

**COST VOLUME PROFIT (CVP) ANALYSIS OF  
HIMALAYAN DISTILLERY PRIVATE LIMITED AND  
BOTTLERS NEPAL LIMITED  
(A Comparative Analysis)**

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TRIBHUVAN UNIVERSITY  
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**“COST VOLUME PROFIT (CVP) ANALYSIS OF HIMALAYAN DISTILLERY PRIVATE LIMITED AND BOTTLERS NEPAL LIMITED (A COMPARATIVE ANALYSIS)”**

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***RECOMENDATION***

This is to certifying that the thesis:

*Submitted by*

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**“COST VOLUME PROFIT (CVP) ANALYSIS OF HIMALAYAN DISTILLERY  
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I hope, I have attempted to bring this report errorless but the possible errors would be covered by the future researchers.

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Researcher

## **DECLARATION**

I Hereby declare that this thesis work entitled “**COST VOLUME PROFIT (CVP) ANALYSIS OF HIMALAYAN DISTILLERY PRIVATE LIMITED AND BOTTLERS NEPAL LIMITED (A COMPARATIVE ANALYSIS)**” submitted to Office of the Dean, Faculty Management, Tribhuvan University, is my original work done in the form of partial fulfillment of the requirement for the degree of Masters of Business Studies which is prepared under the supervision of respected supervisor Mr. Ram Prakash Upadhyay Lecturer of P.G. Campus, Biratnagar

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Sachin Gupta  
Researcher

## ABBREVIATIONS

&	And
\$	US Dollar
A/C	Account
BCP Ltd.	Bhaktapur Craft Private Limited
BEP	Break Even Point
BNL	Bottlers Nepal Limited
C.V.	Co-efficient of Variation
CM Ratio	Contribution Margin Ratio
CMPU	Contribution Margin per Unit
CVP	Cost Volume and Profit
CVPA	Cost Volume Profit Analysis
DOL	Degree of Operating Leverage
F.Y	Financial Year
FC	Fixed Cost
GDP	Gross Domestic Product
Govt.	Government
HDL	Himalayan Distillery Limited
i.e.	That is
MOS	Margin of safety
NAL	Nepal Aushadhi Limited
No.	Number

P/L	Profit And Loss
P/V Ratio	Profit Volume Ratio
PPC	Profit Planning and Control
Pvt. Co.	Private Company
Q	Quantity
r	Correlation
Rs.	Rupees
S.D.	Standard Deviation
S.N.	Serial Number
SDC	ShankerDev Campus
SEBON	Securities Board of Nepal
SPPU	Selling Price per Unit
SR	Sales Revenue
SVC	Semi Variable Cost
SWOT	Strength, Weakness, Opportunity & Threats
T.U	Tribhuvan University
TFC	Total Fixed Cost
TVC	Total Variable Cost
VC	Variable Cost
VCPU	Variable Cost per Unit

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# CHAPTER - 1

## Introduction

### 1.1 Background of the Study

Nepal is a small, least developed and landlocked country situated between two large countries china and India. It has a lot of problems as well as prospectus too. Unemployment is said to be the biggest problem of the country. Nepal is the Greenland and agricultural country where most of the people of the nation are primarily engaged in agriculture sector for their livelihood and they are depended on agriculture to fulfill their basic needs. But the productivity of this sector is very low. The population is increasing. The increasing population of the country has been constantly increasing the pressure on the land.

Industrialization helps the unemployed and underemployed persons especially from the agriculture sector to find alternative mode of productive activities and move into much more productive activities. Thus, industrialization helps reducing the pressure of land, gives a guidelines for diversification into a new area and helps to create a country economics infrastructure.

A weak economy in one country may be offset by a strong economy in another. To overcome weak economy of Nepal, it is very essential to develop the infrastructure and facilities for establishment of manufacture and processing industries. For the overall development of the country industrialization is must. It is only way to remove unemployment problem is the development of industrial sector. Industrialization helps the unemployed and underemployed persons especially from the agriculture sector to find alternative mode of productive activities and move into much more productive activities. Thus, industrialization helps reducing the pressure of land, gives a guidelines for

diversification into a new area and helps to create a country economics infrastructure.

Our country is extremely backward in the field of industrialization. All the industries of the country are suffering from problems of production, finance, manpower, dashing entrepreneurs and many other more.

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

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

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

Profit planning involves two aspects; profit and planning. Profit is the primary objective of business. It is necessary for survival and growth of any business

entity but profit does not just happen or improve. They are managed. Profit is the primary measurement of business success in any economy, if firm is not able to earn profit than it fails to hold the capital for long period. When business firm can't hold capital, it can't secure and retain other sources, such as manpower, materials and machine etc. In other words the more profitable firms/enterprises are more attractive to the holders of the available capital. These firms can attract capital, which they need to buy the other resources. Here key is that capital and other resources are scarce they are allocated to the profit makers in roughly descending order of their profit potential.

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

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

regarded as a way of management and is given the name profit planning programmers; profit planning is a part of overall planning process of an organization.

Cost volume profit analysis serves as a powerful tool in the hands of management for profit planning.

The systematic relationship between cost volume and profit is shown by cost volume and profit analysis. It is analytical tool for analyzing the relationship among cost, profit and sales or production volume. Mainly there are three elements in CVP analysis.

They are;

Cost: Fixed Cost , Variable Cost

Volume: Sales in Rs.

Sales or Production units

Profit: Sales Revenue – Total Cost

The following equation shows the relationship between cost, volume and profit:

Sales Volume = Total Cost + Profit

Or

Total Cost = Sales Volume – Profit

Or

Profit = Sales Revenue – Total Cost

By analyzing the above equation all these terms are interconnected and dependent each other. For instance, profit per unit of a product depends on its

selling price and cost per sales. The selling price to a greater extent will depend upon the cost and cost depends upon the volume of production.

It is highly essential for the management to have the complete knowledge about the interrelationship among the cost, volume and profit. A study concerning this interconnection is under taken through cost-volume-profit analysis. Cost-volume-profit analysis is extremely helpful in profit planning and control, management decision, cost control, budgeting etc.

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 way to look into effects on profit from variations 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 part of the overall management functions. Therefore CVP is also known as complementary to PPC.

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

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

Cost-volume-profit analysis is a systematic method of examining the relationship between changes in activity (i.e. output) and changes in total sales revenue, expenses and net profit. As a model of these relationships CVP analysis simplifies the real-world conditions that a firm will face. CVP analysis is a management accounting tool to show the relationship between the elements of profit planning. Profit planning is the function of the selling price of product, demands variable costs, fixed cost, taxes etc. The whole picture of profit planning is associated with cost-volume-profit interrelationships. A popular technique to study cost volume-profit relationship is break even analysis. Break-even analysis is concerned with the study of revenues and costs in relation to sales at which the firm's revenues and total costs will be exactly equal or the net income will be zero. It is a "no profit no loss" situation. This

point is a corner-stone of profit planning. CVP plays significant role in profit planning so BNL & HDL both manufacturing enterprise share taken for this study about the application of CVP in Nepalese manufacturing company.

## **1.2. Bottlers Nepal Limited**

### **1.2.1 Profile of Bottlers Nepal Limited**

Bottlers Nepal limited Balaju Kathmandu is one of the manufacturing and processing companies. It is established in 1979 under the company act 1964. It was initially started as a private enterprise and converted into public enterprises in 1985 issuing shares to Public. The Company is located at Balaju, in an area of the 10.648 square meters of land and the building of the co. covers 5.823 square meters.

