. There are need for a large number of good managers and managerial decisions in a developing country like Nepal. Most of organizations are in loss, profit earning is necessary to serve organization. For this application, profit planning tools are necessary (Joshi, 2003).

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

The whole picture of profit planning is associated with cost-volume-profit interrelationships. Profit planning is the function of the selling price of product,

demands variable costs, fixed cost, taxes etc. A popular technique to study cost-volume-profit relationship is break even analysis. Break-even analysis is concerned with the study of revenues and costs in relation to sales at which the firm's revenues and total costs will be exactly equal or the net income will be zero. It is a "no profit no loss" situation. This point is a corner-stone of profit planning (Welsch , Hilton and Paul 1999).

CVP analysis is a greater helpful in managerial decision making, especially cost control and profit planning. Out of various profit planning tools, cost-volume-profit analysis is the most important tool.

It provides attention-directing and problem solving backgrounds for important planning decisions, such as selecting distribution channels, pricing, special promotions and personnel hiring. "Know your cost" is an essential theme for any managers. And CVP analysis helps to direct managerial attention to important problems and paves the way to their solution (*Horngren, 1970:207*).

Hence, accompany may use CVP analysis as a planning tool. When the sales volume is known, management needs to find out how much profit it will result. Another way of planning is to begin with a target profit. Then, a company can decide the level of sales needed to reach that profit through CVP analysis. Similarly, for the cost control purpose, CVP analysis is a way to measure how well different departments in the company are doing. At the end of a period, the company analyzes sales volume and related actual costs to find actual profit. It measures the performance by comparing actual costs with expected costs. These expected costs are computed by applying CVP analysis to the actual sales volume. The result is a performance report on which management can base the control of operations.

Therefore a dynamic management uses CVP analysis to predict and evaluate the implications of its short-run decisions about fixed costs, variable costs, volume and selling price for its profit plans on continuous basis. The present study has tried to analyze the effective of Bottlers Nepal Limited using the tool of CVP analysis.

## **1.2 Statement of the Problem**

Cost-Volume-Profit analysis is a supplementary tool of planning for profit. Cost

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

The manufacturing sector has to face numerous problems which have acted as constraints in the growth of manufacturing industries. In Nepal, manufacturing sector is very small. In recent years, the growth rate is relatively more satisfactory. Mainly, such problems are caused by the land locked situation of the country, undeveloped situation of the country, undeveloped situation of physical, human, financial and administrative infrastructure and energy at high rates, non availability of trained and skilled manpower, shortage of capital, small size of market, unawareness of the industrial potential, higher cost of production, low productivity of inputs, manpower and technology, instabilities in government policy etc.

In spite of various attractive policies of the government in respect to the industrialization, new investment made on industrial sector is not satisfactory. The financial performance of established manufacturing industries is also not good. Most of the industries are operating in losses and such condition of the established industries discourages the new investment both in manufacturing and non - manufacturing sector. There may be various and different reasons for the poor performance of manufacturing industries. Such reasons should be investigated and corrective actions should be taken for the improvement of their performance.

To earn desired level of profit, it is to be planned and managed. Success or failure of any business is measured in terms of profit. CVP analysis provides the techniques of profit planning framework based on the annual report published. Performance of Nepalese industries cannot be considered as satisfactory. Poor performance is the outcome of poor planning, controlling and decision-making. This has raised the question whether Nepalese managers are competent enough? Do they practice CVP tools and techniques to carryout planning, controlling and decision-making function? Due to the lack of application of profit planning tools, they can't forecast budgeted

sales to recover total cost and to achieve profit. BNL is currently facing problem to have fair estimate of total cost, total revenue and profit at various sales volume.

Hence, this importance of CVP analysis in PPC for a firm and the problems that arises in this field has led to the selection of this topic for study. So, this research is more concerned with the use of CVP analysis in profit planning process. This study is basically designated to solve the following problems.

- ) How is the relation between various tools of CVP analysis?
- ) Is there any significant difference between budgeted and actual sales of BNL?
- ) Is BNL practising CVP analysis for its profit planning?
- ) How is the risk associated with BNL?

### **1.3 Objectives of the Study**

Some specific objectives can also be outlined that in overall contribute to the attainment of these prime objective. The main objective of this research is to study how efficiently the BNL has used CVP analysis. Those specific and functional objectives of this study are as follows:

- ) To indicate required improvements and provide suggestions, if any on the basis of major findings of the study.
- ) To evaluate the application CVP analysis in BNL.
- ) To analyze the relation between Profit Volume Ratio, Break Even Point, Margin of Safety, Capacity Utilization and Sales Volume among different five fiscal years of BNL.
- ) To examine and assess the risk of BNL with the help of operating leverage technique.
- ) To evaluate & compare the performance report of BNL.

### **1.4 Significance of the Study**

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

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

### **1.5 Limitations of the Study**

The major limitations of the study are not availability of required data and information. Beside this, there are few things that played an important role to limit the area of study. They are pointed out below:

- ) The researcher felt inadequacy of time and also lack of required conceptual and practical knowledge to be involved in a detailed investigation
- ) Analysis is concentrated in some managerial, financial and accounting aspect and it does not cover all areas of enterprise.
- ) This study examines only in the area of cost-volume-profit analysis of Bottlers Nepal Limited.
- ) The accuracy of the study depends on the reliability of information provided by-personnel of the company.
- ) The time period of the study is limited only to five years from fiscal year 2006/07 to 2010/11.

### **1.6 Organization of the Study**

The study has been organized in five chapters. The chapter one to five consists of introduction, review of literature, research methodology, presentation and analysis of data and summary, conclusion and recommendation of study. The whole study has been categorized into five major chapters as:

**Chapter I: Introduction:** This chapter is the introductory part of the study. This chapter is concerned with reasons behind the selection of topic. It has included background of the study, focus of the study, statement of the problem, objectives of study, significance of the study, and limitations of study which are presented in detail.

**Chapter II: Review of literature:** The second chapter reviews the existing literature in the relevant area. Mainly, it includes review of theories and journal. Review of previous research work and research gap. The chapter does not explain in detail all the tools available, but only explains those that are used in chapter IV for analysis purpose.

**Chapter III: Research methodology:** The third chapter explains the research methodology used in the research for collection, presentation and analysis of data. This chapter deals with methodology that includes research design, sources of data, data collection techniques, method of analysis and research variable.

**Chapter IV: Data presentation and analysis:** The fourth chapter presents the information gathered and interprets the data available about the concerned topic and company. For this purpose various analytical tools have been used. It also summarizes the main findings of the study.

**Chapter V: Summary, conclusion and recommendations:** This chapter is the concluding part of the research comprises a brief summary of the whole study and points out the weaknesses and strengths of the organization. It includes summary and conclusion of the study and recommendations made to the organizations.

At the end of the chapters bibliography and appendices are also incorporated.

## **CHAPTER – II**

### **REVIEW OF LITERATURE**

In this chapter the researcher has been reviewed the related literature from different books, journals, previous studies and other reliable sources. As per this study concern, journals of account, previous thesis, related books, reports and related research works has been reviewed briefly. The review of literature has been classified into two- conceptual review and theoretical review done with in Nepal in order to obtain in depth knowledge in the related field of study.

#### **2.1 Conceptual Framework**

##### **2.1.1 CVP Analysis**

Profit planning is the function of selling price of the product, the variable costs and the volume to be sold. The entire scope of profit planning associated with CVP interrelationships. Cost volume profit analysis is a management accounting tool to show the relationship between the ingredients of profit planning. A wisely used technique to study CVP relationship is break-even analysis. Breakeven analysis is concerned with the study of revenues and costs in relation to sales at which the firm's revenue and total costs will be exactly equal or net income is zero. Thus the break-even-point (BEP) may be defined a point at which the firm's total revenues are exactly equal to total costs, yielding zero income. The 'no profit no loss' is a break-even point or a point at which losses cease and profit begins (Khan and Jain, 2008).

We find that cost is price paid to acquire, produce, accomplish or maintain anything volume in mass or quantity of something or amount, profit is the ratio of such pecuniary gain to the amount of capital invested and analysis is resolution, separation or breaking into parts in dictionary. In facts, CVP analysis is an analytical tool for studying the relationship between volume, cost, price, and profit. Basically CVP analysis is the technique involves finding the most favorable combination of different types of costs. CVP analysis provides the managers with a powerful tool for identifying those courses of action that will or will not increase profitability. CVP analysis is the technique that explores the relationship, which exists, between cost, revenue, output level and resulting profit. CVP analysis can be extended to cover the

effects on profit of changes in the selling prices or service fees, cost, income tax rate, total cost, total revenue, and profit at various sales volumes. It is related to profit, sales volume and cost. CVP analysis provides the management with a comprehensive overview of the effects on revenue and costs of all kinds of short-run financial changes. CVP analysis provides information regarding (Munankarmi, 2003:4.01).

People invest huge amount of money in the business to earn profit. Profit planning is the function of the selling price of product and units sold. The entire amount of profit planning is associated with CVP interrelationships. CVP analysis is the technique that explores the relationship which exist between costs, revenue and output by showing the effects on profit of changes in selling price or services fees, costs, income tax rate and product mix. CVP analysis provides the management with a comprehensive overview of the effect on revenue and costs of all kind of short-term financial changes.

CVP is powerful and helpful tool for managerial decision making cost control and profit planning in certain situation. CVP analysis is a systematic method of examining the relationship between changes in activity and change in total sales revenue, expenses and net profit. As a model of this relationship. Profit planning is the function of selling price of product, demand, variable cost, fixed cost, taxes. Management plans future operation by using CVP analysis for estimation of selling price per unit, variable cost, fixed cost and sales volume. CVP analysis helps manager to see in advance to set different strategies and decision of business activities. The aim of CVP analysis is to have correct estimate of fixed cost, total revenue and profit.

CVP analysis helps manager to understand the interrelationship between cost, volume and profit in an organizations by focusing the following four elements.

- ) Price of a product.
- ) Volume or level of activity.
- ) Per unit variable cost.
- ) Total fixed cost mixed product sold.

Generally CVP analysis provides the answer to the question such as:

- ) What sales volume needed to earn desired profit ?
- ) What will be the effect of change in price ?

- ) What sales volume needed avoid losses ?
- ) CVP analysis seeks to estimate the profit or loss at different activity level.
- ) Which product or operation of a plant should be discontinued as soon?

The aim of CVP analysis is to have correct estimate of.

- ) Total cost.
- ) Total revenue.
- ) Profit at various sales volume.

### **2.1.2 Importance of CVP Analysis**

Planning, controlling and decision making are the essential management functions CVP Analysis helps managers to prepare plan for profit to control cost and make decision. It helps (Munankarmi, 2003: 401-402).

- ) To help the management to find the most profitable combination of cost and volume.
- ) To estimate the profit or loss at various level of output.
- ) To ascertain the margin of safety.
- ) To assess the likely effect of management decisions such as an increase or decrease in selling price adoption of new method of production to reduce direct labour cost and increase output.
- ) To determine the BEP in terms of units or sales value.
- ) To determine most profitable and least profitable product.
- ) To determine the optimum selling price.
- ) To determine the maximum sale volume to avoid losses.
- ) To determine the sales volume of which the profit goal of the firm will be achieved.

### **2.1.3 Purpose of CVP Analysis**

Cost volume profit analysis helps management in a number of ways. The following purposes are served by it (Dangol, 2004: 416).

- ) Calculation of sales volume to produce desired profit.
- ) Calculation of sales volume to break even.
- ) Measurement of effect of changes in profit factors.

- ) Effect or changes on price, costs and profits.
- ) Calculation of profit resulting from a budgeted sales volume.
- ) Choosing the most profitable alternatives.
- ) Make or buy decision on sub-assemble or part.
- ) Determining the optimum sales mix.
- ) Long term decision on continuance of product.
- ) To contemplate the increase or decrease in profit due to change in method of production etc.
- ) Determination of capacity and equipment selection.
- ) Determination of new break-even point for changes in cost and selling price.

#### **2.1.4 Assumptions of CVP Analysis**

Every business starts with the target of break even and that it aims to earn profit over its life. But the business firm passes through many ups and downs. CVP analysis is a vital technique that provides supplementary information for profit planning. CVP analysis helps to plan for every set of goal in short run. But CVP analysis encompasses the following assumptions (Bajracharya, et al., 2004: 258-260).

##### **a. Classification of all Costs as Variable and Fixed**

While developing and applying CVP analysis including BEP analysis, it assumes that all cost can be classified into fixed and variable costs. In fact, it is extremely difficult to identify each and every cost into fixed and variable. Costs are recorded in traditional types in developing countries thus it makes very hard to segregate costs into fixed and variable. Moreover flexible policy of company also makes to more difficult to exactly identify the costs as fixed and variable. If one fails to identify the cost as fixed and variable, the application of CVP analysis become almost impossible.

##### **b. Linear Behaviour of Cost within the Relevant Range**

CVP analysis assumes that the total fixed costs do not change in short run within relevant range. Total variable costs are exactly proportionate to sales volume. But in reality cost behaviour may not remain same with the change in the volume of output because of change in production set up with more or less purchase material cost per unit change due to quantity discount. Costs change over time due to inflation. BEP

units and other variables of profit function do not remain constant over time. Therefore, BEP and other variables do not remain at every movement valid the changed situation.

**c. Treatment of Step Fixed Cost**

The relevant range for many costs is very short. In that case it becomes very difficult to compute the required volume, because it becomes difficult to identify the relevant range volume.

**d. Constant Selling Price for any Volume in the Short Run**

The selling price per unit remain constant it does not change with volume or because of other factors. Indeed, selling price per unit is affected by quantity discount for different lots of production. This makes it difficult to determine the CM<sub>PU</sub> and CM ratio.

**e. No Effects of Size of Inventory on Net Income**

The application of CVP analysis is possible only under variable costing because inventorial product cost on all production and sold volume remain the same. CVP analysis does not work under full costing method where inventory changes affect inventory value because of allocation of fixed manufacturing overhead.

**f. Single Product or Constant Sales Mix**

CVP analysis assumes that either a single product is sold or, if more product are sold where the ratio of each product on total sales will be in accordance with a predetermined sales mix. But in real situation sales mix does not remain constant. This makes the application of CVP analysis impossible in case of multi Product Company.

**g. Short Term Time Horizon**

CVP analysis is a short term planning tool because nothing remains stable in the long term. In the condition of changing conditions the ratio of CVP variables may differ. It is essential that anyone preparing or interpreting CVP results should be aware of the underlying assumptions. If these assumptions are not recognized, serious error may result and incorrect conclusions may be drawn from the analysis.

### **2.1.5 Application of CVP Analysis in Profit Planning and Control**

Cost volume profit analysis is an important tool for profit planning. It has been defined as a managerial tool showing the relationship among cost, selling price, profit and volume of activity. CVP analysis can be applied for the following purposes (Dangol, et al., 2004: 416).

- ) It assists the management in profit planning.
- ) It also assists the management in performance evaluation for the purpose of management control.
- ) It helps in fixation of selling price.
- ) It helps very much in making managerial decisions such as make or buy a part, drop or continue a department or product line, accept or reject a special orders, selection of a profitable product mix.
- ) It is helpful in cost control.
- ) It helps in determining the level of output where all the cost can be met.
- ) It also assists the management in understanding the behaviours of cost and help in budgetary control.

### **2.1.6 Special Problem in CVP Analysis**

Cost volume profit analysis is applied to individual product or part of a business and all the products or activities combined. In latter case three problems can be encountered which is as follows (Welsch, et al., 2000: 513-518).

#### **1. Activity Based**

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

If flexible expenses budget are used, they can be summed for cost volume profit purposes. This process may cause some complications because the different departmental flexible budget is related to different activity base. For example, selling expenses, may be related to sales dollars, factory over head related to direct labour or machine hour. To add the flexible expenses budget amounts, it must be assumed that the departmental activity factor correlate reasonably well with the overall activity base selected for break even purposes. The usual procedure in developing break even analysis based on flexible expenses budget is to add the fixed cost components shown in flexible budget amounts and to treat the remaining cost as variable.