The principal activity of the company is to manufacture and sell soft drinks under the registered trademarks of the coca- cola company. There were no changes in the nature of these activities.

The Coca-Cola Sabco (Asia) Ltd, a company incorporated in Dubai, UAE which holds 98.16% shares of Bottlers Nepal Ltd is the parent company. The company also received support from Coca- Cola Sabco (Asia) Ltd, the parent company on sales, marketing and technical operations.

The company continues to maintain its leadership in the soft drink market because of its strong market infrastructure backed up by their effective sales and promotional plans and consumers preferences in their products. The company has already started distributing the products through the Manual Distribution Center (“MDC”) directly through its wholly owned company Troika Traders (P) Ltd since 1 Jan 2006. The result of this distribution through the MDCs is very productive. We were able to increase the market share and numeric distribution by serving the markets more effectively due to the implementation of the MDC distribution model.

The company is committed to deliver the quality product to its consumers at all times. To comply with the Coca-Cola standards of sugar, the company has started using the imported sugar. The cost benefit of the quality derived from imported sugar is more beneficial than locally available sugar.

### **1.2.2 Share Capital**

The BNL was started with an authorized capital of Rs. 3,02,50,000. In the initial period its paid up capital was Rs. 1,05,00,000 of Rs. 100. Now, the company has authorized capital of Rs. 43,00,00,000, issued capital of Rs. 37,00,00,000 and paid up capital of Rs. 19,48,89,000. The BNL has 37 shareholders and par value of share is Rs. 100.

### **1.2.3 Subsidiary Company**

Bottlers Nepal (Terai) Limited, a subsidiary company of BNL, Balaju, Kathmandu was established in 1986 under the company Act, 1964 with the

object of producing and bottling soft drinks under the brand of coke, Fanta and Sprite. The company is situated in Chitwan district is under the management of coca cola Syabco Asia ltd. Dubai. BNTL belong to approximately 90.78% of equity shares to holding company BNL, Balaju. The current economic, political and security situation in the country has likewise affected the operations of our subsidiary company, Bottlers Nepal (Terai) Limited. The company suffered a major volume set back because of the long term unrest that also affected the regions. During the year 2005/06, the company has encountered almost 70 days of closures. Due to these external factors, the performance of the company has been badly affected. In addition, there has been an impact of Rs 29million as additional depreciation charges compared with previous year 2004/05. As a result, the company is bearing losses of Rs 26million against the profit before tax of Rs 19million from the previous year 2004/05.

#### **1.2.4 Profit Position**

BNL is one of the top ten companies listed in the NEPSE in terms of market capitalization. The company produces bottles soft drink named coca cola, Fanta orange, Fanta lemon and sprite.

Due to the several market competition and disturbances in the market, the company of the sales volume has increased by 1.15% compared to previous year. However, the profit after tax of the company has decreased by 28.14% due to change in accounting policy on depreciation. Retained earnings of the company are a net of Rs 84million adjusted for the additional depreciation of earlier years and provision of income taxes.

#### **1.2.5 Distribution Policy**

The company doesn't have direct distribution to the consumer. The strategic long term plan is used in the company. As mentioned above, the company uses two types of distribution channel, i.e. through the dealer and retailer to the

consumers. Since the company doesn't sell from company itself, it uses some kinds of commission system. But there is not any policy of discounts and incentives. Like, 8% commission on sales price is given to distributor whereas nearly 13.30% commission on sales price is provided for retailer.

In order to stay ahead of the competition, the company had launched several programs with financial and technical support from the coca cola company. The objectives of those programs are to increase the per capita consumption of its beverages in the market. This company will continue to promote all its products as before.

## **1.3 Himalayan Distillery Ltd**

### **1.3.1 Profile of Himalayan Distillery Ltd.**



### **1.3.2 Introduction**

The Himalayan Distillery Ltd is promoted by Jawalakhel Distillery, which is the largest player in Nepal's liquor market and for decades has been synonymous with quality products. The founding chairman, V.K shah, is a well qualified specialist in the field of alcoholic beverage and the family has been in the alcoholic business for the last six generations.

The Himalayan Distillery Ltd is a culmination of a perfectionist's dream. It is not only a modern distillery but also a research unit. While constructing this distillery, the promoter have given paramount importance to selecting the best quality equipment with the sole aim of producing alcoholic beverage of superfine grade making them the bench mark of quality in the market. The distillery has started its initial operation as of January 1999.

The distillery is located in serene surroundings at the foot hills of the Himalayas in the southern part of Nepal. It's registered office has situated at Parsa district, V.D.C. Lipnibirta-7, Parwanipur. The distillation unit stands as a land mark and is accessible by road. The local airport (i.e. Simra) is only minutes away and the nearest India Boarder Birgunj to Raxaul is 12 Kms from the factory site. The Indian Broad Gauge Rail-way head terminals situated at Raxaul boarder. The contact office of the company has stayed at Satdobato Chowk, Lalitpur .

The distillery which in present value would cost around Rs. 800 million. It's authorized capital is Rs. 900 million and issued capital is Rs. 60.18 million. The par value of the share has fixed Rs. 100 each. The company had separated 41,30,000 equity shares for issue, out of authorized capital and provisions are not made fore issue of preference shares. The promoters have owned 58% equity shares (i.e. 23,95,000 equity shares) and remaining 42% (i.e. 17,34,600 equity shares) shares have offered to public.

Himalayan Distillery, sister concern of Jawalakhel Distillery subscribes to the same philosophy of setting new benchmarks. The company's penchant for quality has seen it tie-up with Seagrams one of the well known name in the liquor world to produce and market Seagrams Royal Stag and Imperial Blue in the first phase and other brands in second phase .

The company takes at most care that not a drop of whisky, vodka, rum, brandy and gin leaves the distillery until it has been sealed in its bottle ready to be

drunk and enjoyed. Even the flavors used in the preparation of products are directly imported from Europe. The labels are printed in Thailand and shrink wraps are used. There is no room for recycled bottles which insures that the product is genuine, has not been refilled and not counterfeited .

The HDL and Seagram Manufacturing Limited (SML) have entered into a Technical and Marketing Support Agreement on November 5, 1999. The company is producing and marketing Seagram's products in Nepal.

As per the agreement Seagram Manufacturing Limited has agreed to render the following services to the HDL .

Technical support for blending and bottling process including quality control and supervision,

Brand Management and marketing support services, for this purpose SML's marketing and sales executives will visit Nepal on regular basis to render the support and assist in marketing and promotional activity,

SML will provide marketing and promotional materials to be used in the kingdom of Nepal for promoting sales of the products,

These products will be exported to India etc.

So, it is a state of the art facility and is the only grain unit in Nepal. The company is about eight times bigger than Jawalakhel Distillery.

### **1.3.3 List of Raw materials**

The company uses some raw materials to produce finished products. Some raw materials like rectified spirits and E.N.A are produced and re-used, others are taken from Nepalese supplier's and special materials are imported from abroad. The list of raw materials are shown in the table below:

**Table 1. 3 List of Raw Materials**

<b>Rectified spirits</b>	<b>Starch</b>
Pure Natural alcohol	Stretchable materials
E.N.A	Corns
Vaded Malt spirit	Potatoes
Malt spirit	Different kinds of fruits
Other spirit	Grains
Vegetables	Herbs
Natural oils	Yeast
Sugar	Juniper barriers (from Italy)
Sugar base materials (SAKKHARGUDD)	Coriander seeds (from Romani's, Russia, and Bulgaria)
Vaded malt	Flavour
Malts (from Scotland)	Orange and lemon peels (from spain)
Molasses	

*Source: Memorandum of the Co. and Nubiz, 2062:60*

### **1.3.4 Technology of the company**

"Quality know no pinioned, no saturation point. It is a journey that's internal."

"The above line of thought has been company's guiding principle since inception. A philosophy that runs through every stage. Be it customer interface, technology application processing or the production phase.

Firmly believing in the ethics of total quality management, the company makes their products go through a series of stringent quality control test to enhance their appeal among their esteemed and highly valued customers. Since inception, it's been their Endeavour to render high quality products and services

to customers. To achieve quality objectives, each one is always on the look out to tap the latest technology doing rounds worldwide. Keeping a close watch on the winds of changes and insuring products innovations, the company has achieved an enviable reputation in a very short period of time. All the while carrying forward the rich and tremendous legacy of sister company Jawalakhel Distillery Private Limited, of excellent, commitment and perfection.

### **1.3.5 Product lines of the company**

The company manufactures multiple products. The product lines of the company are shown in the following table:

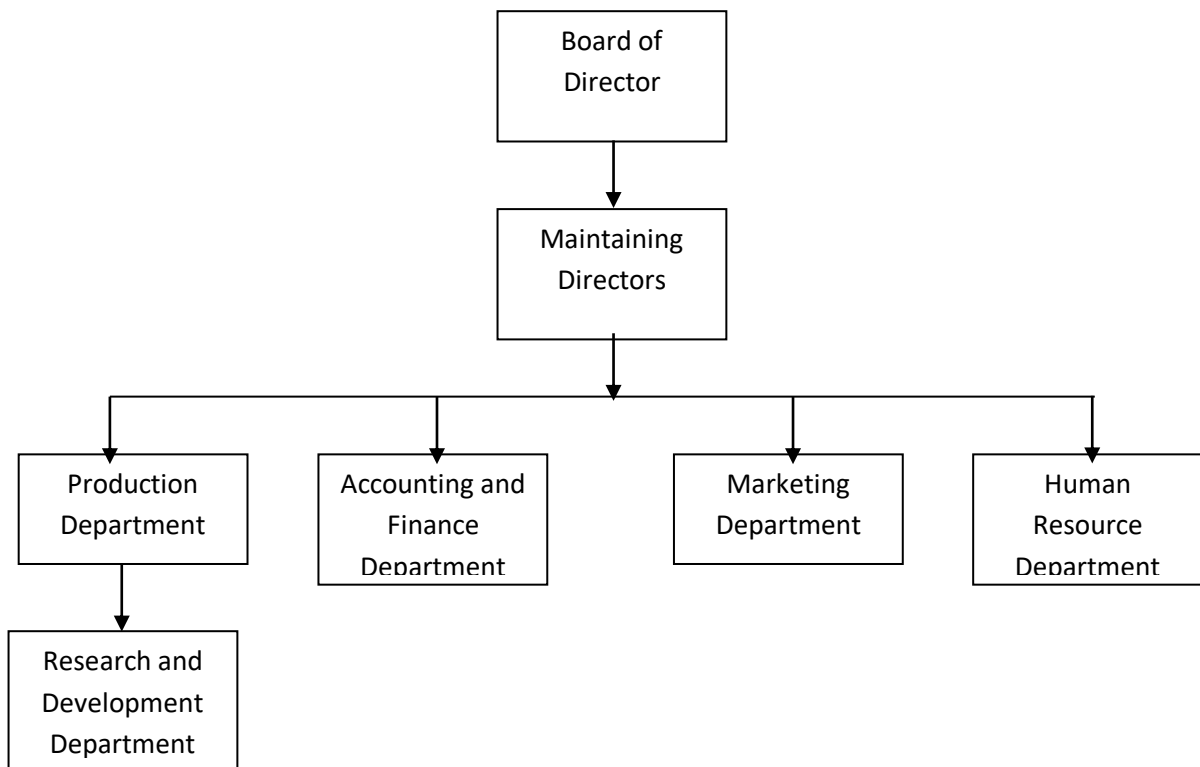
**Table 1. 4 Product lines of HDL**

1. E.N.A.	5. Cleopatra	9. Play boy
2. Royal Stag	6. Triple Cross	10. Ruslan Vodka
3. Emperial Blue	7. Bonni Charles	11. Ja. dry Gin
4. Ruslan White	8. Ultimate	12. Blue Diamond etc.

*Source: Annual Reports of HDL (FY 2021/63 to FY 2066/067)*

### **1.3.6 Organizational Structure of the Company**

The company is a public limited company. There are seven persons in board of directors and one person in the post of managing director. Where five persons are elected from promoter-share holders and remaining three persons are selected from public-share holders. The company has employed two hundred persons. There as two persons employed from India. The organizational structure of the company is shown in the figure below:

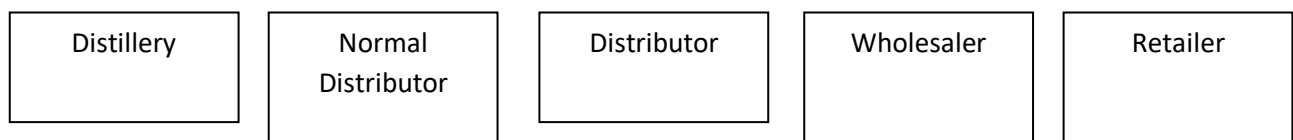


**Figure 1. 3 Organizational Structure of HD**

### 1.3.7 Distribution Channel and Major Market of HDL

The company has adopted channel of distribution by National distributors to Distributors then wholesalers and retailers. The retailer includes all kinds of selling stalls. Departmental stores sell more than other retailers. The channel of distribution is shown in figure below:

**Figure 1. 4 Channel of Distribution and Major Markets**



### 1.4 Statement of the Problem

Industrialization is an effective means of achieving economic development. It is the major hope, which can raise the living standards and provide better quality of life in the country. In the absence of industrialization, Nepal's problems like poverty, insecurity and overpopulation cannot be solved (Pradhan, 1984:14). The center problem of economic development of the background countries is industrialization. It is one of the major tools with the aid of which the vicious circle of background and poverty can be broken (Cuker, 1974:9). It's also a major instrument of progress, modernization and social change in developing countries (UNDP, 1974:1).

Nepal is in infancy period of industrialization. The manufacturing sector is very small. In recent years the growth rate is relatively more satisfactory. The

manufacturing sector has to face numerous problems which have acted as constraints in the growth of manufacturing industries. 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 reasonable 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.

The industrialization process in Nepal is being developed very slowly. In spite of various attractive policies of the government in respect of 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 should be taken corrective measures for the improvement of their performance.

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

Nepalese forms are still being run with primitive management. They lack modern management culture there is a lot of difference between the theory and

practice in the business form. In Nepal, the practice of using CVP analysis tools for different management decision is rare.

CVP analysis provides the technique of profit planning framework. Based on annual published annual report, performance of the Nepalese industry is not satisfactory. Poor performance is the outcomes of poor planning controlling, decision making. The question has risen whether Nepalese managers are enough competent? Do they use CVP analysis tools and technique to carryout planning, decision making and controlling function? The research question posed mainly in this research will be following:

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

## **1.5 Objective of the Study**

The main objective of the study is examining the use of CVP analysis to plan the profit in BNL& HDL. The other specific objectives of this study are:

- To analyze different components of cost as per cost behavior.
- To study the present application of CVP analysis in BNL & HDL. To analyze the CVP and its impact in profitability of BNL & HDL.