## **2. Inventory Change**

Usually the budget change in inventories (that is finished goods and work in process) are immaterial in amount and thus may be disregarded in cost volume profit analysis. On the other hand when the change in budgeted inventory is significant it should be included in the analysis.

Including the effects of cost volume profit analysis required subjective judgment about the effect of change is,

- ) Disregard the inventory change.
- ) Include the inventory change.
- ) The conceptual precision that is desired.
- ) What management might do (about to making inventory changes) at different volume level and
- ) We will consider two practical approaches other used:

## **3. Non Operating Income and Expenses**

The basic issue is whether they should be included or excluded. Non operating income (gains) and expenses (losses) and extraordinary gain and losses, is material in amount accuse another problem in cost volume profit analysis. Extraordinary gains and losses are nonrecurring and unused therefore they should be excluded. Non operating incomes (and gains) and expenses (and losses) are recurring but they are not related to ongoing operations. Normally 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, where as if the excess is income, it should be deducted from the fixed expenses.

#### **4. Margin of Safety**

The difference between total sales and break even sales is identified as margin of safety. The high margin of safety is good for business. The soundness of business is medicated by margin of safety. It indicates that there can be substantial falling of sale and yet profit can still be made on the other hand if the margin of safety is small. It indicate the weak position of business. The small margin of safety shows that even small reduction in sales or production will adversely affect the profit position of business (Dangol, and Jeetendra, 2002: 168).

If margin of safety is unsatisfactory, the following steps can be taken:

- ) increase the sales and production volume.
- ) increase the sub selling price.
- ) decrease the fixed cost.
- ) increase the variable cost.
- ) increase the sales or product mix ratio.

Margin of safety is ascertained by using the following formula:

$$\text{Margin of safety (in units)} = \frac{\text{Profit}}{\text{Contribution margin}}$$

$$\text{Margin of Safety (in \%)} = \frac{\text{Actual sales} - \text{ZBE sales}}{\text{Actual sales}}$$

$$\text{Margin of safety (in Rs.)} = \frac{\text{Profit}}{\text{PV ratio}}$$

#### **2.1.7 Approaches to Cost Volume Profit Analysis**

The CVP relationships can be analyzed through different approaches which are:

- ) Formula (equation) approach.
- ) Contribution margin approach.
- ) The graphic (break even chart) approach.

**i. Formula Approach:**

The most popularly practiced approach to the break-even point and cost volume profit analysis is the formula, also known as the equation. It is particularly because the equation provides the most general and easiest to remember and uses because the equation provides the most general and easiest to remember and uses solving the equation may sometimes, need to be rounded to whole numbers of units or lots sizes. The rounding of break even points is always done upward because this will provide a small profit rather than the small loss that would be shown from rounding downward (Dangol, et al., 2062: 422).

$$\text{CM ratio of PV ratio} = \frac{\text{Contribution margin}}{\text{Selling price}}$$

$$\text{BE Sales Value} = \text{FC} + \text{VC} \pm \text{Profit}$$

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

$$\text{BE Sales Unit} \times \text{SPPU} = \text{FC} + (\text{BE Sales Unit} \times \text{VCPU}) \pm \text{Profit}$$

| Contribution Margin Approach | Symbol or Equation                              |
|------------------------------|---|
| Sales volume (units)         | Q   |
| Selling Price per Unit       | P   |
| Selling Revenue(Rs.)         | $Q \times P$                                    |
| Less: Variable Cost          | $Q \times \text{VCPU}$                          |
| Contribution Margin          | $Q \times P - Q \times \text{VCPU}$             |
| Less: Fixed Cost             | FC  |
| Net Profit                   | $Q \times P - Q \times \text{VCPU} - \text{FC}$ |

Therefore, BE Sales Value = FC + VC ± Profit

$$\text{BE Sales Unit} \times \text{SPPU} = \text{FC} + (\text{BE Sales Unit} \times \text{VCPU}) \pm \text{Profit}$$

**ii. Contribution Margin Approach:**

Contribution margin is different between the Sales and the variable cost of production. Contribution margin consists the fixed cost and profit i.e. contribution

margin is the amount that contributes to recover of all fixed costs and to the generation of profit.

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

It can be expressed as :

$$\text{Contribution margin} = \text{Sales} - \text{Variable Cost}$$

or

$$\text{Contribution margin} = \text{Fixed cost} + \text{profit}$$

Contribution margin is usually expressed as a percentage sales which is known as contribution margin ratio or profit volume ratios.

### **iii. The Graphical Approach to CVP Analysis:**

A Breakeven chart is used to used to graphically depict the relationships among revenue, Variable Cost and profit (or losses). The no profit, no loss point (the break even point) is located at the point where the total cost and total revenue lines cross. Below this point, the firm losses, and above this point the firm earns profit ( Bajaracharya, et. al., 2004: 231-232).

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

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

At volume 'Q' + 'n'

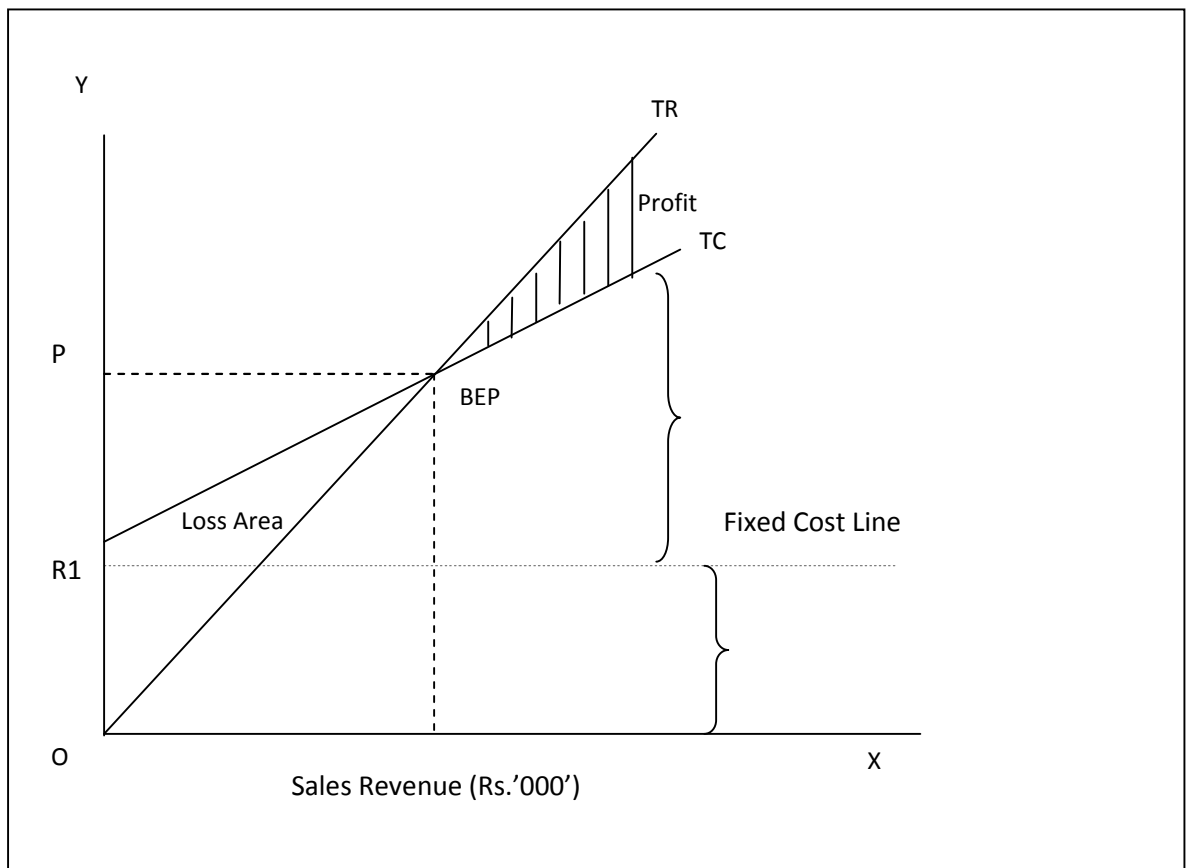
$$\text{Total costs} = \text{TFC} + (Q + n) \times \text{VCPU}$$

$$\text{Total cost} = O + n \times \text{VCPU}$$

$$\text{Total cost} = \text{variable costs}$$

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

### Graphical Approach to CVP



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

#### 2.1.8 Break-Even Analysis

The narrower-interpretation of the term break even analysis refers to a system of determination of that level of activity where total cost equals total selling price. The broader interpretation refers to that system of analysis which determines probable profit at any level of activity. Break even analysis is widely used technique to study

cost volume profit relationship. It portrays the relationship between cost of production, volume of production and the sales value. CVP analysis includes the entire gamut of profit planning, while break even analysis is one of the techniques used in this process. However is so popular for studying CVP analysis that the two terms are used as synonymous terms (Maheshari, 2000, 175-181).

**a. Applications of Break-Even Analysis**

Break even concept can be used to formulate different policies in a business enterprise. Some of these applications are (Maheshwar, 2000: 182).

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

**b. Assumptions of Break Even Point :**

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

- ) Fixed cost will remain constant and variable cost varies proportionately with activity.
- ) Selling price per unit remains constant. It is not affected by sales volume.
- ) All costs can be classified into fixed and variable cost. There is no other cost other than fixed and variable.

**c. Limitations of Break Even Analysis**

Break even analysis in many business situations can be used for effective decision making, but there are many short coming limitations in its analysis and interpretations. Some of these can be listed as (Maheshwari, 2000: 189-184).

- ) The fixed cost may not remain constant as well as the variable cost may not vary in fixed proportions at levels of output.
- ) The assumption of producer's market phenomenon may not hold good for all types of commodities.

- ) Identification of fixed and variable costs involved in production process is very complicated. A shift in production mix may change the break even point.
- ) Consumers may be given certain discount on purchases to promote sales. This revenue may not be perfectly variable with level of sales output.
- ) With variation in the prices of the items or services which also depend on the factors affecting its demand and supply will certainly affect the demand of the commodity. This phenomenon is not covered in break even analysis.

#### **d. Cash Break Even Point**

If sales are maintained at the BEP then the company will neither earn profit nor will suffer from losses. The BEP tells what volume of sales which is necessary to cover all operating expenses. What happens if company cannot achieve the BEP ? Of courses, the company suffer from losses. If the company suffers from the loss, does it mean that the company is facising the difficulties in paying its monthly bills for rent. Salary, suppliers and labours? Not necessary. It because all fixed cost is kept in numerator while computing BEP. Fixed cost include certain non-cash expenses like depreciation and amortization, for which no cash needed in short run. Therefore Therefore company can exclude depreciation and other non cash expenses in the short run. Only cash costs are included in fixed costs to calculate cash BEP (Gywali et al. 2064).

$$\text{Cash BEP} = \frac{\text{FC Z Non Z cash expenses}}{\text{SPPU Z VCPU}}$$

Or

$$\text{Cash break even point} = \frac{\text{Cash fixed cost}}{\text{Contribution margin or PV ratio}}$$

#### **e. Profit Volume Analysis**

The two factors profit and volume are interconnected and dependent with each other profit depends upon sales, selling price to a greater extent will depend upon the volume of production. The analysis of relationship between profit and volume is known as profit volume analysis. Thus, the entire amount of profit planning is associated with cost volume profit interrelationship.

## **f. Profit/Volume Ratio**

Profit/volume ratio (i.e. P/V ratio) establishes a relationship between the contribution and the sales value. This term is important for studying the profitability of operations of a business. The ratio can be shown in the form of a be known by comparing the change in contribution to change in sales or change in percentage also. The formula can be expressed by (Maheshwari, 2000: 184)

$$\text{P/V ratio} = \frac{\text{Contribution}}{\text{Sales}} \times \frac{S}{S} \times \frac{ZVC}{Z} \times \frac{VC}{S}$$

The ratio can also be called as contribution margin ratio. This ratio can also profit to change in sales. Any increase in contribution would means increase in profit only because fixed costs are assumed to be constant at all level of production (Maheshwari, 2000, 185).

$$\text{P/V ratio} = \frac{\text{Change in Contribution}}{\text{Change in sales}} \times \frac{\text{Change in profit}}{\text{Change in sales}}$$

This ratio would remain constant at different levels of production since variable costs as a proportion to sales remain constant at various levels. This ratio is useful for determination of the desire level of output or profit and for the calculation of variable costs for any value sales. The variable cost can be expressed as follows.

$$\text{VC} = \text{Sales} (1 - \text{P/V ratio})$$

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

### **2.1.9 Managerial Uses of CVP Analysis**

Planning controlling and decision making are the essential managerial function. CVP analysis helps the manager to plan for profit, to control cost and make decision. It is necessary to describe in greater details about its usefulness to management.

**a. Management Plan Further Operation with CVP Analysis**

The estimated net profit can be examined by estimating SP, VCPU, Total FC and sales volume. Profit does not just happen they must be managed and planned. By estimating the SP, VCPU, total FC and sales volume management can estimate profit. If management believe profit are too low or too high, then CVP analysis can be used to determine the likely effects of changes it may wish to make in any of the variables. CVP analysis can be used as a starting point and as a quick and easy way to determine the likely effects of management policy changes.

**b. Management uses the Budgeted Amounts to Control Operations throughout the Certain Period**

Management should not now just sit back and wait until the end of period to see if it was right or wrong. During the period, sales and cost figures actually incurred should compare with those expected to see if additional action should be taken. Management should then use CVP analysis to determine the probable

**c. Management Use CVP Analysis to Analyze Past Performance**

Management should determine the reason for difference or variance between budgeted and actual results. CVP analysis can make an important contribution in planning, organizing and controlling. It provides a framework for planning future operation and means for determining the likely effect of various ways of organizing those operations CVP can be used to control current operation by comparing actual results with planned result.

**d. Management use CVP Analysis to Know how much Business Safe**

The higher the safety margin the safer is the business and lower the safety margin the risk is the business. So margin of safety is analysis is possible through CVP analysis.

**e. Determination of Selling Price**

Selling price has a most sensitive effects in demand, profit and break even. A SP of product covers all costs plus a required margin. Normally business firm have a goal of charging certain percent of profit margin of SP. The profit margin and SP depend on

any factors including the nature of item, competition and the required return on investment.

#### **f. Profit Pick up in Incremental Sales**

Up to BEP, the company earn nothing, profit begins only after the BEP. Each unit sold beyond the BEP contributes towards profit. Therefore, each unit sold beyond BEP gives profit equal to CM/PU.

#### **2.1.10 Cost Volume Profit Analysis for a Multi-Product Firm**

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

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

#### **2.1.11 BEP for Sales Mix/Multi-Product**

The sales mix is used to compute a weighted average unit contribution. In multi-product firm, BEP is calculated in aggregate. This is the average of the several products unit contribution margin weighted by the relative sales proportion of each product. The following procedures are followed to calculate BEP for sales mix/multi-product.

- ) Calculate CM/PV ratio for each product.
- ) Calculate proportion of sales mix in units and values as follows:

$$\text{In units} = \frac{\text{Individual product's sales units}}{\text{Total of all products sales units}}$$

$$\text{In amount} = \frac{\text{Individual product's sales amount}}{\text{Total of all products sales amount}}$$

Calculated weighted average for all product as follows:

= Sales mix (units) x Units contribution margin

Or

Sales mix (units) x PV ratio

$$\text{Calculate BEP} = \frac{FC}{\text{Weighted average CM / PV ratio}}$$

### 2.1.12 Method of Segregating Mixed or Semi Variable Cost

CVP analysis requires the segregation of all cost into fixed and variables. So, the semi-variable cost should also be segregated into fixed and variable accordingly. The segregation of the semi-variable cost is done through one of the following methods (Maheshwar, 2000, 162-165).