- To provides suggestion and recommendation on the basis of major finding

## **1.6 Significance of the Study**

This study will be significance in the following ways:

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

## **1.7 Limitation of the Study**

- Each and every research has some limitations. Basically, not availability of required data and information would be the major limitations of the study. The study is confined only to CVP analysis as a tool of profit planning and control. Following factors will limit the study: - The study will cover the data of five years only from BNL & HDL.
- The study will based in the secondary data mostly.
- The accuracy of this study will depend upon the true response and the data available from the management.
- The time and the availability of resource is the main limitation of the study.

- This study would only concern with fulfilling the partial requirement in Master in Business studies (MBS).

## **1.8 Organization of the Study**

The entire study has been divided into the following five chapters:

### **Chapter 1:- Introduction**

The chapter is introduction framework that includes background of the study, profile of the concern company, statement of the problem, objective of the study, significance of the study, limitation of the study and organization of the study.

### **Chapter 2:- Review of the Literature**

This chapter concerned with review of literature. It focuses on the theoretical part of the study including conceptual review and review of previous related studies.

### **Chapter3:- Research Methodology**

These chapters deals with methodology that includes research design, source of data, data collection procurers and data analysis tools.

### **Chapter 4:- Presentation and Analysis of Data**

This is the most important and most extensive chapter as it includes the main theme of the study. This chapter deals with the presentation and analysis of collected data and information. For this purpose various analytical tools will be used.

### **Chapter 5:- Summary, Conclusion and Recommendation**

This chapter is the final chapter of the study which includes summary of the study, major finding, conclusion and recommendation.

The Bibliography, Appendix includes in the last of the thesis.

## **CHAPTER - 2**

### **Review of Literature**

In order to make a research on the subject some other literature should also be reviewed. Review of the literature is supported to revise the eminent literature related to the study. Main purpose of literature review is to find out the works done in the subject on the areas of research. Some possible study and conceptual prospective available in this respect have been reviewed. Various books, articles, journals, bulletins, reports, news statement, research study published by various institutions and some thesis etc. are the bases for preparing it. Some philosophers, writers or researchers have given the contribution for preparing it.

### **2.1 Conceptual Review**

#### **2.1.1 Profit Planning**

Profit planning is the key point of management. Without proper planning, profit will not be achieved in the expected extent. Therefore, every enterprise should plan for profit in a systematic way. Various functional budgets are the basic tools for proper planning of profit and control.

Usually, profit don't just happened, profit are managed. Profit planning is a part of overall planning process of an organization.

Planning and controlling are the primary function of business. Without planning and controlling any business cannot run smoothly in competitive and global environment. In fact, profit planning is a managerial technique in written form in which all aspect of business operation for a defined period is included. It is a formal statement of policy, plan, objectives and goals established by the top management. Profit planning is deciding in advance at present, what to achieve in the future.

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

Profit planning function of management rests upon some fundamentals views that are the conviction that a management can plan the long range destiny of a manufacturing enterprise by making continue streamed of well-conceived decision. The thrust of the comprehensive profit planning concept goes to the very heart of management that is the decision making process especially for long range success. The streamed of managerial decision must generate plans and actions to provides the essential inflows that are necessary of support the plant outflow of the enterprises So that, realistic profits and return on investment are earned. Continuing generation of profits by managerial manipulation of the inflow and outflow

The aggregate meaning of the preparation of various functional annual budgets is known as profit planning. The determination of next year tends to achieve the sales which are directly related with revenue generation. The decision on new capital investment and financial borrowing represents profit planning in all cases the form is deciding now how it will use its resources i.e. manpower, material, machines and money in the future . A formal profits planning is the key to corporate survival in a world of rapid social change and intense competition. Profit planning can take the best use of firm's opportunities and resources to meet the targeted profits.

### **2.1.1.1 Profit**

An organization is established to achieve some goals. It has its own objectives. To achieve the goals of organization objectives should clearly mention. In this competitive globalize business age, an organization whether it is public or private profit is essential. Profit isn't change; it is result of successful management.

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

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

Generally profit is controversial terms and many authors define its in different ways.

The basic objectives of running any business organization are to earn profit. Profit serves as a yardstick for judging the competence and efficiency of the management (Maheshwari, 2000:171).

The word “profit” implies a comparison of the operation of the business between to specific date which is usually separated by an interval of one year. In

order to optimize those corporate source of wealth in which national prosperity depends on those corporate financial objectives of the company is to maximize within socially acceptable limits profit from the use of funds employed by them. The maximization of profit within socially acceptable limit implies that a proper regard to public interest has been paid. No company can survive long without profit; profit is the ultimate measure of its effectiveness and in a capitalized society. There is no future for a private enterprise which always increased loses. The survival measure of the effective performance of a business is a profit which really is a measure of how well a business performs economically. Profit is a signal for the allocation of resources and a yardstick for judging managerial efficiency. Profit is a primary objective of a business in view of the heavy investment which is necessary for the success of most enterprise. Profit in the accounting sense tends to become a long term objective which measures not only the success of product but also the development of market of it(Kulkarni,1985:245).

According to the economist perception, some economist says that profit is a rent of ability. Some says profit as reward for risk bearing of business. It is also said that profit is return to uncertainty bearing and it is also reward for innovation. Innovations are those new products or process which increases national income more than they increases national cost(Reeki& Jonathon, 1988:380-381).

In the opinion of Myers john N, Profit is the dominant goal in business and profit making should be the main objectives in terms of which the general effectiveness of organization is measured. In other words, profit is obtained by subtracting the cost from revenue. Profit is the reward of the entrepreneur rather of the entrepreneurial functions.

Profit differs from the return on other factors in three respects (Dewelt,, 1981 :299):

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

Dean Joel clearly distinguishes the views of accountant and economist about profit as following point. The most important point of different between economist and accountant approaches is:

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

**The term profit in views from management as follows:**

- An intangible expression of the goals it has set for the firm.
- A measure of the performance towards the achievement of its goals.
- A means of maintaining the health growth and continuity of the company (Lynch & Williams, 1988:245)

### **2.1.1.2 Planning**

Planning is the first essence of management and all other function is performing within the framework of planning. Planning means deciding in advance, what is to be done in future? Planning starts from forecasting and pre-determination of

future events. Planning is the whole concept of any business organization. No firm can achieved its pre-determined goals and objectives in the absence of proper plan. Hence, it is life blood of any organization which makes efficiently run towards the competitive environment.

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

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

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

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

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

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

Anticipatory, since they are made something in advance of action and Interrelated, since they comprise broad groups of interdependent choice from alternatives of the government (Welsch, et al. 1979:11).

Planning is the basic foundation of profit planning and a plan is a projected course of action. Planning is a technique whereby the use pattern of resources is carried out (Agrawal, et al., 1989:348).

A planning process includes goal setting, resource evaluating, forecasting by different methods and formulating a master plan. Planning depends upon the organized objectives. For the planning purpose, a firm's objective can distinguish mainly three types: prime, instrumental and specific. The prime objective is to complete the action. Instrumental objectives are for accomplishment of divisional and individual goal. Specific objectives are those

objectives that have been specified as to time and magnitude, which are known as organizational goals. Therefore, company's objectives provide the ultimate criteria for resolving difficulties of company and company objectives are the base for long range profit planning.

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

### **Objectives**

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

### **Goals**

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

### **Strategies**

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

## **Budgets/Plans**

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

### **2.1.1.3 Profit Planning**

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

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

Profit planning is, therefore a fundamental part of the overall management functions and is a vital part of the total budgeting process. The management determines the profits goals and prepares budgets that will lead them to the realization of these goals. Profit planning can be done only when the management has the information about the cost of the products both fixed and variables and the selling price at which it will be in a position to sell the products of the company(Maheshwari, 2000:1 71).

Profit planning is planning for future operation in such a way as to maximize the profit or to maintain a specified level of profit. A comprehensive profit planning is also known as broad budgeting schedule developed in financial

statements. Profit planning deals with the development of objectives, specification of short term goals, development of strategic and tactical profit plan. In other word, profit plan is a detail expression of the expected result from the planning decisions. Profit planning is an important approach developed to facilitate for effective performance of management process like as planning, organizing, staffing, controlling etc. Therefore, profit planning carry out the responsibility of forward thinking about the future operation of the organization. It is the precise measurement of operation in terms of quantity (i.e. the matters of profit planning are expressed in numerical value).

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

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

- Development and application of broad and long term objectives of organization.
- Specification of organization goals.
- Development of long run profit plan in broad terms.
- Development of short run profit plan detailed by assigned responsibilities.
- System of periodical performance report detailed by assigned responsibilities.

- Follow up the procedure.

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

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

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

Neil W. Chambrlin describes in his research report that “profit planning & control refer to the organization techniques & procedures whereby long & short range plans are formulated, considered & approved. A profit plan is an advance decision of expected achievement based on the most efficient operating standards in effect or in prospect at the time it is established against which actual accomplishment is regularly compared. In short, it provides a tool for

more effective supervision of individual operations and practical administration of the business as a whole.

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

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

## **2.2 Process of Profit Planning**

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

The steps of profit planning are explained below;

### **(a) Identification and Evaluation of Relevant Variables**

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

Identification also involves separate consideration of variables that are non-controllable and those that are controllable. This means, management planning must focus on how to manipulate the controllable variables. Moreover there must be managerial planning of how to work with the non- controllable variables. By relevant variables we obviously imply those that will have a direct

and significant impact on the enterprise. However, in most enterprise there is a strong need for a periodic evaluation of the relevant variables, usually on an annual basis. A comprehensive PPC programmed uses such a periodic evaluation in depth. So, analysis and evaluation of the environmental variables must be a continuing concern of management. This activity should involve all executive managers; who in turn should expect various staff groups to provide data and recommendations. A particularly significant phase of this analysis includes an evaluation of the present strength and weakness of the enterprise (Welch, et al., 1992:75).

### **(b)Development of the Broad Objectives of the Enterprise**

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

Development of the broad objectives of enterprises is a relevant variable and an assessment of the strength and weakness of the organization executive management can specify this phase of profit planning. The statement of broad objectives should express the mission, vision, and ethical tone of the enterprises. It tends to provide identify continuing of purpose and definition(Welschet al., 1979:65).

### **(c)Development and Establish Specific Goals for the Enterprises**

The purpose of the steps is to bring the statement of broad objectives into sharp focus and at the same time to move from the realm of general information to the confines of internal management. This component of comprehensive PPC programs deals specific short range and long range goals for the enterprises. This step provides definite and measurable goals for the whole enterprises and for each of the major sub-division (Welschet al., 1979:65).

#### **(d)Development and Evaluation of Company Strategies**

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

The purpose of development of strategies is to find the best alternatives for attaining the plan broad objectives and specific goals. It focuses on how to plan.

Here are some examples of basic strategies (Welsch, et at., 1992:77):

- Increase long-term market penetration by using technology to develop new products
- and improve current product.
- Emphasize product quality and price for top of the market.
- Price of product with low market price to expand sales volume.
- Use both industrial and local advertising program to build market.
- Improve employee moral and productivity by initiating a behavioral management program.

#### **(e)Preparation of Planning Premises**

When the objectives for the periodic plan are developed the executive management should provide with the certain instruction and guidelines to the lower management in order to develop the profit plan of the other respective responsibilities center. Thus, instruction and format guidelines as communicated by the top management at this point in the planning process have come to be generally identified as the statement of planning premises. It is simply a communication step from executive management to the lower level of management (Welsch, et at., 1992:66).

### **(f)Preparation and Evaluation of Projects Plan**

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

### **(g)Development and Approval of Tactical Profit Plans**

When the managers of various responsibility centers in the enterprise receive the executive management planning structure and the project plans they can begin intensive activities to develop their respective strategic and tactical profit plans. The strategic long range plan and the tactical short range profit plan are usually developed. It is possible that executive management or the chief financial executive will develop the strategic and tactical profit plans(Welschet al., 1992:80).

### **(h) Implementation of Profit Plans**

Implementation of management plans that have been developed and approved in the planning process involves the management function of leading subordinates in attaining enterprise objectives and goals. Thus, effective management at all levels requires that enterprise objectives, goals, strategic and policies be

communicated and understood by subordinates. The plan should have been developed with the managerial convention that they are going to be met or exceeded in all major respect. If these principles are effective in the development process various executive and supervisors will have a clear understanding of their responsibilities and the expected level of performance ( Welsch, et al., 1992:84).

### **(i)Use of Periodic Performance Report**

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

These performance reports;

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

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

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

## **(j) Follow up Procedure**

Follow up action is an important fact of effective control and re-planning. Performance reports are the bases for effective follow up action. This is the part of effective control. It is important to distinguish between causes and effect. The performance variation is effect, the management must determine the underlying causes, and the identification of causes is primarily a responsibility of line of management. Analysis to determine the underline causes of both favorable and unfavorable performance variance should be given immediate priority. In the cases of unfavorable performance variance, after identifying the basis causes, as opposed to the results, an alternative for corrective action must be selected. Then the corrective action must be implemented. In the case of favorable performance, the underlying causes should also be identified (Welsch,et al., 1992:88).

## **2.3 Elements of Profit Planning The basic elements are as follows:**

### **2.3.1 Comprehensive and Co-Ordinate Plan**

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

### **2.3.2 Expressed in Financial Terms**

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

### **2.3.3 Plans for Operational Resources and Expenses**

It is a plan for the firms operation and resources. Budget is a mechanization to plan for the firm's all operations or activities. The two aspects of every operation are revenue and expenses. The budgets must plan for any quantity of

revenue and expenses related to specific activity only. The plan should be made to carry out the operations. The planning for resources will include planning assets and sources of funds.

### **2.3.4 Future Plan**

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

## **2.4 Components of Profit Planning**

Profit planning and control is a systematic and formalized approach for accomplishing the planning, co-ordination and control responsibilities of management. Components of PPC are bones of a business/ an enterprise, which help it operate properly, effectively. The components of PPC are as follows (Welsch,et al., 1992:74);

### **2.4.1 The Substantive Plan**

This plan represents the following:

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

### **2.4.2 The Master Plan**

The Master plan includes:

#### **A) Strategic Long Range Profit Plan:**

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

## **B) Tactical Short Range Profit Plan:**

### **i) Operating Plan: It includes:**

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

### **ii) Financial Position Plan:**

It includes

1. Planned income statement.
2. Planned balance sheet (i.e. assets, liabilities and owner's equity)

### **iii) Cash Flow Plan:**

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

- C) Variables Expenses Budgets (i.e. output expenses formula)**
- D) Supplementary Data (i.e. CVP analysis, Ratio analysis)**
- E) Performance Reports (i.e. each month and as per need)**
- F) Follow up Corrective Action and Re-planning Reports.**

## **2.5 Major Tools Used in Profit Planning and Control**

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

### **2.5.1 Operating Budget**

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

#### **i) Sales Budget**

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

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

constructed by multiplying the expected sales in units by the sales price (Garrison, 1985:306).