#### a. Level of Output Compared to Levels of Expenses Methods

According to this method, the output at two different level in compared with corresponding level of expenses. Since, fixed cost remain constant, the variable overheads are arrived at by the ratio of change in expenses to changes in output.

$$\text{Variable element} = \frac{\text{Change in amount of expenses}}{\text{Change in activity or quality}}$$

#### b. Range Method

This method is similar to levels of output compared to level of expenses expect that only the highest and lowest point of output are considered out of various levels. This method is also called "High 'and low' method".

Procedure,

- ) Select the highest pair and the lowest pair.
- ) Compute the variable ratio "b" using the formula.

$$\text{Variable rate} = \frac{\text{Difference in cost 'Y'}}{\text{Difference in activity 'X'}}$$

) Compute the fixed cost as :

$$\text{Fixed cost portion} = \text{Total semi-variable cost} - \text{variable cost}$$

#### **c. Degree of Variability Method (DUV)**

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 difficult is faced in determining the degree if variability.

#### **d. Scatter Group Method**

In this method, the given data are plotted on graph paper and line of best fit is drawn, whereas semi-variable expenses is plotted on the vertical axis (y axis) and activity measure is plotted on the horizontal axis (x axis).

##### **Procedure**

- ) The volume of production is plotted on the horizontal axis and the cost are plotted on the vertical axis.
- ) Corresponding to each volume of production costs is then plotted on the paper thus, several points are shown on it.
- ) A straight line of best fit is then drawn through the points plotted. This is the total cost line. The point where this line intersects the vertical axis is taken to be the amount of fixed elements.
- ) A line parallel to the horizontal axis is drawn from the point where the line of best fit intersects the vertical axis. This is the fixed cost line.
- ) The variable cost of any level can be known by nothing difference between fixed cost and total cost line.

The scatter-graph method is relatively easy to use and simple to understand. However, it should be used with extreme caution, because it does not provide an objective test for assuring that the regression line drawn in the most accurate fit for the underlying assumptions.

### e. Least Squares Method

The regression method does include all the observed data and attempts to find a line of best fit. Regression analysis is a statistical procedure for estimating mathematically, the average relationship between the dependent variable (y) and the independent variable (x). To find the line of best fit, a technique called least square method is used.

It is based on the mathematical technique of fitting an equation with the help of a number of observations. The linear equation can be assumed as:

$y = a + bx$  and the various sub-equation shall be,

$$y = na + b \sum x^2$$

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

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.

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

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

Where,

a = Fixed cost

b = Unit variable cost

N = No of series

x = Production units

= Sum of variables

### 2.1.13 Economic Characteristics of CVP Analysis

Essentially, cost-volume profit analysis offers greater insight into the economic characteristics of a company and may be used to determine the approximate effect of various alternatives. Where cost volume profit analysis are reasonably accurate, they

can help management decision making. CVP analysis is based on estimates, however, and the arithmetical manipulations generally involved average. Hence the result should never be interpreted as precise. Rather, analysis may be characterized appropriately as a "slide-rule" approach that may be used to developed and test with a minimum of effort, the approximate effect on costs and Profit of Servable types of management decision” (Welsch, 1979; 467-468).

#### **2.1.14 Cost Volume Profit Analysis and Limiting Factors**

CVP analysis is helpful in profit planning and expects that a company will be able to produce any number of output of its choices (desire). But in real world it is not possible, because of some critical factors like finishing machine or raw material or labour. These critical factors in the CVP analysis are known as constraints.

##### **a. CVP Analysis with a Single Constraint**

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

##### **b. CVP Analysis with a Multiple Constraints**

Where more than one scarce resources exists, the optimum production program can not easily be established by the simple process applied in single resources constraint. Under the circumstances simple allocation of resources or the basis of contribution margin per unit is neither feasible nor desirable. Contribution margin per unit of scarce resources may be different for different scarce resources. In such situation, linear programming technique may be used to optimize product mix. The linear programming formulation is required to determine a production plant that maximizes contribution from the product mix. Linear programming is a mathematical technique

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

### **2.1.15 CVP Analysis Under Condition of Uncertainty**

CVP analysis can be used for various purposes. Such as choosing between machine and products, planning of profit and most significantly fixing up of selling price. Management has used this as a convenient tool of profit planning without giving consideration of risk and uncertainty involved in it. Although, margin of safety ratio explains the degree of sensitivity of the product and product in general but it fails to explain among of certainty in the product and also between the alternatives. To cover come such a difficulty, risk and uncertainty analysis can also be used in CVP analysis (Gyawali et al. 2064).

Probability distribution approach is a simple statistical tools which may be used to measure the risk and uncertainty involved in CVP analysis. A probability distribution of happening of the event in consideration is used. This may be done either taking into consideration of the experience in the past or may be done by considering the personal intuition of the persons doing so. In business, references of past experience are hardly available therefore a person is likely to behave in the same manner in the similar situation in different time. Personal judgement plays significant role in the management decision making. The condition thus, postulated are assigned probability (i.e. ones judgement towards likeliness of happening of the condition forecasted). It must be understood here that probability assigned here is a subjective probability based in, personal judgement of the man making such a analysis (Pandey, 2003: 17).

### **2.1.16 Cost Structure and Operating Leverage**

#### **a. Cost Structure**

The relationship of variable and fixed cost is reflected in its operating leverage. Cost structure refers to the relative proportion of fixed and variable cost in an organization. The highly labour intensive organization has high variable cost and low fixed cost and thus makes low operating leverage and relatively low break even point. Conversely,

organization that is highly capital intensive has a cost structure that include low variable and high fixed costs. Such a structure reflects high operating leverage and relatively high break even point. Company with lower fixed costs and higher variable costs will enjoy greater stability in net income and will be more protected from losses during bad years but at the cost of lower net income in good years.

### **b. Operating Leverage**

The relationship of a company's variable and fixed costs is reflected in its operating leverage. Operating leverage is a measure of the extent to which fixed costs are being used in organization. Generally, highly labour intensive organization has high variable costs and low fixed costs and this makes low operating leverage and a relatively low break even point. Conversely, organization that is highly capital intensive may have a cost structure that includes low variable and high fixed costs which reflects high operating leverage with high break even point. It shows that fixed costs and operating leverage have direct relationship. Higher the amount of fixed costs higher the operating leverage and break even point and vice versa. In other words the firm with relatively high operating leverage has proportionally high fixed expenses, the firms break even point will be relatively high. The operating leverage, factory is determine as under (Munakarmi, 2003:145).

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

### **2.1.17 Sensitivity Analysis**

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

$$\begin{aligned} \text{Net profit} &= \text{Total sales revenue} - \text{Total cost} \\ &= \text{Sales units SPPU} - \text{Sales Units} \times \text{VCPU} - \text{Fixed cost} - \text{Taxes} \end{aligned}$$

But one of the factors remain unchanged, sometimes the manager can intentionally change the price and cost factors as a part of strategic decisions. But the strategy should focus more on the factor, which is more sensitive or responsive for profit. Therefore, to measure the sensitivity of cost volume profit factors, we can see the impact of certain percentage or amount change in volume, price or cost factors on net profit (Bajracharya, et. al., 2004: 245). Profit is the function of a various of factors. It is affected by change in volume, cost and prices. Profit may be affected by the changes, (increase or decreases), in the following factors (Pandey, 1999: 203-208).

- ) Effect of price and volume changes : A change in price invariably affects volume. A price reduction increases demand of the product and consequently, may result in increased volume. On the other hand, increase in price may adversely affect the demand and thus, reduce volume. The impact on profits under these circumstances is not obvious. Profit may increase with a price reduction if volume increases substantially. Similarly, a price rise may reduce profits if there is material fall in volume.
- ) Effect of price changes : An increase in the selling price will the increase P/V ratio and as a result will lower the break even point. On the contrary, a decrease in selling price will reduce the P/V ratio and therefore, result in a higher break even point.
- ) Effect of volume changes : A changes in volume, not accompanied with a change in the selling price and/or costs, will not affect P/V ratio. As a result, the break even point remains unchanged. Profit will increase with an increase in volume and will reduce with a decrease in volume.
- ) Effect of changes in combination of factors : The financial manager of the management, evaluating profit plans or budgets, must realize that a change in one factor leads to a changes in an other factors. Therefore, all such changes should be carefully visualized and their net impact on profit must be seen.
- ) Effect of change in variable costs : The impact of the changes in variable costs on profits is straight forward it does not cause any change in selling price

and/or volume. An increase in variable costs will lower P/V ratio, and push up the BEP and reduce profits. On the other hand, if the variable costs decline, P/V ratio will increase, BEP will be lowered and profit would rise.

- ) Effect of changes in fixed costs : A change in fixed cost does not influence P/V ratio. Other factors remaining unchanged, a fall in the fixed cost will, lower the BEP and raise profits. An increase in fixed costs, caused either due to some external factors or due to some changes in the management policy, will raise the BEP. Increase in factory rent or insurance and taxes are examples of external factors, while increased depreciation or salaries of managements may be the result of management decisions.

## **2.2 Review of the Previous Research Works**

Many researches have been made in the area of profit planning and control and management accounting in Nepalese context. The research topic cost volume profit analysis as a tool to measure effectiveness of PPC/budgeting of a company, in Nepalese context. As profit planning and control and management accounting cover major of the aspects of cost volume profit analysis, researchers made on these areas are taken into consideration for the sake of review to examine how profit planning and control and management accounting practices in Nepalese companies. An attempt is made here to review some of the researches, which have been submitted on profit planning and control and management accounting in the context of Nepal.

**Rijal, Madhav (2003)** has conducted a research entitled *CVP Analysis of a Tool to Measure Effectiveness of Profit Planning and Control: A Case Study of Nebico Private Limited*. His research is based on primary data as well as on secondary data and information's. Stratified questionnaire method is used to collect primary and raw data. His study has made a great impact in Nepalese organizations, whether Nepalese organizations can practice CVP analysis and make improvement through it or not. CVP analysis tool is effective for profit planning can be figured out. Through his outstanding research we can find out some recommendable findings and suggestion. Some of the remarkable findings were as follows:

The main objective of his study was to examine CVP analysis to measure effectiveness of TPC of profit planning of STCL. To achieve the main objective, following sub-objectives were set.

**His specific objectives:**

- ) To study interrelationship of cost, volume and profit.
- ) To evaluate the profitability, financial position and sensitivity cost of STCL.
- ) To analyze the impact of CVP on profit planning.

**His major findings:**

- ) No clear and defined guideline for objectives, responsibility and duties.
- ) No classifications of items are done as fixed and variable.
- ) Lack of decision making power at middle and lower level.
- ) Lack of effective inventory policy.
- ) Lack of effective controlling tools to reduce unnecessary costs.
- ) Need to establish a separate research and development department for better result in future.
- ) Need of a systematic approach towards, comprehensive profit planning.

**Aryal, Chaturbhuj (2006)** has conducted a research entitled *CVP analysis as a tool to measures effectiveness of PPC (A Case Study of Herbs Production and Processing Co. Ltd.)*. He used primary and secondary sources to data collected and used seven years data from FY 2056/57 to FY 2062/63 for analysis.

**His objectives :**

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

**His major findings:**

- ) Budgets were prepared on traditional method.
- ) HPPCL has burden of management and administration expenses and interest on loan which is directly influencing the profitability.
- ) HPPCL adopted traditional pricing method to determine price, which may not be appropriate in today's competitive market.

- ) There was not practices to separating cost in to fixed and variable. The costs are roughly classified and that classification is not scientific and appropriate. Thus it is difficult to use financial tools, like as flexible budget, CVP, cost of good sold and degree of operating leverage and profit margin ratio.
- ) HPPCL is suffering from huge losses; so in every year has negative net profit margin ratio.
- ) Profit volume ratio of the company is in fluctuated trend, which effects on BEP of the company.
- ) Margin of safety of the company is negative trend. So company could not sold properly and suffering from losses.
- ) BEP of the company is analysis higher than Actual sales. So the company should not maintain its expenses.

**Bhushal, Bhesh Raj (2006)** has conducted a research entitled *Use of cost volume profit analysis to plan the profit in Nepalese manufacturing companies: A case study of Bottlers Nepal Ltd.* The main objective of his study is to examine the use of CVP analysis to plan the profit in bottlers Nepal limited.

**His specific objectives:**

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

**His major findings:**

- ) The company has not maintained the broad and long range objectives and periodic report and objectives are limited to the high ranking official only.
- ) Sales and production target are not achieving because there is not an effective forecasting system.
- ) There is no any effective plan for cost reduction and control. And lack of effective cost control programmed.
- ) The profit trend of the company is not satisfactory.

- ) The company has no details and systematic expenses plans. The fixed, variable and mixed expenses plan is the necessary elements for profit planning and control.
- ) BNL has not proper practice of segregating the costs into fixed and variable or controllable and non-controllable.

**Namdak, Tenzin (2007)** has submitted the thesis on the topic *CVP analysis of Dairy Development Corporation*. The main objective of this thesis is to determine the relationship between cost, volume and profit and profitability of the DDC. His research covered the time period of five years from 2058/59 to 2063/64. Research methodology was through primary as well as secondary sources.

**His objectives:**

- ) 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 labour by using different productivity ratios.
- ) To analyze the CVP of the corporation and it's impact on its profit planning.
- ) To provide necessary suggestions and recommendations, whatever necessary, base on findings.

**His major findings:**

- ) DDC has been planning only on short term basis.
- ) The practice of CVP analysis has not been used yet.
- ) There is no practice of segregating cost into fixed and variable.
- ) 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 high 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.

**Adhikari, Bijaya Raj (2007)** has presented a Dissertation on the topic of *Cost Volume Profit Analysis of Nepal Lube Oil Limited*. The main objective of his study is to examine the use of CVP analysis to plan the profit in Nepal Lube Oil Limited.

**His specific objectives:**

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

**His major findings:**

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

**Sijakhwo, Krisna Ram (2009)** has submitted his thesis entitled *CVP analysis as a Managerial Tool in Bhaktapur Craft Paper Limited*. His research was submitted to Shanker Dev Campus, T.U. in partial fulfillment of Master's Degree in the year 2008.

**His objectives:**

- ) The study the relationship of cost volume and profit BCP Ltd.
- ) To analyze the impact of CVP of the company productivity.
- ) To calculate BEP, MOS, CM etc. and its impact on the profitability.
- ) To make suggestions for future prospects, problems and promotion of the Bhaktapur Craft Paper Ltd. through this study.

**His major findings:**

- ) Very high degree of correlation between sales and total costs showed that if total costs changed, it would affect the sales revenues of the company due to sales and total costs relation should be considered.
- ) Company should attention to improve performance, using management principles like MBO, participating management activities etc.
- ) Scientific costs segregation method (i.e. Least square method) should be used for costs segregation as mixed costs into fixed and variable cost that help to control cost minimize.
- ) Research is focused immediately to improve cost analysis by using CVP analysis as tools of PPC.

**Ghimire, Kuldeep (2010)** has submitted his thesis entitled *Analysis of CVP of manufacturing organization: A Case study of Dabur Nepal Pvt. Ltd.* Shanker Dev Campus, Kathmandu.

**His objectives:**

- ) To evaluate the impact of the profit of Dabur Nepal Pvt. Ltd.
- ) To show the relationship of cost, volume and profit between multi product of the organization.
- ) Examine the variance between target and actual sales and production.
- ) To provide appropriate suggestions on the basis of major finding of the study.

**His major findings:**

- ) Management of the company is not taking interest for BEP analysis.

- ) The company facing the political problem. So, government should take attention for the decision.
- ) Management of the company is not in favour of segregation of cost in variable and fixed, mostly it used as variable and fixed cost whatever the nature of cost.
- ) Net profit margin profitability ratio and other things were not satisfactory.
- ) The total sales revenue of the company is less fluctuating.
- ) Ghimire is focusing on his research for find out the position of total budgeted sales, actual sales, BEP, MOS, and CM of the Ltd, which is enable to show relationship between cost, volume and profit as much clearly.