Sales budget is prepared from sales forecast where as a sales forecast encompass potential sales for the entire industry as well as potential sales for the firm preparing the forecast. Sales results from prior years are used as a starting point in preparing a sales forecast. (Welsch, et al., 1992:173).

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

## **ii) Production Budget**

The second step of PPC is the production budget. The production budget is an estimate of the quantity of goods to be manufactured during the budgeted period.

After the sales budget has been prepared, the production requirements for the forth coming budget period can be determined and organized in the form of a production budget. Sufficient goods will have to be available to meet sales need and provide for the desired ending inventory. A portion of these goods will already exist in the form of beginning inventory. The reminder will have to be produced. Thus, production budget can be determined by adding budgeted sales units to be desired ending inventory and deducting the beginning inventory from the total (Horngreen, et al., 1999:182) .

## **iii) Purchase Budget**

In case of non-manufacturing concern it would prepare a merchandise purchase budget to plan the amount of goods to be purchased during the period. The merchandise purchase budget is in the same basis format as the production

budget. It shows goods to be purchased but it doesn't show the goods to be produced.

#### **iv) Direct Material Budget**

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

#### **v) Direct Labor Budget**

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

#### **vi) Manufacturing Overhead Budget**

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

## **vii) Selling and Administrative Overhead Budget**

The selling and administrative expenses overhead budget contains a listing of anticipated expenses for the budget period that will be incurred in areas other than manufacturing. The budget will be made up of many smaller individual budgets submitted by various persons having responsibility for cost control in selling and administrative matters. If the number of expenses item is very large separate budget may be needed for the selling and administrative functions.

## **2.5.2 Financial Budgets**

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

### **i) Budgeted Income Statement**

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

### **ii) Cash Budget**

Cash budget is the detail showing cash receipt cash disbursement and the balance cash. The cash budget is composed of four major sections. The receipts section, the disbursements section, the cash excess or deficiency section, and the financing section. The receipts section consists of the opening balance of cash added to whatever is expected in the way of cash receipts during the budget period. The disbursement section consists of cash payments that are planned for the budget period. The cash excess or deficiency section consists of the

difference between the cash receipts section total and the cash disbursement section total. The financing section provides a detailed account of the borrowing and repayments projected to take place during the budget period. It is also includes a detail interest payment that will due on money borrowed.

### **iii) Budgeted Balance Sheet**

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

### **2.5.3 Flexible Budgets**

Flexible expenses budget relates only to expenses or costs. They are also called dynamic, activity or output adjusted expenses budgets. The concept of flexible expenses budget is that all expenses are incurred because of passage of time, output, activity or combination of time and output or activity. Therefore, it is complementary to tactical profit plan, which helps to provide an expense plan. They should be adjusted to actual output for comparison with actual expenses in periodic performance report. Expenses or costs must be identified into fixed and variable expenses or costs in flexible budget.

### **2.5.4 Capital Expenditure Budget**

Capital expenditure budgeting is a process of planning and controlling of the long term and short term expenditure for expansion, replacement and contraction of fixed assets. Capital budgeting is useful to earn future profit and reduce future costs. The major elements of a capital expenditure budget are cash outflows and cash in flows. Cash outflow includes the cost of the project as cash

outlays at different times during the life of a project. The cash outflows are affected by the provision of residual value of old equipment, tax position, addition working capital needed etc. cash inflows are expected cash revenue during the life of a project. The non cash expenses like depreciation and tax position can affect the cash inflows.

### **2.5.5 Zero Based Budgeting**

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

### **2.5.6 Activity Based Budgeting**

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

### **2.5.7 Cost Volume Profit Analysis**

The analysis of relationship between cost volume and profit is known as cost volume profit analysis. It is an analytical tool for studying the relationship between volume, cost, price and profit. Cost volume profit analysis is great

helpful tools in managerial decision making. Specially, cost control and profit planning with the help of cost volume profit analysis.

### **2.5.8 Completion of Profit Plan**

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

### **2.5.9 Performance Reports**

Performance report is an important part of a comprehensive PPC system. The performance reporting phase of a comprehensive PPC programmed significantly influences the extent to which the organizations planned goals and objectives are attained. Performance reports deal with control aspect of PPC or management control function of management defined as "the action necessary to assure the objectives, plans, policies and standards are being attend" or in other words, the objectives of control is to guarantee the achievement of the planned objectives of the management by introducing periodic systematic correction measure. Performance report is one of the vital tools of management to exercise its control function effectively.

## **2.6 Cost Volume Profit Analysis**

The dictionary meaning of cost is the price paid to acquire, produce, accomplish or maintain any things. Volume is a mass or quantity of something or amount. Profit is the ratio of such pecuniary gain to the amount of capital invested and analysis is resolution, separation or breaking into parts. But actually cost volume profit analysis is the process of examining the relationship among revenues, cost and profits for a relevant range of activity and for a particular

time frame. Basically, CVP analysis involves finding the most favorable combination of variable costs, fixed cost, selling price, sales volume and mix of products sold. CVP analysis provides the managers with a powerful tool for identifying those courses of action that will and will not improve profitability.

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

CVP analysis is an analytical tool for analyzing the relationships among cost, price, profit, sales and production volume. Mainly, there are three elements in CVP analysis. They are cost, sales or production volume and profit. All these terms are interconnected and dependent on one another. For instant, profit per unit of a product depends on its selling price and cost of sales. The selling price to a greater extent will depend in the cost and cost depends on the volume of production. It is highly essential for the management to have the complete knowledge about the interrelationship among the cost, volume and profit. A study concerning this inter connection is undertaken through cost volume profit

analysis. CVP analysis is extremely helpful in profit planning and control, management decision and cost control etc.

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

Cost volume profit analysis is one of the major and popular tools to analyze the financial statement of the firms. It is one of the important part of profit planning and control or budgeting.

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

1. Price of product
2. Volume or level of activity
3. Per unit variables costs
4. Total fixed costs
5. Mix product sold

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

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

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

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

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

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. CVP analysis is subject to number of underlying assumptions and limitations. Nevertheless it is powerful tool for decision making in certain situations(Drury, 2000:17).

Most of the business fails after a few years sometimes months of starting because they tend to do anything for volume without thinking how it's going to affect the bottom line. CVP analysis is a management accounting tool to show the relationship between the elements of profit planning. Profit planning is a

function of the selling price of product demand, variable costs, fixed costs, taxes etc. (Bajracharya, et al., 2004:225).

Cost volume profit analysis is the analysis of three variables i.e. cost, volume and profit. Such an analysis explores the relationship existing among cost, revenue, activity levels and the resulting profit. It aims at measuring variations of cost with volume. In the profit planning of a business, cost volume profit relationships is the most significant factor. The CVP analysis is an extension of marginal costing. It makes use of principles of marginal costing. It is an important tool of planning. It is quite useful in making short run decisions (I C A 2004:2.16).

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

## **2.7 Use of CVP Analysis in Profit Planning**

Planning, controlling and decision making are the essential managerial function. Cost volume profit analysis helps the managers to plan for profit to control cost and make decision. As such it helps (Bhattarai, 2060:101-102);

- To determine the break even point in rupees and units.

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

## **2.8 Applications of CVP Analysis**

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

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

- It helps in fixation of selling price.

- It is helpful in cost control.
- It also assists the management in understanding the behaviors of cost and helps in budgeting control
- It helps in determining the level of output where all the costs can be met. It assists the management in profit planning.
- It also assists the management on performance evaluation for the purpose of management control.
- It helps very much in making managerial decisions such as make or buy a part, drop or continue a department or product line, accept or reject a special order, selection of profitable product mix etc.

## **2.9 Approaches to CVP Analysis**

There are three approaches to CVP analysis. They are:

- Contribution margin (CM) approach.
- Cost and revenue equation approach.
- Graphic approach

### **2.9.1 Contribution Margin Approach**

In general sense, contribution is to leave something for some purpose. One very important concept in cost volume profit and break even analysis is contribution margin. Cm reflects the revenue remaining after covering all variable costs.

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

Contribution margin is the excess of sales revenue over variable costs, so contribution margin means how much is left from sales revenue after covering variable expenses that are contributed toward profit for the period. Contribution margin is used to first to cover the fixed expenses and then whatever remains, after the fixed expenses are covered goes toward profit. If the contribution margin is not sufficient to cover the fixed expenses then a loss occurs for the period. Basically contribution margin indicates why operating income changes as the volume of sales changes.

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

$$\text{Contribution Margin} = \text{Sales Revenue} - \text{Variable Cost} = \text{Fixed Cost} + \text{Profit}$$
$$\text{Contribution Margin perUnit} = \text{Selling Price perUnit} - \text{Variable Cost perUnit}$$

We can derive from it that profit cannot result unless contribution exceeds fixed cost. In other words, the point of no profit no loss shall be arrived at where contribution is equal to fixed costs (Maheshwari, 2000:176).

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

Companies that separately identify and measure the fixed and variable components of cost often use a contribution margin approach on their periodic income statement prepared for internal management uses. These income statements provide financial data that are uniquely useful for management planning purpose because of the emphasis on fixed and variable costs. Most of

the managerial decisions that relate to operations (either directly or indirectly) are based in some way to knowledge of the fixed and variable components of cost (Welsch, et al., 1995:498-499).

The variables usually used in cost volume profit analysis are:

### **1. Sales Value**

Any firm or company may have different products, services etc. the sales value or rupees includes the quantity of total sales multiplied by selling price per unit.

### **2. Variable Cost**

Variable cost is that cost which is directly affected by changes in the activity level. The per unit variable cost always remain constant. If the activity level is decreased, the variable cost also decreases. If the activity level or production level increase, then the variable cost also increase. Change in variable cost affects CM ratio, BEP and net income. When variable cost increase, net income, cm ratio and margin of safety will be decreased and it helps to increase BEP.

### **3. Fixed Cost**

Fixed cost remains constant in total amount despite the changes in the level of activities. That is the fixed cost remains unchanged in total as the activity levels vary. When other factors remain unchanged, the change in fixed cost effects to BEP and net income. Increase in the fixed cost, increase the volume of BEP and decrease the net income or vice versa. Fixed cost is also called capacity cost.

### **4. Mixed Cost**

Expenditures that cannot be categorized as purely fixed or variables are termed as mixed cost or semi variable cost. Mixed cost contains both variable and fixed cost elements. Repair and maintenance, supervision, telephone cost, electricity

charge are some examples of mixed costs. It should be separated into the variable and fixed cost elements for profit planning, cost control and decision making.

## 5. Jumping Cost

Some cost remains fixed over a wide range of activity, but some jump to a different amount for activity level within that range. Such costs are called jumping costs or step fixed cost or moving fixed cost or ladder fixed costs.

### 2.9.1.1 Contribution Margin Ratio (CM Ratio)

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

$$\text{CM ratio} = \frac{\text{Sales revenue} - \text{variable cost}}{\text{sales revenue}}$$

Or

$$\text{CM ratio} = \frac{\text{contribution margin}}{\text{sales revenue}}$$

Or

$$\text{CM ratio} = \frac{\text{SPPU} - \text{VCPU}}{\text{SPPU}}$$

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

$$\text{CM Ratio} = 1 - \frac{\text{variable cost}}{\text{sales revenue}}$$

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

$$\text{CM ratio} = \frac{\text{change in contribution margin}}{\text{changes in sales revenue}}$$

Or

$$\text{CM ratio} = \frac{\text{change in net profit}}{\text{change in sales revenue}}$$

This ratio is helpful for determination of the desired level of output or profit and for the calculation of variable costs for any value of sales. The variable cost can be expressed:

$$\text{VC} = \text{Sales} (1 - \text{CM Ratio})$$

Comparison of different CM ratio 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 price.

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

- Increased sales price per unit.
- Decreasing variable cost.
- Increasing the production of products having high P/V Ratio and vice versa.

### **2.9.1.2 Use of Profit Volume Ratio**

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

**The P/V Ratio is used to determine the following facts:**

- For the analysis of breakeven point.
- For ascertaining of profit at a budgeted sales volume.
- For calculation of sales amount required to earn a target profit.
- For ascertaining sales amount needed to keep up with previous profit while
- Decreasing selling price.
- For ascertaining profit on margin of safety. For determination of selling price.

### **2.9.2 Cost and Revenue Equation Approach**

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

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

Total revenue and total cost are affected by sales volume. The addition of quality in above equation will provide useful information for knowing the effect

of revenue, costs and volume as operating profits. When the quantity is included in the above equation, its algebraic form will be as follows.

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

Or,

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

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

Or,

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

Where,

P = Profits

Q = Sales Units

S = Unit Selling Price

V = Unit Variable Cost

FC = Fixed Cost

### **2.9.3 Break Even Analysis**

Break even analysis is the term used to study of the relationship between cost, volume and profit at various level of activity. It is the most widely known from of the CVP analysis. Break even analysis is a special case of CVP analysis.

Break even analysis is used to determine the level of sales of products required to just recover all cost incurred during the period (Hammer, et al., 1994:592).

Break even analysis is widely used technique to study cost volume profit relationship. The narrow 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 (Maheshwari, 2000:175).

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

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

### **2.9.3.1 Break Even Point**

The point, which breaks the total cost and the selling price evenly to show the level of output or sales at which there shall be neither profit nor loss, is regarded as breakeven point. At this point, the income of the business exactly equals its expenditure.

Break even analysis, more precisely the breakeven point tells what quantity of output sold at which total revenues equal total costs. Breakeven point is that quantity of output sold at which the operating income is zero. Breakeven point is the bridge between the loss area and the profit area. Profit begins from the breakeven point. It is survival point where all firms must at least remain to sustain or continue the business (Bajracharya, et al., 2004:23) .

### **2.9.3.1.1 Approaches to Cost Volume Profit and Break Even Analysis**

The cost volume profit relationships and the breakeven point can be analysed through different approaches. Mainly the breakeven point and other required cost volume profit relationships can be explained through contribution margin statement approaches or graphic approach or equation/formula approach. A contribution margin statement is a variable costing income statement where philosophy is all fixed costs are period cost which should be deducted from the contribution margin of the same period. Only the variable costs vary proportionately to the level of output or sales. Most often, we use the equations approach to the solution of cost volume profit analysis and break even analysis instead of the graph or the income statement.

#### **A. Contribution Margin Approach**

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

#### **B. Formula Approach**

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

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

#### **Table 2.1**

#### **Formula Approach of CVP Analysis**

## Contribution Margin Approach Symbol or Equations

$$\text{Sales Volume(units)} = Q$$

$$\text{Selling Price per Units} = \text{SPPU}$$

$$\text{Sales Revenue (Rs)} = Q \times \text{SPPU}$$

$$\text{Less:-Variable Costs} = Q \times \text{VCPU}$$

$$\text{Contribution Margin} = Q \times \text{SPPU} - Q \times \text{VCPU}$$

$$\text{Less:-Fixed Costs} = \text{FC}$$

$$\text{Net Profit} = Q \times \text{SPPU} - Q \times \text{VCPU} - \text{FC}$$

This ratio is helpful for determination of the desired level of output or profit and for the calculation of variable costs for any value of sales. The variable cost can be expressed:

$$\text{VC} = \text{Sales} (1 - \text{CM Ratio})$$

Comparison of different CM ratio 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 price.