### **2.3 Research Gap**

Most of the researches have analyzed in very limited areas and impacts are rarely explained. Every researcher gives his/her effort to fulfill the gap, which has not been covered by the previous research works. Especially very few researches have been made by comparing the two multinational companies. Most of the studies have been done in respect of comprehensive profit planning and control of manufacturing enterprises but this study examines the current practice of CVP analysis as a tool of PPC in BNL. Previous studies have not covered risk measurement, CVP analysis under conditions of uncertainties but this research tries to cover these areas. This study gives a high degree of value as the process and the data used in a systematic way of CVP Analysis. So this research remains fruitful to those interested person, scholars, students, teachers, government, businessman, civil society and other stakeholders for academic and policy perspective. This study has focused on operating position of the organization and clear picture of CVP analysis and its impact on profitability.

## **CHAPTER-III**

### **RESEARCH METHODOLOGY**

This chapter plays vital role to accomplish the study in realistic term with sound empirical analysis. Thus, this chapter deals with the brief conceptual review of research design of this study and the research methodology used to achieve the objectives of study so that the proper recommendations may be given to the concerned enterprises.

#### **3.1 Research Design**

By research design, we mean an overall framework, outline or plan for conducting the study. It is the plan, structure and strategy for investigation of the facts in order to arrive at conclusion. Research is generally either exploratory or descriptive in nature. The exploratory or descriptive design can be further classified into three categories:

#### **3.2 Population and Sample**

There are not any limitations for the selection of the enterprise. Since it is not possible to attempt all the number of research population in this research due to various circumstances, one of the large multinational companies named BNL is selected randomly for the sake of convenience of the study.

#### **3.3 Nature and Sources of Data**

Research methodology cannot be utilized to bring the conclusion. For the purpose of CVP analysis of the enterprise, data has been collected from secondary sources only.

This data has already been used by others. Only primary data are not sufficient to fulfill the requirement of the research work. Sometimes it is very difficult to collect the primary data. In this situation, it is better to use secondary data to accomplish the objectives of study. Secondary data is used from the following sources:

- ) Different publications made by the company.
- ) Annual Report provided by the company.

- ) Library
- ) Books, Booklets, Journals, Magazines, etc.

### **3.4 Data Gathering Procedure**

Data gathering is the most important phase of the research work. The conclusion of the study depends upon the collected data. The researcher found the data gathering procedure as the most difficult part of the fieldwork. Frequent visits to personnel of different departments of the company as well as the manufacturing unit were made to ensure that the collected data were according to the requirements of study.

### **3.5 Period Covered**

Due to the short span of time and other constraints, this research only covers the last five years i.e. FY 2005/6 to FY 2009/10.

### **3.6 Tools and Techniques Used for Analysis**

The collected information is recorded in the appropriate categories on the basis of their similarity and homogeneous nature. The data are presented in proper formats and interpreted and explained whenever necessary. The following tools are used for analyzing the data.

#### **3.6.1 Accounting and Financial Tools**

Generally, the accounting and financial tools are used for the purpose of the assessment of the financial position to a particular organization. The following tools are used for analyzing the data:

$$\text{Contribution Margin (CM)} = \text{Sales Revenue (SR)} - \text{Variable Cost (VC)}$$

$$\text{Contribution Margin (CM)} = \text{Fixed Cost (FC)} \pm \text{Profit/Loss}$$

$$\text{Contribution Margin per Unit (CMPU)} = \text{SPPU} - \text{VCPU}$$

$$\text{Contribution Margin Ratio (C/M Ratio)} = \text{CM/SR or CMPU/SPPU}$$

$$\text{BEP (Units)} = \text{FC/CMPU}$$

$$\text{BEP (Rs)} = \frac{FC}{C/M \text{ Ratio}}$$

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

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

$$\text{Required Sales (Units)} = \frac{FC \Gamma \frac{DPAT}{1 ZTax}}{CMPU}$$

$$\text{Required Sales (Rs)} = \frac{FC \Gamma \frac{DPAT}{1 ZTax}}{C/M \text{ ratio}}$$

$$\text{Required Sales (Units)} = \frac{FC}{CMPU Z PPU}$$

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

$$\text{Required Sales (Units)} = \frac{FC}{CMPU Z \frac{PPU}{1 ZTax}}$$

$$\text{Required Sales (Rs)} = \frac{FC}{C/M \text{ Ratio Z } \frac{\text{Profit}}{1 ZTax}}$$

$$\text{Margin of Safety (MOS)} = \text{Total Sales} - \text{BE Sales}$$

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

$$\text{DOL} = \text{CM/EBIT}$$

### 3.6.2 Mathematical and Statistical Tools

Generally, the mathematical and statistical tools are used for attaining accuracy on analysis as well as on study. The following tools are used for analyzing the data:

#### 1) Mean, Standard Deviation and Coefficient of Variation:

$$a) \text{ Mean} = \frac{\sum fX}{n}$$

$$b) \text{ Standard Deviation } (\sigma) = \sqrt{\frac{1}{n} \sum X^2 - \left(\frac{\sum X}{n}\right)^2}$$

$$c) \text{ Coefficient of Variation (C.V.)} = \frac{S.D.(\sigma)}{\text{Mean}(\bar{X})}$$

#### 2) Time Series Analysis (Trend Analysis):

Trend analysis is also one of the most useful statistical tools. It is used for forecasting. A widely and most commonly used method to describe the trend is the least square method.

##### a) Simple Regression Analysis:

Let, the demand forecasting regression equation of Y on X is,  $Y = a + bX$

Where, Y= Dependent Variable

a= Intercept of Regression Line

b= Slope of Regression Line

X= Independent Variable &

$$b = \frac{n \sum XY - \sum X \sum Y}{n \sum X^2 - (\sum X)^2} \quad \& \quad a = \frac{\sum Y - b \sum X}{n}$$

##### b. Multiple Regression Analysis:

Let, the demand forecasting multiple regression equation of  $X_1, X_2$  &  $X_3$  is,

$$X_1 = a_1 + b_1 X_2 + b_2 X_3$$

Where,  $X_1$  = Dependent Variable

$X_2$  = Independent Variable

$X_3$  = Independent Variable

$a_1$  = Point of Intercept on Y-axis

$b_1$  = Slope of  $X_1$  with variable  $X_2$

$b_2$  = Slope of  $X_1$  with variable  $X_3$

### 3) Karl Pearson's Correlation Coefficient & Probable Error:

$$\text{Simple Correlation Coef. (r)} = \frac{n \sum XY - \sum X \sum Y}{\sqrt{[n \sum X^2 - (\sum X)^2][n \sum Y^2 - (\sum Y)^2]}}$$

$$\text{Coefficient of Determination (C.D.)} = r^2$$

$$\text{Probable Error (P.E.)} = 0.6745 \frac{\sum r^2}{\sqrt{n}}$$

Multiple Correlation Coef. ( $R_{1.23}$ ) =

$$\sqrt{\frac{a_1 \sum X_1 + b_1 \sum X_1 X_2 + b_2 \sum X_1 X_3 - Z_n (\sum X_1)^2}{\sum X_1^2 - Z_n (\sum X_1)^2}}$$

$$\text{Multiple Determination} = R_{1.23}^2$$

$$\text{Standard Error of Estimate } (\sigma_{1.23}) = \sqrt{\frac{\sum X_1^2 - Z_n a_1 - X_1 Z_n b_1 - X_1 X_2 Z_n b_2 - X_1 X_3}{n - Z_n}}$$

### 4) Hypothesis Test (t -Test):

**Null Hypothesis**

... $H_0$  :  $\sim_1 X \sim_2$ , i.e. there is no significant difference between budgeted & actual sales.

### **Alternative Hypothesis**

... $H_0 : \sim_1 \mid \sim_2$ , i.e. there is significant difference between budgeted & actual sales.

### **Test Statistics**

$$\dots t X \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{S^2 \left( \frac{1}{n_1} + \frac{1}{n_2} \right)}}$$

### **Level of Significance**

... $\alpha = 5\% = 0.05$

### **Degree of Freedom**

... $n_1 + n_2 - 2$

### **Critical Value:**

...0.05 For  $(n_1 + n_2 - 2)$  for two tailed test

### **Decision**

- a) If the calculated value of 't' is less than the critical value, then  $H_0$  is accepted.
- b) If the calculated value of 't' is greater than the critical value then  $H_0$  is rejected.

## CHAPTER-IV

### DATA PRESENTATION AND ANALYSIS

#### 4.1 Sales Plan/Sales Budget

Bottler's plan is an organized approach for developing comprehensive sales plan. Bottler's plan provides basic managerial decision about marketing based on that decision. So different important decisions such as production, purchases, expenses are made by sales unit, which is budgeted, likely production volume depends upon sales target and labor, material and production cost depends up on the production volume.

The sales plan is the foundation for periodic planning in the first because particularly all others enterprise planning is built on it. The primary source of cash is sales. The capital additions needed the Amount of expenses to be planned, the manpower requirement, the production level, and others important operational aspects depend on the volume of sales. Therefore, the sales plan must be realistic.

A comprehensive sales plan includes both strategic and tactical sales plan. Both sales plans must be prepared in comprehensive profit plan. Strategic sales plan is known as long range sales plan. Usually, it is 5 to 10 years strategic sales plan. It is to be developed as annual amount. It require depth analysis of future market potentials which may built up from a basis foundation such as population changes state of economy, industry projections and company objectives.

The effect long term strategic are also brought to bear on the long term sales plan. They would effect in such area as pricing, development of new product line, innovation of product, expansion of distribution channel, cost patterns. Similarly, tactical sales plan is to be developed for short-term period in a company for future 12 months detailed by month and quarter. So it is also called, short range sales plan. Tactical sales plan includes detailed plan for each major products and from grouping of minor products. Short-term sales plan are usually developed in term of physical units or jobs and in sales or dollars.

For planning and controlling purposes, short-term sales must be developed by sales responsibility. Because short-term profit plan provides major consideration for planning and controlling purposes, it is also necessary for completing other components of profit plan.

### 4.1.1 Sales Plan of BNL

It provides basic management decision about marketing. It is an organized approach for developing comprehensive sales plan. It is a fundamental plan of overall profit planning. Different important decision such as production purchase expenses etc are made on the basis of sales Budget.

The company does not have a fixed method of sales forecasting. It uses personal judgment method as well as statistical method like regression method, time series analysis etc. The following factors are considered while forecasting the sales.

- ) Past Sales Level
- ) General Economic Trend
- ) Economic Trend in Industry i.e. Industry of soft drink
- ) Current Political & legal Situation of Country
- ) Planned Advertising & Sales Promotion Expenses
- ) Market Research Studies

The following table shows the target and actual sales of BNL (in Rs.) during the five-year period form 2006/07 to 2010/11.

**Table 4.1: Target and Actual Sales**

| Details<br>Year | Budgeted       |                       | Actual       |                       | Variance |
|-----------------|----------------|-----------------------|--------------|-----------------------|----------|
|                 | Sales (in Rs.) | Increase/<br>Decrease | Sales in Rs. | Increase/<br>Decrease |          |
| 2006/07         | 714739440      | -2.37%                | 621827381    | 1.15%                 | 13U      |
| 2007/08         | 721827381      | 0.99%                 | 634189583    | 1.99%                 | 12.14U   |
| 2008/09         | 734189583      | 1.71%                 | 746581607    | 17.72%                | 1.69F    |
| 2009/10         | 846581607      | 15.31%                | 1002720181   | 34.31%                | 18.44F   |
| 2010/11         | 1102720181     | 30.25%                | 1588149524   | 58.38%                | 44.02F   |
| Mean*           | 824011638      |                       | 918693655    |                       |          |
| S.D*            | 164801314      |                       | 404328557    |                       |          |
| C.V*            | 20%            |                       | 44.01%       |                       |          |
| r*              | 0.9959276025   |                       |              |                       |          |
| P.E*            | 0.002451838714 |                       |              |                       |          |

\*Appendix II.

Source: Annual Report of BNL

The above table shows the Budgeted and actual sales of BNL over five year period from 2006/07 to 2010/11, actual sales is Rs 614739440 in FY 2005/06 which is increased by 1.15% in 2006/07. After then it is increased in increasing rate up to the fiscal year 2010/11. There is a slight increase in sales in 2007/08 but there is significant increase in sales afterward and is increased by 17.72%, 34.31% and 58.38% In 2008/09, 2009/10 and 2010/11 respectively. The lowest sales of Rs.621, 827,381 is made in 2006/07 and the highest sales of Rs.1588, 149,524 is made in 2010/11. So sales of BNL are satisfactory.

If it is assumed that 5% variance is ignorable then performance of BNL is not satisfactory since variance is more than 10%. For this variance sales manager should be responsible. The unrealistic forecasting of regional sales manager may also result this variance, the company is able to meet this forecasted sales in 2008/09, 2009/10 and 2010/11 in which there are favorable variance of 1.69%, 18.44% and 44.02% respectively. And the company has the poorest performance in 2006/07 in which there is high unfavorable variance of 13%.

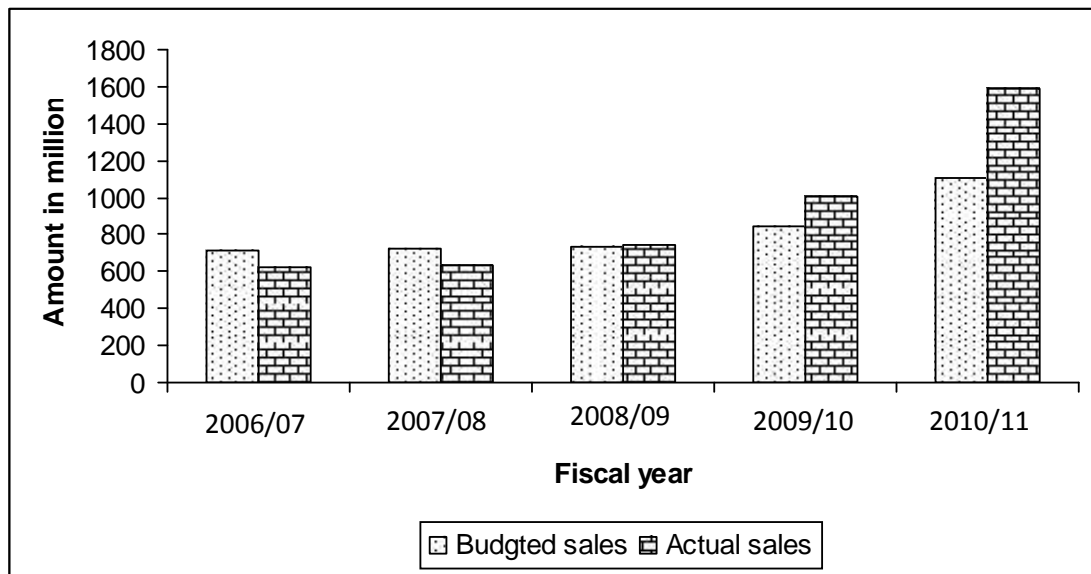
From the above table the average of Budgeted sales is 824011638 with the standard deviation of Rs.164801314 which is less than average of actual sales of Rest.918693655 with the standard deviation of Rs.404328557. The actual sales has the high C.V. than the Budgeted sales that means the actual sales is more fluctuate than the Budgeted sales. It shows that there is not any proper planning for making Budget and for achieving the target sales.

Similarly, the value of correlation coefficient of 0.9959276025 shows the positive relationship between budgeted and the actual sales with very high significant since  $r = 0.9959276025$ , then the coefficient of determinant ion  $r^2=0.992$ . That means 99.20% of the total variance in actual sales is due to the change in Budgeted sales and remaining 0.80 % (1-0.9920) is unexplained. Since  $r > 6PE$  (i.e.  $0.9959276025 > 0.002451838714$ ), we can conclude that  $r$  is significant.

The above analysis shows that the BNL does not have good planning for preparing the budget. The targets are somehow unrealistic and high and there is no proper planning for achieving the target.

The multiple bar diagram for the budgeted and actual sales is presented below:

**Figure No. 4.1: Budgeted and Actual Sales of BNL**



The above diagram shows that there is high variance (favorable) in FY 2010/11 and low variance (unfavorable) in FY 2008/09. The company is not able to meet the target in first two years till 2007/08. But the company is able to achieve its target in 2008/09, 2009/10 and 2010/11. It can be concluded that actual sales is less than budgeted in first two fiscal year and actual sales is higher than budgeted sales in last three years, shows the fluctuating trend of sales.

#### **4.2 Production plan of BNL**

Production planning is the second step of profit planning and control in a manufacturing company. The past sales & production, inventory level and forecasted sales are the basic foundations of production budget. It is affected by the desired ending inventory of finished goods. To find the budgeted production the following equation should be considered by the management.

$$\text{Budgeted production} = \text{Budgeted Sales} + \text{Desired Ending Inventory} - \text{Beginning Inventory}$$

$$\text{Or Budgeted production} = \text{Budgeted sales} \pm \text{Finished Inventory Changes.}$$

The production plan of BBL is based upon various controllable factors. It adopts seasonal production. The production manager of the company prepares production Budget with the help of sales manager, production supervisors, marketing managers, administrative manager and financial manager. The industry has sufficient capacity to

produce the goods to fulfill the demand of Budgeted sales; nevertheless, it is unable to utilize its full capacity.

The company uses the fluctuating seasonal production policy. While determining inventory levels for finished goods, the management considers fluctuating production & inventory policy for smooth supply. The company keeps inventory of finished goods equal to 2% of next year's sales. The following factors are considered while preparing the production Budget:

- ) Availability of raw material, labor
- ) Planned sales for the Budgeted period
- ) Inventory policies relative to level of finished goods and WIP.
- ) Economic lot size of production runs
- ) Plant capacity

The following table shows the planned production and actual production of BNL (in Rs.) over five-year period from 2006/07 to 2010/11.

**Table 4.2: Budgeted production of BNL**

| Year \ Detail | Cost of goods sold | Desired ending Inventory | Total needed | Actual Beginning Inventory | Budgeted Production |
|---------------|--------------------|--------------------------|--------------|----------------------------|---------------------|
| 2006/07       | 415480239          | 8150789                  | 423631028    | 7465594                    | 416165434           |
| 2007/08       | 407539444          | 9012746                  | 416552190    | 7133110                    | 409419080           |
| 2008/09       | 450637322          | 10321929                 | 460959251    | 14401378                   | 446557873           |
| 2009/10       | 516096450          | 13678286                 | 529774736    | 18874839                   | 510899897           |
| 2010/11       | 683914300          | 115102681                | 685424568    | 17371311                   | 668053257           |

Source: Annual report of BNL

**Table 4.3: Actual production of BNL**

| Year \ Detail | Cost of goods sold | Desired ending Inventory | Total needed | Beginning Inventory | Actual Production |
|---------------|--------------------|--------------------------|--------------|---------------------|-------------------|
| 2006/07       | 351080039          | 7133110                  | 358213149    | 7465594             | 350747555         |
| 2007/08       | 389258445          | 14401378                 | 403659823    | 7133110             | 396526713         |
| 2008/09       | 455134052          | 18874839                 | 474008891    | 14401378            | 459607513         |
| 2009/10       | 621893624          | 17371311                 | 639264935    | 18874839            | 620390096         |
| 2010/11       | 887111740          | 11380999                 | 898492739    | 17371311            | 881121428         |
| Total         | 2704477900         | 11380999                 | 2715858899   | 7465594             | 2708393305        |

Source: Annual report of BNL

**Table 4.4: Budgeted and Actual production of BNL**

| Detail<br>Year | Budgeted       |                       | Actual     |                       | Variance |
|----------------|----------------|-----------------------|------------|-----------------------|----------|
|                | Production     | Increase/<br>Decrease | Production | Increase/<br>Decrease |          |
| 2006/07        | 416165434      | 0.85%                 | 350747555  | -0.95%                | 15.72%U  |
| 2007/08        | 409419080      | -1.62%                | 396526713  | 13.05%                | 3.15%U   |
| 2008/09        | 446557873      | 9.07%                 | 459607513  | 15.91%                | 2.96%F   |
| 2009/10        | 510899897      | 14.41%                | 620390096  | 34.98%                | 21.43%F  |
| 2010/11        | 668053257      | 30.76%                | 881121428  | 42.03%                | 31.90%F  |
| Mean*          | 490219108      |                       | 541678661  |                       |          |
| S.D*           | 107204914      |                       | 215450882  |                       |          |
| C.V*           | 21.87%         |                       | 39.78%     |                       |          |
| r*             | 0.9897555125   |                       |            |                       |          |
| P.E*           | 0.006148750987 |                       |            |                       |          |

\*appendix II

Source: Annual Report of BNL

The above table shows the budgeted and actual production of BNL. Budgeted and actual productions are Rs. 412659705 and 354093866 respectively in 2005/06. The budgeted production is increased by 0.85% in FY 2006/07 but actual production is decreased by 0.95%. There is Budgeted production decreased by 1.62%. In FY 2007/08 but actual production is highly increased in that year. Both productions are increased with high rate afterwards.

If 5% variance is assumed to be ignorable, then the performance of BNL is not satisfactory since it has 15.72% & 3.15% unfavorable variance in FY 2006/08 and 2007/08 respectively, BNL has achieved its target in last three years but there is high variance of 42.03% in 2004/11. The company has the poorest performance in FY 2006/07 in which there is high unfavorable variance of 15.72%. Overall the company has not a good performance since it has the unfavorable variance in past two years. The unrealistic sales forecasting the poorest condition between sales and production manager may happen this result. Production manager as well as sales manager should be responsible for this variance.

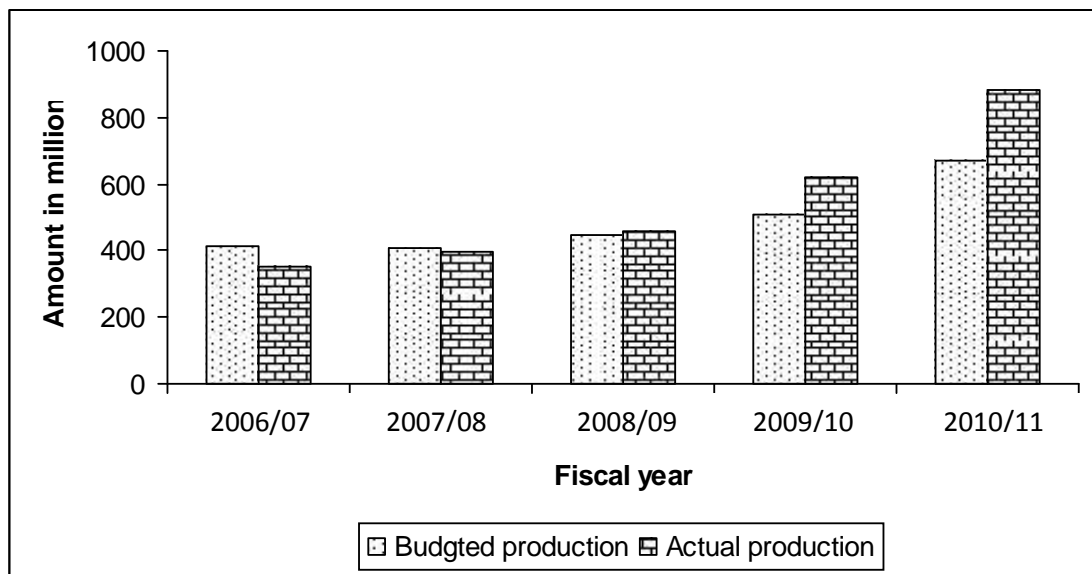
The averages of budgeted and actual productions are 490219108 and Rs. 541678661 with the standard deviation of Rs. 107204914 & Rs. 215450882 respectively. The C.V. of budgeted production is 21.87% where as the C.V. of actual production is

39.78%. That means actual production is more fluctuating than the budgeted production.

Similarly the value of correlation coefficient of 0.9897555125 shows the positive relationship between Budgeted and the actual production with the high significance. Since  $r=0.9897555125$  then the coefficient of determination  $r^2 = 0.9796$ . That means 97.96% of the total variation in actual Sales is due to the change in Budgeted production and remaining 2.04% (1-0.9796) is unexplained. Since  $r > 6PE$  (i.e.  $0.989755125 > 0.0368925$ ), we can conclude that  $r$  is significant.

The multiple Bar diagram for the budgeted and actual production is presented as below:

**Figure No. 4.2: Budgeted and Actual Production**



The above diagram shows that there is favorable variance of 31.90% In 2010/11 and high unfavorable variance of 15.72% In 2006/07. The company has low favorable variance of 2.92% In 2008/09 and low unfavorable variance of 3.15% in 2007/08. The company is unable to meet its target. In first two years till 2007/08 but it is able to achieve its target in last three years.

### 4.3 Cost Plan of BNL

When we take any goods or service, we have to pay some amount for that. Organization has to bear various types of costs like variable cost, fixed cost or semi variable cost. The cost is the Amount which is expenses for production of goods and services or used in operation. Variable cost can be controlled. So, it is also called controllable cost. Since fixed cost can not be controlled it is known as uncontrollable cost. For the operation of Business, cost is required but it should be controlled to earn profit. Different organization should bear different types of costs. For the cost volume profit Analysis, production and operation cost should be segregated in- to variable cost and fixed cost. So every organization should segregate their various types of cost into fixed and variable.

Costs incurred by BNL under different headings are presented as below:

**Table 4.5: Cost heading & Their Behavior**

| S.N | Cost Heading                         | Behavior | Fixed Cost | Variable Cost |
|-----|--------------------------------------|----------|------------|---------------|
| 1.  | <u>Cost Sales:</u>                   |          |            |               |
|     | Material cost:                       |          |            |               |
|     | Production of CO <sub>2</sub> gas    | Variable | -          | 100%          |
|     | Purchase                             | Variable | -          | 100%          |
|     | <u>Production Expenditures:</u>      |          |            |               |
|     | Salary, wages & allowance            | Fixed    | 100%       |               |
|     | Utilities                            | Fixed    | 100%       |               |
|     | Traveling                            | Fixed    | 100%       |               |
|     | Repair and maintenances              | Fixed    | 100%       |               |
|     | Consumables                          | Fixed    | 100%       |               |
|     | Insurance                            | Fixed    | 100%       |               |
|     | Printing and stationery              | Fixed    | 100%       |               |
|     | Other Expenses                       | Fixed    | 100%       |               |
| 2.  | <u>Administrative Expenses:</u>      |          |            |               |
|     | Salary, wages & other employees cost | Fixed    | 100%       |               |

|    |  |               |      |      |
|----|--|---------------|------|------|
|    | Contribution to P.F. gratuity            | Fixed         | 100% |      |
|    | Rent                                     | Fixed         | 100% |      |
|    | Repair and maintenance                   | Fixed         | 100% |      |
|    | Security expenses                        | Fixed         | 100% |      |
|    | Electricity fuel and water               | Fixed         | 100% |      |
|    | Training and traveling expenses          | Fixed         | 100% |      |
|    | SAP related expenses                     | Fixed         | 100% |      |
|    | Audit fee                                | Fixed         | 100% |      |
|    | Legal professional fee and<br>experience | Fixed         | 100% |      |
|    | Rates and taxes                          | Fixed         | 100% |      |
|    | Bank Charge                              | Fixed         | 100% |      |
|    | Trade discount                           | Variable      |      | 100% |
|    | General meeting expenses                 | Fixed         | 100% |      |
|    | Insurance premium                        | Fixed         | 100% |      |
|    | Communication                            | Fixed         | 100% |      |
|    | Information service charge               | Fixed         | 100% |      |
|    | Printing and stationary                  | Fixed         | 100% |      |
|    | Advertisement                            | Fixed         | 100% |      |
|    | Sales promotion expenses                 | Fixed         | 100% |      |
|    | Deposit written off                      | Fixed         | 100% |      |
|    | Charity and donation                     | Non operating |      |      |
|    | Uniform                                  | Non operating |      |      |
|    | Rejection and breakages                  | Fixed         | 100% |      |
|    | Vehicle operating expenses               | Fixed         | 100% |      |
|    | Royalties and management fees            | Fixed         | 100% |      |
|    | Obsolete stock and fixed assets          | Fixed         | 100% |      |
|    | Written off                              | Fixed         | 100% |      |
|    | Product transfer fees                    | Fixed         | 100% |      |
|    | Management fees                          | Fixed         | 100% |      |
|    | Miscellaneous expenses                   | Fixed         | 100% |      |
|    | Bad debt expenses                        | Fixed         | 100% |      |
| 3. | <u>Distribution Expenses</u>             | Semi-Variable | 30%  | 70%  |

|    |                                    |               |      |  |
|----|------------------------------------|---------------|------|--|
| 4. | <u>Interest</u>                    | Fixed         | 100% |  |
| 5. | <u>Depreciation</u>                | Fixed         | 100% |  |
| 6. | <u>Impairment</u>                  | Fixed         | 100% |  |
| 7. | <u>Amortization</u>                | Fixed         | 100% |  |
| 8. | <u>Provision for staff Quarter</u> | Non operating |      |  |
| 9. | <u>Provision for bonus</u>         | Non operating |      |  |

#### 4.3.1 Analysis of semi-variable costs

Semi variable cost is combined cost of both fixed and variable. Fixed cost should bear for certain level and if the level of output or services increased, excess amount should be spent which is known as variable cost. To segregate the mixed cost into fixed and variable costs, the company has provided the information about the degree of variability of the cost. All semi-variable costs have been segregated on the basis of given information.

**Table 4.6: Segregation of semi-variable cost of BNL**

| Particulars              | 2006/07  | 2007/08  | 2008/09  | 2009/10  | 2010/11  |
|--------------------------|----------|----------|----------|----------|----------|
| 1)Distribution Expenses: |          |          |          |          |          |
| Fixed cost (30%)         | 5086429  | 6353684  | 7791626  | 10446856 | 14917993 |
| Variable cost (70%)      | 11868334 | 14825263 | 18180461 | 24375998 | 34808651 |
| Total                    | 16954763 | 21178947 | 25972087 | 34822854 | 49726644 |
| Increase/Decrease        | -14.09%  | 24.91%   | 22.63%   | 34.08%   | 42.80%   |

Source: Annual Report of BNL.

The above table shows the detailed segregation of semi-variable cost. The company treats the distribution cost as a semi-variable cost. BNL is able to control its distribution cost in FY 2006/07. But it is increased by 24.91%, 22.63%, 34.08% and 42.80% in FY 2007/08, 2008/09, 2009/10 & 2010/11 respectively. It can be concluded that total cost is in increasing trend for every fiscal year.

### 4.3.2 Analysis of Fixed cost

Fixed cost remains constant up to the certain level or the maximum level. It does not vary with level of output. Per unit fixed cost may vary with the level of output (i.e. increase with decrease in level of output & decrease with increase in level of output). Fixed cost in total may vary in different fiscal year due to the other level of output like inflation, tax rate increase in price of different factors used etc. Fixed costs incurred by BNL under different headings are presented in detail as below:

**Table 4.7: Computation of Fixed Cost of BNL**

| S.N               | Particular                                  | 2006/07   | 2007/08   | 2008/09   | 2009/10   | 2010/11   |
|-------------------|---|-----------|-----------|-----------|-----------|-----------|
| 1.                | Cost of sales:<br>Production<br>expenditure | 70512428  | 91752580  | 96140535  | 136427709 | 179438452 |
| 2.                | Adm. Expenses                               | 98237991  | 136209815 | 185275640 | 211708914 | 240654091 |
| 3.                | Distribution<br>expenses                    | 5086429   | 6353684   | 7791626   | 10446856  | 14917993  |
| 4.                | Interest                                    | 1328931   | 8875422   | 20789989  | 26193016  | 20392656  |
| 5.                | Depreciation                                | 64165899  | 60227418  | 65414572  | 67871841  | 71740948  |
| 6.                | Impairment                                  |           | 37672142  |           |           |           |
| 7.                | Amortization                                | 503470    | 531622    | 1030864   | 2570691   | 6889327   |
| Total             |   | 239835148 | 341622683 | 376443226 | 458033645 | 534033467 |
| Increase/decrease |   | 9.50%     | 42.44%    | 10.19%    | 21.67%    | 16.59%    |

The above table shows the fixed cost incurred by BNL. Fixed cost is increased by 9.50%, 42.44%, 10.19%, 21.67% and 16.59% in FY 2006/07, 2007/08, 2008/09, 2009/10 and 2010/11 respectively. In 2007/08, it is increased by 42.44% due to increase in miscellaneous expenses and impairment. The company should always try to control its miscellaneous expenses and spend in more productive sectors like advertisement expenses, sales promotion expenses, and information services charges etc. It can be concluded that BNL is not using the effective planning to control the fixed costs.

### 4.3.3 Analysis of variable cost

Variable costs are based on activity. Thus the variable costs should be zero with no activity level. They are changed directly with change in activity level in a responsibility center. Therefore, variable costs will be proportionately changed with the change in output level. Variable costs are controllable costs. So management has to give priority to control variable costs. Variable costs incurred by BNL under different headings are presented in details as below:

**Table 4.8: Computation of Variable Cost of BNL**

| Particular  | 2006/07    | 2007/08    | 2008/09    | 2009/10    | 2010/11    |
|---|------------|------------|------------|------------|------------|
| 1. Cost of Sales:   |            |            |            |            |            |
| Opening stock:  |            |            |            |            |            |
| Raw materials   | 142772596  | 81600664   | 87259400   | 47762161   | 58718366   |
| Work in progress  | 1379482    | 1074612    | 863340     | 1219212    | 2466301    |
| Finished goods  | 7465594    | 7133110    | 14401378   | 18874839   | 16822875   |
| Total   | 151617672  | 89808386   | 102524118  | 67856212   | 78007542   |
| Add: production of CO <sub>2</sub> Gas                    | 5877892    | 425936     | 0          | 0          | 0          |
| Add: Purchase during the year (Net rebate on concentrate) | 224047225  | 369282382  | 351268529  | 541140109  | 806638257  |
| Less: Transfer to Bottlers Nepal (Terai) Ltd.             | (11166792) | (59486721) | (26942919) | (47789047) | (10278353) |
| Total Available   | 370375997  | 400029983  | 426849728  | 561207274  | 874367446  |
| Less: Closing Stock                                       |            |            |            |            |            |
| Raw material  | 81600664   | 87259400   | 47762161   | 58718366   | 153049334  |
| Work in process   | 1074612    | 863340     | 1219212    | 2466301    | 2263528    |
| Finished goods  | 7133110    | 14401378   | 18874839   | 17371311   | 11381288   |
| Total   | 89808386   | 102524118  | 67856212   | 78555978   | 166694150  |
| Material cost   | 280567611  | 297505865  | 358993516  | 482651296  | 707673296  |
| 2. Administrative expense trade discount                  | 56673446   | 49126411   | 30979640   | 32256140   | 50883252   |
| 3. Distribution expenses                                  | 11868334   | 14825263   | 18180461   | 24375998   | 34808651   |
| Total variable costs                                      | 349109391  | 361457539  | 408153617  | 539283434  | 793365199  |
| Increase/decrease   | -0.53%     | 3.54%      | 12.92%     | 32.13%     | 47.11%     |

The above table shows the variable cost of BNL. Variable cost varies with the level of output. In 2006/07 variable cost is decreased by 0.53% with 1.15% increase in sales revenue. Again in 2007/08 variable cost is increased by 3.54% with 1.99% increase in sales revenue. Again in 2008/09 variable cost is increased by 12.92% with 17.72% increase in sales revenue. Again variable cost is increased by 32.13% with 34.31% increase in sales in 2009/10 and again variable cost is increased by 47.11% with 58.38% increase in sales in 2010/11. That means the company is able to control its costs in 2006/07, 2008/09, 2009/10 & 2010/11 but it is not able to control in 2007/08 in which variable cost is increased more than sales revenue.

#### 4.3.4 Non-operating Income and Expenses

These are the costs which are not related to production and operation of the organization. That means, these are the expenses or losses from non-operating sectors. Non-operating income includes the income other than the sales revenue. Thus, these are the extra income for the company. So, these income and expenses are not related with output level. Non-operating income of BNL under different headings is presented in details as below:

**Table 4.9: Computation of Non-operating Income of BNL**

| Particular   | 2006/07 | 2007/08 | 2008/09  | 2009/10  | 2010/11  |
|--|---------|---------|----------|----------|----------|
| Dividend from Bottlers Nepal (Terai) ltd, a subsidiary Co. | 0       | 0       | 83483872 | 0        | 31306452 |
| profit on sale of fixed assets                             | 2860982 | 385302  | 0        | 9972     | 0        |
| Other income   | 859031  | 1092417 | 1317254  | 30701457 | 1983895  |
| Total  | 3720013 | 1477719 | 84801126 | 30711429 | 33290347 |
| Increase/ Decrease   | -44.09% | -60.28% | 5638.65% | -63.78%  | 8.39%    |

Source: Annual Report of BNL.

The above table shows the non-operating income of BNL from 2006/07 to 2010/11. The company has the non operating income of Rs. 6,653,742 in 2005/06. Then it is decrease with increasing rate up to 2007/08. But it is increased with very high rate in 2008/09. But it is increased with very high rate in 2008/09. Then it is decreased by 63.78% in 2009/10. Again it is increased by 8.39% in 2010/11.

Non-operating Expenses of BNL under different headings are presented in details as below:

**Table 4.10: Computation of Non-operating Expenses of BNL**

| Particular                   | 2006/07 | 2007/08 | 2008/09  | 2009/10 | 2010/11  |
|------------------------------|---------|---------|----------|---------|----------|
| Administrative expenses:     |         |         |          |         |          |
| Charity and donation         | 139331  | 88258   | 312356   | 199871  | 69139    |
| Uniform                      | 613017  | 1210954 | 997000   | 645383  | 1320720  |
| Total (A)                    | 752348  | 1299212 | 1309356  | 845254  | 1389859  |
| Others:                      |         |         |          |         |          |
| Loss on sale of fixed assets | 0       | 0       | 10070535 | 0       | 28143049 |
| Provision for staff quarter  | 1792525 | 0       | 1770300  | 1763464 | 13225415 |
| Provision for Bonus          | 3096180 | 0       | 3363570  | 3045983 | 22843898 |
| Total (B)                    | 4888705 | 0       | 15204405 | 4809447 | 64212362 |
| Grand total (A + B)          | 5641053 | 1299212 | 16513761 | 5654701 | 65602221 |
| Increase/ Decrease           | -25.06% | -76.97% | 1171.06% | -65.76% | 1060.13% |

Source: Annual Report of BNL.

The above table shows the non operating expenses of BNL incurred from FY 2006/07 to 2010/11. The company has the non operating expenses of Rs 7527706 in 2005/06. Then it is decreased by 25.06% and 76.97% in 2006/07, 2007/08 respectively. Then it is increased with very high increasing rate by 1171.06% in 2008/09 and again it is decreased by 65.76% in 2009/10. But again it is increased with very high increasing rate by 1060.13% in 2010/11. The company should always try to reduce its non operating expenses.

Both non-operating income and expenses are decreased with increasing rate up to 2007/08. Then, both are increased with very high rate in 2008/09 and again both are decreased in 2009/10 and then both are increased with very high rate in 2010/11.

#### 4.4 Income Statement under Variable Costing

Income statement of BNL under variable costing during five-year period from 2006/07 to 2010/11 is presented as below:

**Table No.: 4.11**

#### **Income statement (under variable costing)**

#### **Form FY 2005/06 to 2009/10**

| Particular  | 2006/07     | 2007/08     | 2008/09     | 2009/10     | 2010/11     |
|---|-------------|-------------|-------------|-------------|-------------|
| Sales revenue                                       | 621827381   | 634189583   | 746581607   | 1002720181  | 1588149524  |
| Less: variable cost of sales                        | (349109391) | (361457539) | (408153617) | (539283434) | (793365199) |
| Contribution margin                                 | 272717990   | 272732044   | 338427990   | 463436747   | 794784325   |
| Less: Fixed cost                                    | (239835148) | (341622683) | (376443226) | (458033645) | (534033467) |
| Net profit before non operating income and expenses | 32882842    | (68890639)  | (38015236)  | 5403102     | 260750858   |
| Add: Non operating income                           | 3720013     | 1477719     | 84801126    | 30711429    | 33290347    |
| Less: Non operating expense                         | (5641053)   | (1299212)   | (16513761)  | (5654701)   | (65602221)  |
| Net profit before tax                               | 30961802    | (68712132)  | 30272129    | 30459830    | 228438984   |
| Provision for tax                                   | (5539057)   | 0           | 0           | 0           | 0           |
| Provision for special fee                           | (461588)    | 0           | 0           | 0           | 0           |
| Income tax  |             | (2959078)   | (2209062)   | (716990)    | (55025012)  |
| Differed tax  |             | 41363862    | 39492081    | (9212196)   | 4088177     |
| Net profit after tax                                | 24961157    | (30307348)  | (11429014)  | 20530644    | 177502149   |
| Increase/Decrease                                   | -28.14%     | -221.42%    | 62.29%      | 279.64%     | 764.57%     |
| Mean*   | 36251518    |             |             |             |             |
| SD*   | 82203824    |             |             |             |             |
| C.V*  | 226.76%     |             |             |             |             |

\*appendix II

Source: Annual Report of BNL

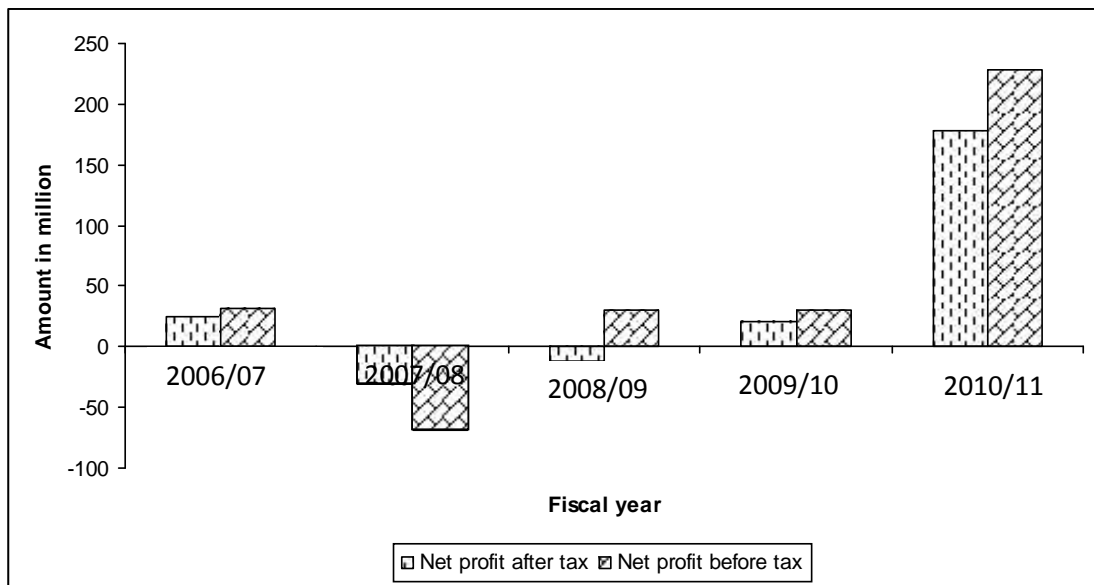
The above table shows the income statement of BNL from FY 2006/07 to 2010/11. The company has net profit of Rs. 34734873 in 2005/06. Then it is decreased 28.14% in 2006/07. Again it is decreased with increasing rate in 2007/08. The company has

incurred losses in 2007/08 due to high amount of taxes but it has the satisfactory amount of profit before tax. Again the company is able to make profit of Rs 20530644 and Rs. 177502149 in 2009/10 and 2010/11 respectively. The company is unable to maintain a stable profit during these periods. This has happened due to the unrealistic and improper planning. The whole management team should be responsible for it.

The average income of BNL is Rs 36251518 with standard deviation 82203824. The coefficient of variation (C.V.) is more than 100% that means the profit is highly fluctuating.

The Bar diagram for the net profit before and after tax earned by BNL is presented as below:

**Figure No. 4.3: Net Profit Before and After Tax**



The above diagram shows that profit is decreasing every Year up to 2008/09. The company has paid high amount of taxes in 2007/08 and 2008/09. The company has incurred losses in 2007/08 and again it has earned profit in 2009/10. But the company drastically increased profit in 2010/11. Both profits are in highly fluctuating trend which shows the company associates the high risk.

#### 4.5 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 after that it contributes to the profit. If the contribution margin is not sufficient to cover the fixed costs, then the firm suffers from losses. Contribution margin can be expressed by.

... Contribution Margin = Sales Revenue – Variable Costs

$$\text{C/M Ratio or P/V Ratio} = \frac{\text{Contribution Margin}}{\text{Total Sales Revenue}} \text{ or}$$

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

$$\text{V/C Ratio or C/V Ratio} = \frac{\text{Variable Cost}}{\text{Sales Revenue}}$$

Contribution Margin of BNL during five year periods up to 2010/11 is presented as below:

**Table 4.12: Calculation of C.M. C/M ratio and V/C Ratio of BNL**

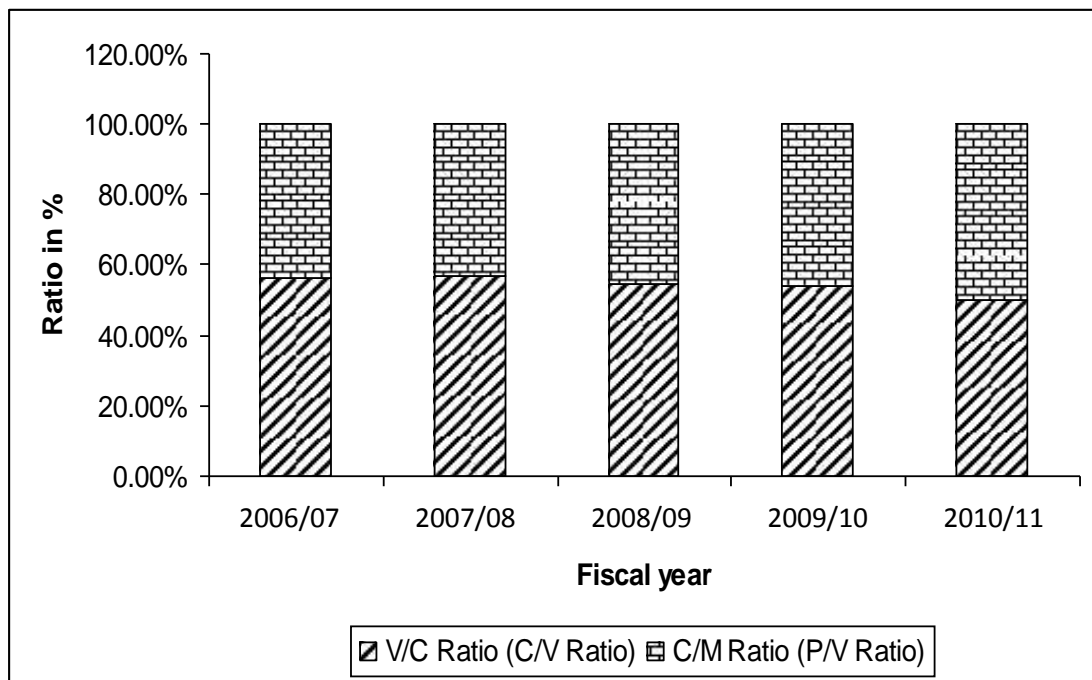
| Particular                   | 2006/07     | 2007/08     | 2008/09     | 2009/10     | 2010/11     |
|------------------------------|-------------|-------------|-------------|-------------|-------------|
| Sales Revenue                | 621827381   | 634189583   | 746581607   | 1002720181  | 1588149524  |
| Less: Variable cost of sales | (349109391) | (361457539) | (408153617) | (539283434) | (793365199) |
| Contribution Margin          | 272717990   | 272732044   | 338427990   | 463436747   | 794784325   |
| C/M Ratio (P/V Ratio)        | 43.86%      | 43.00%      | 45.33%      | 46.22%      | 50.05%      |
| V/C Ratio (C/V Ratio)        | 56.14%      | 57.00%      | 54.67%      | 53.78%      | 49.95%      |

The above table shows the contribution margin of BNL over five year period from FY 2006/07 to 2010/11. The company has the contribution margin 263768747 in 2005/06. Then it has been slightly increased and become Rs 272717990 in 2006/07 and then it is increased to Rs.272732044, Rs.338427990, Rs.463436747 and Rs.794784325 in year 2007/08, 2008/09, 2009/10 and 2010/11 respectively. The company has the almost stable C/M ratio in first two years and then it is slightly

increased in 2008/09 and then it is almost same in 2009/10 and it is increased in 2010/11. The company has the C/M ratio of 42.91% in 2005/06. Then it slightly increases and become 43.86% in 2006/07. Then it is decreased to 43% in 2007/08 and again it is slightly increased to 43.33% in 2008/09. Then it has become 46.22% in 2009/10 and then 50.05% in 2010/11. There is no high variance in V/C ratio during two years up to 2007/06. But V/C ratio is decreased by 2.33% (i.e. 57%-54.67%) in 2008/09 and by 3.83% (i.e. 53.78%-49.95%) in 2010/11. In this way the company is able to control its variable cost in 2008/09 and 2010/11 and V/C ratio is almost stable over the years.

The percentile bar diagram for V/C ratio and C/M ratio of BNL during five years period up to 2010/11 is presented as below:

**Figure No. 4.4: V/C Ratio and C/M Ratio**



The above diagram shows that V/C ratio is almost stable every year up to 2007/08. But it is a bit lower than previous years in 2010/11. Then against it is almost same.

#### 4.6 Break-Even Analysis

Break even analysis is the most widely known form of cost-volume profit analysis. Therefore, cost volume profit analysis is also called break-even analysis. Break even point is the level of activity at which total cost equals to total revenue. In other words

Break-even point is a point of “no profit no loss.” If the sales is higher than, the BEP level, there will be profit and if the sales is less than BEP level, there will be loss. BEP can be determined by using these three methods:

- ) Algebraic or formula approach
- ) Graphical or chart approach
- ) Tabulation method

### 1. Algebraic or formula approach

The most popular, and practiced approach to the break even point and cost volume profit analysis is the formula, also known as the equation. The formula approach uses an algebraic equation. The formula approach uses an algebraic equation to calculate the break even point.

$$\text{BEP (Units)} = \frac{\text{fixed Cost}}{\text{SPPU ZVCPU}} \quad \text{or} \quad \frac{\text{Fixed Cost}}{\text{CMPU}}$$

$$\text{Or, } \frac{\text{Fixed Cost } \Gamma \text{ Non Zoperatig Expenses ZNon Zoperating income}}{\text{CMPU}}$$

$$\begin{aligned} \text{BEP in Rs} &= \frac{\text{Fixed Cost}}{\text{C/M or P/V Ratio}} \\ &= \frac{\text{Fixed Cost } \Gamma \text{ Non Zoperatig Expenses ZNon Zoperating income}}{1 \text{ ZV / C Ratio}} \end{aligned}$$

BEP of BNL under formula approach during five year period up to 2009/10 is presented as below:

**Table 4.13: Calculation of Breakeven sales (in Rs) of BNL**

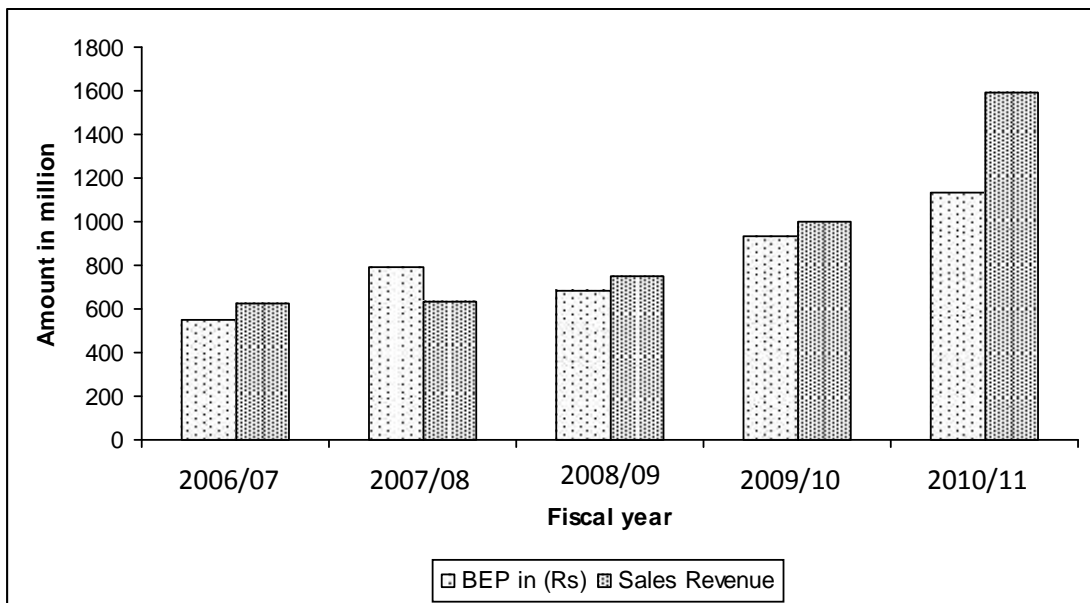
| Particular             | 2006/07     | 2007/08     | 2008/09     | 2009/10     | 2010/11     |
|------------------------|-------------|-------------|-------------|-------------|-------------|
| Sales Revenue          | 621827381   | 634189583   | 746581607   | 1002720181  | 1588149524  |
| Less: Variable cost    | (349109391) | (361457519) | (408153617) | (539283434) | (793365199) |
| Contribution margin    | 272717990   | 272732044   | 338427990   | 463436747   | 794784325   |
| C/M (P/V) Ratio        | 43.86%      | 43.00%      | 45.33%      | 46.22%      | 50.05       |
| Fixed costs            | 239835148   | 341622683   | 376443226   | 458033645   | 534033467   |
| Non-operating Expenses | 5641053     | 1299212     | 16513761    | 5654701     | 65602221    |
| Non-operating Income   | 3720013     | 1477719     | 84801126    | 30711429    | 33290347    |
| BEP in (Rs)            | 551231025   | 793967355   | 679800444   | 936815424   | 1131679445  |
| Increase/Decrease      | 7.56%       | 44.04%      | -14.38%     | 37.81%      | 20.80%      |
| Mean*                  | 818698739   |             |             |             |             |
| S.D*                   | 225472742   |             |             |             |             |
| C.V*                   | 27.54%      |             |             |             |             |

\*appendix II

The above table shows the break even sales of BNL during five years period from FY 2006/07 to 2010/11. The company has BEP of Rs 512482193 in 2005/06. Then due to increase in fixed cost it is increased by 7.56% and become Rs.551231025 in 2006/07. Suddenly, Increase in fixed cost, BEP is increased with high rate and reaches to Rs 793967355 in 2007/08 which is higher than sales revenue so the company is not able to maintain profit and it has incurred losses. BNL is able to decrease its V/C although there is increased in fixed costs in 2008/09. So, BEP is decreased to Rs.679800341 and company is able to make profit. Again BEP is increased to 936815424 due to increase in fixed cost although C/M ratio is little bit increased and then again BEP is increased to Rs.1131679445 due to increased in fixed cost although C/M ratio is increases. The average BEP is Rs.818698739 with the standard deviation of Rs.225472742. The company has CV of 27.54%.

The Bar diagram for BEP is presented as below:

**Figure No.4.5: Bar Diagram for BEP of BNL**



The above diagram shows that BEP is significantly increased in 2007/08. Then it is decreased in 2008/09 and again it is increased with high rate in 2009/10 and 2010/11.

#### 4.7 Margin of Safety Analysis

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

Margin of Safety (MOS) = Total sales – BE Sales

Margin of safety ratio = (Total sales – BE sales)/Total sales

= Margin of safety (MOS)/Total sales

MOS of BNL during five years period up to 2010/11 is presented as below:

**Table 4.14: Calculation of MOS, MOS ratio and BEP ratio of BNL**

| Particular             | 2006/07     | 2007/08     | 2008/09     | 2009/10     | 2010/11      |
|------------------------|-------------|-------------|-------------|-------------|--------------|
| Sales Revenue          | 621827381   | 634189583   | 746581607   | 1002720181  | 1588149524   |
| Less: Break-even sales | (551231025) | (793967355) | (679800444) | (936815424) | (1131679445) |
| Margin of safety       | 70596356    | (159777772) | 66781063    | 65904757    | 456470079    |
| Margin of Safety ratio | 11.35%      | -25.19%     | 8.94%       | 6.57%       | 28.74%       |
| BEP ratio              | 88.65%      | 125.19%     | 91.06%      | 93.93%      | 71.26%       |

The above table shows the margin of safety of BNL during the five years period up to 2010/11. The company has the margin of safety of Rs.70596356 in 2006/07 which shows the 11.35% of total sales revenue. Then it is decreased to Rs. (159777772). It means the company has the negative MOS ratio of 25.19% in 2007/08. That means the company is in loss position and the sales volume is less than BE sales Volume.

The company is able to make profit and MOS has become 8.94% in 2008/09. Again it is decreased to Rs.65904757 in 2009/10 which shows the only 6.57% of total sales revenue. At the last, it increased to Rs.456470079 in 2010/11 which shows the 28.74% of total sales revenue form the above analysis we can say that the company has high MOS ratio in the initial period and then it is decreased over year. Again it

increased in FY 2010/11. It may have happened due to the high competition in the market.

#### 4.8 Risk Measurement Operating Leverage & BEP Analysis

Leverage decision is meant to substitute variable costs by the fixed costs. To create a degree of operating leverage means the employment of higher amount of fixed costs, which eventually increases the break-even point also, so a high degree of operating leverage makes good time better and bad time worse. So, a risk taker may prefer a high DOL but a risk averter prefers a small DOL.

$$\dots DOL \times \frac{\text{Contribution margin (CM)}}{\text{Net Operating income (EBIT)}} \times \frac{Q(\text{SPPU ZVCPU})}{Q(\text{SPPU ZVCPU}) ZFC}$$

DOL of BNL during five year period up 2010/11 is presented as below:

**Table 4.15: Computation of DOL**

| Particular          | 2006/07      | 2007/08     | 2008/09     | 2009/10     | 2010/11     |
|---------------------|--------------|-------------|-------------|-------------|-------------|
| Sales Revenue       | 621827381    | 634189583   | 746581607   | 1002720181  | 1588149524  |
| Less: Variable cost | (3499109391) | (361457539) | (408153617) | (539283434) | (793365199) |
| Contribution margin | 272717990    | 272732044   | 338427990   | 463436747   | 794784325   |
| Less: Fixed cost    | (238506217)  | (332747261) | (355653237) | (431840629) | (513640811) |
| EBIT                | 34211773     | (60015217)  | (17225247)  | 31596118    | 281143514   |
| DOL in times        | 7.97         | 4.54        | 19.65       | 14.67       | 2.82        |

The above table shows the DOL of BNL during five year period. The company has DOL of 7.97 times in FY 2006/07. The company has DOL of 7.97 times in FY 2006/07. That means profit is increased by 7.97 more times than sales increased and vice versa. The company has 4.54 times in 2007/08. The company has the highest DOL of 19.65 times in 2008/09 which may very good. In increase in sales and very bad for decreased in sales. Again it is decreased to 2.82 times in 2010/11.

#### 4.9 Time Series Analysis for Sales plan

Let  $x_1$ ,  $x_2$  and  $x_3$  be the sales revenue no of time periods and Advertisement and promotional expenses of BNL respectively.

Then,

Since sales revenue is a dependent variable so the multiple regression equation of  $x_1$  on  $x_2$  and  $x_3$  is

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

The value of  $a_1$ ,  $b_1$  can be determined by solving the following three normal equations simultaneously.

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

$$\sum x_1x_2 = a_1\sum x_2 + b_1\sum x_2^2 + b_2\sum x_2x_3 \dots\dots\dots(iii)$$

$$\sum x_1x_3 = a_1\sum x_3 + b_1\sum x_2x_3 + b_2\sum x_3^2 \dots\dots\dots(iv)$$

Now putting the value of  $x$  in the above equation the equation will be

$$4593468276 = 5a_1 + 5b_1 + 105690785b_2 \dots\dots\dots (v)$$

$$16081579712 = 15a_1 + 55b_1 + 360321414b_2 \dots\dots\dots (vi)$$

$$104127171921135140 = 105690785a_1 + 360321414b_1 + 2506961113480287b_2 \dots\dots\dots (vii)$$

Solving equation (v), (vi) and(vii) then,

$$a = 506401438 \quad b_1 = 377430939, \quad b_2 = -34.06165441$$

Now substituting the value of  $a_1$ ,  $b_1$  and  $b_2$  in equation (i)

$$X_1 = a_1 + b_1x_2 + b_2x_3$$

$$X_1 = 506401438 + 377430939x_2 - 34.06165441x_3$$

## Interpretation

1. Since,  $a_1 = 506401438$ , which represents the value of dependent variable  $x_1$  (Sales revenue) when others variables  $x_2$  (no. of time periods) and  $x_3$  (advertisement and promotional expenses) remain zero i.e. sales revenue = Rs.506401438 when no. of time period = advertisement and promotional expenses = 0
2. Again, since  $b_1 = 377430939$ , which represent the corresponding change in sales revenue for each no. of change in time period when advertisements and promotional expenses held constant i.e. each no. of change in time period leads to increase sales revenue by Rs.377430939 at advertisement and promotional expenses held constant.
3. Again since  $b_2 = -34.06165441$ , which represents the corresponding change in sales revenue for each rupee change in advertisement and promotional expenses when time period is held constant i.e. each rupee change in advertisement and promotional expenses lead to decrease sales revenue by Rs.34.06165441 at time period is held constant.

**Table 4.16: Sales Forecasting of BNL**

| Fiscal year | $X_1 = 506401438 + 377430939x_2 - 34.06165441x_3$                  | Sales in Rs. |
|-------------|--|--------------|
| 2011/12     | $x_6 = 506401438 + 377430939x_6 - 34.061665441 x$<br>34112871      | 160946249    |
| 2012/13     | $x_7 = 506401438 + 377430939x_7 - 34.06165441 x$<br>38437776       | 1839163769   |
| 2013/14     | $x_8 = 506401438 + 377430939x_8 - 34.06165441 x$<br>42763682       | 2069281254   |
| 2014/15     | $x_9 = 506401438 + 377430939x_9 - 34.06165441 x$ 47087587          | 2299398774   |
| 2015/16     | $x_{10} = 506401438 + 377430939x_{10} - 34.06165441 x$<br>51412492 | 2529516293   |

\* Appendix IV

#### 4.10 Correlation Analysis

Let  $x_1$ ,  $x_2$  and  $x_3$  be the net profit before tax, sales revenue and operating expenses of BNL respectively.

Since profit is a dependent variable, so the multiple regression equation of  $x_1$  on  $x_2$  and  $x_3$  is:

$$x_1 = a_1 + b_2x_2 + b_3x_3 \dots\dots\dots (i)$$

The value of  $a$ ,  $b_1$  and  $b_2$  can be determined by solving the following three normal equations simultaneously.

$$\sum x_1 = na_1 + b_2\sum x_2 + b_3\sum x_3 \dots\dots\dots (ii)$$

$$\sum x_1x_2 = a_1\sum x_2 + b_1\sum x_2^2 + b_2\sum x_2x_3 \dots (iii)$$

$$\sum x_1x_3 = a_1\sum x_3 + b_1\sum x_2x_3 + b_2\sum x_3^2 \dots\dots (iv)$$

Now, putting the value of  $x$  in the above equation, the equation will be:

Appendix V.

$$251422 = 5a_1 + 4593469b_1 + 4401337b_2 \dots\dots\dots (v)$$

$$391616911798 = 4593469a_1 + 4873918277653b_1 + 4506012007432b_2 \dots\dots (vi)$$

$$327285474932 = 4401337a_1 + 4506012007432b_2 + 4213398277635b_2 \dots\dots (vii)$$

$$a_1 = -27040.93735 \quad b_1 = 0.700939927 \quad b_2 = -0.643689438$$

#### 1. Calculation of multiple correlation coefficients:

$$R_{1,23} = \sqrt{\frac{a_1 \sum x_1 + b_1 \sum x_1x_2 + b_2 \sum x_1x_3 - n(\bar{x})^2}{\sum x_1^2 - n(\bar{x})^2}}$$

$$R_{1,23} = \sqrt{\frac{251422 + (-0.643689438) \cdot 4593469 + (0.700939927) \cdot 4401337 - 5 \cdot (-27040.93735)^2}{5970902357 - 2 \cdot 5 \cdot \frac{251422^2}{5}}}$$

$$R_{1,23} = \sqrt{0.943075299}$$

Or,  $R_{1,23} = 0.971120$

Hence required multiple correlation coefficient is,

$$R_{1,23} = 0.971120$$

Calculation of coefficient of multiple determinations:

$$R_{1,23} = 0.971120$$

$$R^2_{1,23} = 0.943075$$

**Interpretation:**

Since the correlation coefficient  $R_{1,23} = 0.9711$ , then the coefficient of multiple determination  $R^2_{1,23} = 0.943075$  which indicates that 94.30% of the total variation in the dependent variable  $x_1$  (net profit before tax) is due to the independent variables  $x_2$  (Sales revenue) and  $x_3$  (operating expenses) remaining 5.70% is due to the other factors.

**2. Calculation of standard error of estimate**

$$\Xi_{1,23} = \sqrt{\frac{x_1^2 \sum a_1^2 + x_1 \sum b_1 + x_1 x_2 \sum b_2 + x_1 x_3}{n - 3}}$$

$$= \sqrt{\frac{59709023572 + (227045.93735) \times 251422 + 0.700939927 \times 391616911798 + (0.643689438) \times 327285474932}{(5 - 3)}}$$

$$= \sqrt{1339620568}$$

$$= 36600.82742$$

Hence, required standard error of estimate is:

$$\Xi_{1,23} = 36600.82742$$

#### 4.11 Testing of Hypothesis

For budgeted sales:  $n = 5$ ,  $\bar{X}_1 = 824011638.40$ ,  $S_1 = 164801314$

For actual sales:  $n = 5$ ,  $\bar{X}_2 = 918693655.2$ ,  $S_2 = 404328557$

$$S^2 = \frac{n_1 S_1^2 + n_2 S_2^2}{n_1 + n_2} = \frac{5 \times 164801314^2 + 5 \times 404328557^2}{5 + 5} = 1191506594$$

##### Null hypothesis:

$H_0: \mu_1 = \mu_2$ , i.e. there is no significant difference between budgeted and actual sales.

Alternative hypothesis:

$H_1: \mu_1 \neq \mu_2$ , i.e. there is significant difference between budgeted and actual sales.

##### Test of statistics:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{S^2 \left( \frac{1}{n_1} + \frac{1}{n_2} \right)}} = \frac{824011638.4 - 918693655.2}{\sqrt{1.191506594 \left( \frac{1}{5} + \frac{1}{5} \right)}} = -0.43369$$

Level of significance:

$$\alpha = 5\% = 0.05$$

Degree of freedom:

$$n_1 + n_2 - 2 = 5 + 5 - 2 = 8$$

Critical value:  $t_{0.05}$  for 8 d.f. for two tailed test = 2.306

Decision: Since the calculated value of  $t$  is less than the critical value of  $t$ , so  $H_0$  is accepted. Hence, we can conclude that there is no significant difference between budgeted and actual sales.

#### 4.12 Major Findings of the Study

After the brief analysis of various elements of BNL, it can be concluded that it has been formulating and implementing respective tools and techniques in controlling cost and making effective and efficient use of its resources. From this research, the major findings of BNL based on the analysis of available data under the constraints of given method of study, are pointed out as below:

- ) The company has used high variable costs as compared to fixed costs.
- ) The company is not considering about margin of safety.
- ) The use of profit planning and control is not practiced by the management.

- ) The planning is not properly maintained; it is made on ad hoc basis.
- ) The objective set by the management is very ambiguous which resulted in the fluctuation in the actual and targeted results.
- ) There is more than 10% unfavorable variance between actual and budgeted sales in most of the periods i.e. research periods. The company is able to meet its target in 2008/09, 2009/10 and 2010/11.
- ) There is no linearity in the target figure.
- ) The company has not practiced any appropriate and effective sales forecasting techniques like survey method and statistical method. It uses market studies and experimentation method for sales forecasting. It also forecast sales on the basis of advertisement expenses made.
- ) The company has unfavorable variance between budgeted and actual production in first three years. There is high fluctuation in desired ending inventory and actual ending inventory.
- ) This company has not practiced cost volume profit analysis tools for profit planning and the company does not have any policy for using CVP tools in coming years.
- ) The company has not applied any special technique for segregation of costs into fixed and variable, controllable and controllable and operating and non-operating.
- ) The company is not able to control its variable costs. Variable cost is increased more than sales increased and decreased less than sales decreased.
- ) The company has not applied any effective managerial tools of "profit planning and control" for controlling its activity.
- ) The top level management, being highly competent is praise worthy. They have given due care on ascertaining their level of operation to have good profitability.
- ) Coefficient of variation of actual sales is less than BEP sales. So actual sales is less volatile.

- ) The relationship between sales and profit and loss is not significant. There is no clear relationship. So that it can be concluded that the pattern of fixed costs and variable cost is not consistent.
- ) The company is enjoying huge profit every year in comparison to other companies of similar category whether public or private.
- ) MOS ratio is very fluctuating with decreasing trend which shows the risk of loss.
- ) The company has incurred losses in FY 2007/08 due to the high increase in fixed costs.
- ) The company is able to maintain almost consistent C/M ratio in every year which shows the good efficiency of BNL not for increasing V/C ratio.
- ) DOL is not consistent and fluctuating every year which leads BNL to the risk. DOL is high in last two years which is best for increasing sales but worst for decreasing sales.
- ) BNL has low probability to achieve its forecasted sales but it has high probability to achieve profit i.e. there is high probability to achieve sales more than break even sales.
- ) 94.30% of the total variation in net profit before tax is due to the sales revenue and operating expenses and remaining 5.70% is due to the other factor which is not good for BNL.
- ) From the t-test we can conclude that there is no significant difference between budgeted and actual sales.
- ) BNL has the good strategic policy for promotion of sales, which helps actual sales to stay far above the BEP level.

## **CHAPTER –V**

### **SUMMARY, CONCLUSION AND RECOMMENDATIONS**

This chapter highlights some selected actionable conclusion and recommendations on the basis of the major findings of the study derived from the analysis of BNL. The study has covered 5 years data from Fy 2006/07 to 2010/11. The major findings of the study based on financial and statistical analysis listed in chapter-IV of this report in order to carry out this study only secondary data have been used. The analysis of data is carried out with the help of various financial and statistical tools. The findings of the study are summarized and conclusion and recommendations are given below.

#### **5.1 Summary**

The threats of competition from multinational companies are forcing Nepalese managers to be more efficient in managing and utilizing their assets. However, inventory constitutes the most significant part of current assets, most of the organizations in Nepal are facing various problems in management of inventories, very little measures have been taken to use the scientific tools and techniques developed for the purpose.

Industrialization is essential. Scientific and technological advancement plays vital role in industrializing the nation. But it is not enough only the advancement of science and technology for development of the country. Management of all these sectors is very essential. Without good management, organization cannot achieve its goals and objectives, government of Nepal has established so many public enterprises to facilitate the people. Most of the public enterprises are suffering loss, whereas the government has invested huge amount of resources. There is no any concept of effective and appropriate planning system and procedure. Lack of expert, qualified and skilled manpower in the field of management, available resources, capacity and efficiency are not utilized properly. Some popular and systematic tools and techniques of management are ignored. These tools are not used in public enterprises for measurement of financial statement.

This study is undertaken to cost-volume profit analysis to plan the profit. It was observed that BNL was successful private enterprise rise in soft drinks and beverages

all over the country. As per the nature of the study, the secondary data were used and related other information were collected through informal interviews for sales analysis, costs analysis, inventory analysis, contribution margin analysis, P/V ratio analysis BEP analysis.

BNL, one of the large multinational companies has glorious history of the field of cold drinks. Its smooth running with profit shows the strong financial position of the company whereas loss shows the weak financial position. Profit is necessary to every organization. Profit is excess amount over cost. Financial position of the company can be analyzed its from various ways like financial performance, cash flow statement, ratio analysis, profit and loss account, balance sheet, and budgeting etc. Cost volume profit analysis is one of the most popular tools of management account. It is a part of profit planning and control. It shows the relationship among the variable like selling price, sales volume, cost-break-even level safety margin etc. when the organization finds its BE sales, it can determine the price, volume and cost for profit earning. The main objectives of the study are to highlight the cost-volume-profit analysis of BNL and comparative study of sales revenue, P/V ratio, BEP sales, safety margin etc. in different years. As per the objective of the study various primary and secondary data are collected for five year period from FY 2006/07 to 2010/11. The collected data are analyzed with descriptive and analytical approach. Sales revenue analysis, sales trend analysis, cost analysis, P/V ratio analysis, BEP analysis, profitability analysis, correlation analysis are done with the help of various financial and statistical tools. Primary data are collected by direct interview with concerned employees and senior staff of the enterprises. Secondary data are drawn from the various document like annual report, journal published by these enterprises and concerned authority. Different results are concluded from the analysis of CVP variables. BNL has almost consistent CM ratio. Its operating income is in fluctuating trend, variable cost of BNL is very less in comparison to fixed cost. So profit volume ratio is high. So it is able to earn profit. Sensitivity analysis of the profit planning is very important and necessary tool for both deficit and surplus units of the growing financial market of our country Nepal. So, profit plan is the lifeblood of every organization, which not only keeps it alive but also assures the future and creates the soundness on it. PPC means the development of objectives which motivates the organization to achieve the objectives effectively and efficiently.

## 5.2 Conclusion

In Nepalese enterprises, there is a vast gap between theory and practice. There are so many tools and techniques to measure the financial performance of the company but BNL has applied very few tools to analyze its performance. BNL has neither applied cost-volume-profit analysis nor segregated costs into fixed and variable. Increasing in operating and maintenance cost in each years is another remarkable problem for BNL. The company has not adopted the cost control programme. Company had no practice of segregating semi-variable cost into fixed and variable components. The classification of cost is not scientific and systematic. Therefore, BNL is unable to apply CVP analysis as a tool of profit planning and control. After performing the study, we are able to arrive at some results.

The objective of company is not clearly defined. There is not a long-term strategic plan to achieve the objectives. There is not complete and comprehensive budgeting system. BNL has not prepared long-term strategic profit plan but has prepared only short-term profit plan in term of budget for each year. There is not a scientific budget system. Budgets are prepared on traditional basis. There is no proper planning for purchasing materials and sales of goods. It has not applied any inventory policy. All overhead expenses or shown in general expenditure budget. Different types of profit planning tools, which are used in the academic field, are not found applied by the company as no segregation of cost into fixed cost and variable cost which is hardcore of CVP. There is no plan and policies like production plan sales plan and other operating plan. The company has not utilized its full capacity because of the lack of raw material, in efficiency of management and lack of skilled production specialist.

BNL has not used CVP tools for planning so, the company is not able to earn a large. There is no perfect sales policy or sales planner; as a result the company is not able to meet the target sales. The top-level management makes the decisions and policies, target sales are always greater than actual sales. So there is high fluctuation in target and actual sales. The major problem faced by the company is increasing in the variable operating cost because it has adopted neither cost control system nor the systematic and scientific plan for classification of cost. The company has incurred heavy losses in 2007/08 which has happened due to the improper cost planning, fixed cost is increased by 42.44%. The company is able to maintain almost consistent CM

ratio in every year but it is not able to increase CM ratio. Margin of safety ratio is decreased every year which leads BNL to the risk. BEP ratio is more than 80% every year. Degree of operating leverage is fluctuating more which leads BNL to the risk. More DOL is only good for the favorable condition. High probability not to achieve the expected sales in coming year which shows the improper planning of sales but there is high probability to make profit.

### **5.3 Recommendations**

The recommendations based on the findings of the research study are as follows:

- ) Participatory management is essential for any company. So management can play the vital role in the implementation of decisions. Therefore the company should try to involve more personnels in decision making process as far as possible. The CVP and PPC manuals should be communicated from top to lower levels of the company.
- ) The company should analyze its strengths and weakness in internal environment of company and its opportunities and threats. In external environment of the company, regular inspection, evaluation, monitoring activities should be undertaken by the central level to different department
- ) The company should use the different tools of PPC to strengthen the competitiveness of BNL and carry out planning and controlling activities. For this purpose, the company can use CVP analysis tool for planning in budgetary activities.
- ) There is unfavourable variance between budgeted and actual due to the unrealistic planning. The planning should be made on the basis of systematic and the realistic way. The achievable target should be made instead of higher target.
- ) Classification of expenses and cost according to their nature of variability is very essential the preparation of flexible budget becomes exact and easier after classification of costs. So, it is recommended to follow the segregation method either high low method or least square method for segregating semi-variable cost into variable cost and fixed cost.

- ) BNL has invested huge amount of capital in fixed cost. Therefore, the company should try to maximize the effective utilization of fixed costs to generate profit.
- ) The ending inventory of the company does not show any inventory policy. Therefore the company should apply the effective management policy, raw material handling and controlling system for continuous production and selling of the product.
- ) A systematic and complete profit planning programme should be followed to generate more profit. The efficiency and profitability of the company may be improved through different planning programs.
- ) BNL is running smoothly by earning profit. But it has incurred heavy losses in 2007/08 due to the high increase in fixed cost. The company should consider cost controlling program.
- ) Contribution margin ratio is less than 47% and variable cost ratio is more than 53%. The company should control variable cost to minimize the risk. It is suggested to utilize maximum fixed cost.
- ) Break-even level of BNL is more than 71.26% and margin of safety is only less than 28.74%. It is suggested to increase margin of safety to minimize the risk by applying cost control programme.
- ) There are many new and popular management theories like management by objective, participation management etc. These principles can be more effective to BNL.
- ) High degree of operating leverage makes good time better and bad time worse. So it is suggested to increase DOL if the company will have a favourable condition in future, otherwise it is suggested to use average level of DOL.
- ) Finally, a system of periodical performance report should be prepared and analyzed after a budget is implemented. Actual results should be compared with the outcome that ought to be. Then necessary corrective action should be strictly implemented for any variances occurred.

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