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

- Increased sales price per unit.
- Decreasing variable cost.

- Increasing the production of products having high P/V Ratio and vice versa.

### **2.9.1.2 Use of Profit Volume Ratio**

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

#### **The P/V Ratio is used to determine the following facts:**

- For the analysis of breakeven point.
- For ascertaining of profit at a budgeted sales volume.
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- For ascertaining sales amount needed to keep up with previous profit while
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$$\text{Profit} = \text{Total Revenue} - \text{Total Cost}$$

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

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

Or,

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

Or,

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

Or,

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Break even analysis is widely used technique to study cost volume profit relationship. The narrow 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 (Maheshwari, 2000:175).

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

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

### **2.9.3.1 Break Even Point**

The point, which breaks the total cost and the selling price evenly to show the level of output or sales at which there shall be neither profit nor loss, is regarded as breakeven point. At this point, the income of the business exactly equals its expenditure.

Break even analysis, more precisely the breakeven point tells what quantity of output sold at which total revenues equal total costs. Breakeven point is that quantity of output sold at which the operating income is zero. Breakeven point is the bridge between the loss area and the profit area. Profit begins from the

breakeven point. It is survival point where all firms must at least remain to sustain or continue the business (Bajracharya, et al., 2004:23) .

### **2.9.3.1.1 Approaches to Cost Volume Profit and Break Even Analysis**

The cost volume profit relationships and the breakeven point can be analysed through different approaches. Mainly the breakeven point and other required cost volume profit relationships can be explained through contribution margin statement approaches or graphic approach or equation/formula approach. A contribution margin statement is a variable costing income statement where philosophy is all fixed costs are period cost which should be deducted from the contribution margin of the same period. Only the variable costs vary proportionately to the level of output or sales. Most often, we use the equations approach to the solution of cost volume profit analysis and break even analysis instead of the graph or the income statement.

#### **A. Contribution Margin Approach**

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

#### **B. Formula Approach**

The most popular practiced approach to the breakeven point and cost volume profit analysis is the formula also known as the equation. The formula approach uses an algebraic equation to calculate the breakeven point (Rainborn, et al., 1993,89).

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

**Table 2. 4 Formula Approach of CVP Analysis**

<b>Contribution Margin Approach</b>	<b>Symbol or Equations</b>
Sales Volume(units)	Q
Selling Price per Units	SPPU
<b>Sales Revenue (Rs)</b>	<b>Q x SPPU</b>
Less:-Variable Costs	Q x VCPU
<b>Contribution Margin</b>	<b>Q x SPPU – Q x VCPU</b>
Less:-Fixed Costs	FC
<b>Net Profit</b>	<b>Q x SPPU – Q x VCPU – FC</b>

Equations:

$$\text{Sales} - \text{Variables Cost} - \text{Fixed Cost} = \text{Net Profit}$$

Or

$$\text{Sales} = \text{Variable Cost} + \text{Fixed Cost} + \text{Net Profit}$$

Or

$$Q \times \text{SPPU} = Q \times \text{VCPU} + \text{FC} + \text{Net Profit Therefore,}$$

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

Where,  $SPPU - VCPU = CMPU$

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

$$\text{BEP in RS} = \frac{\text{FixedCost}}{\text{P/VRatio}}$$

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

$$\text{Required Sales for Desire Profit (in Units)} = \frac{\text{FixedCost} + \text{DP}}{\text{CMPU}}$$

$$\text{Required Sales for Desire Profit (in Rs)} = \frac{\text{FixedCost} + \text{DP}}{\text{P/VRatio}}$$

$$\text{Required Sales for desired profit after tax (in units)} = \frac{\text{FixedCost} + \frac{\text{DPAT}}{1-t}}{\text{CMPU}}$$

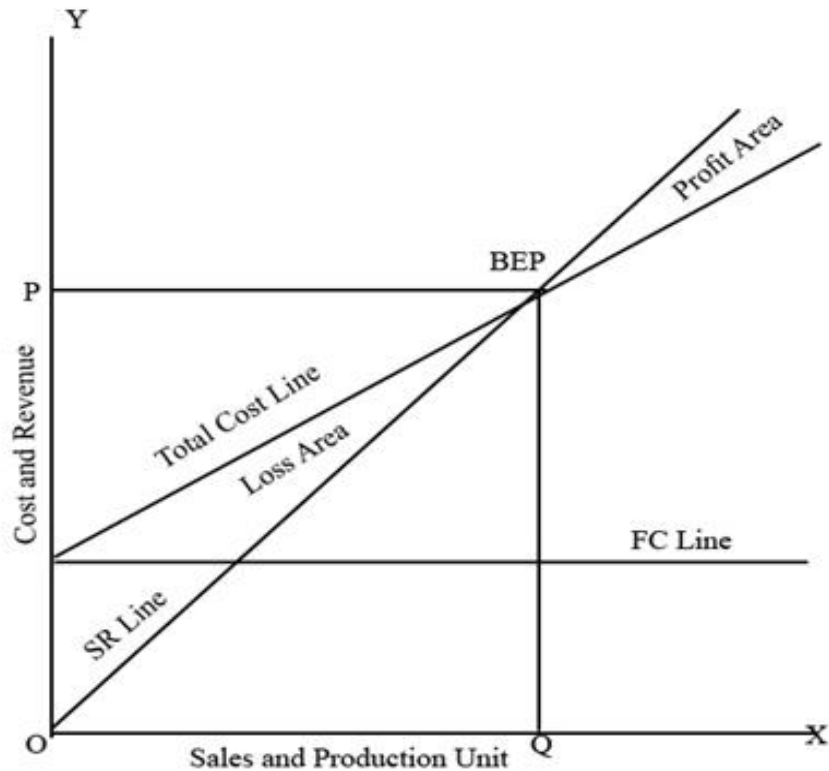
$$\text{Required Sales for desired profit after tax (in Rs)} = \frac{\text{FixedCost} + \frac{\text{DPAT}}{1-t}}{\text{P/VRatio}}$$

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

### **C. The Graphic Approach**

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

**Figure 2. 4 Graphic Approach of BEP Analysis**



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

The above graph clearly states that if the company can reach the point BEP, it can generate sufficient revenues to cover all its operating expenses. At this point total revenues equal the total cost. Here, the revenue curve break up (intersects)

the total cost curve, that's why this point is called breakeven point. At BEP, total sales revenues = total cost (Bajracharya, et al., 2004:230).

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

### **2.9.3.2 Cash Break Even Point**

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

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

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

$$\text{Cash BEP (in Unit)} = \frac{\text{FC - Non Cash Expenses}}{\text{CMPU}}$$

$$\text{Cash BEP (in Rs.)} = \frac{\text{FC - Non Cash Expenses}}{\text{P/V Ratio}}$$

### **2.9.3.3 Composite Break Even Point**

In case a concern is dealing in several products, a composite breakeven point can be computed according to the following formula(Maheshwari, 2000:179).

$$\text{Composite BEP (in Units)} = \frac{\text{Total Fixed Cost}}{\text{Composite CMU}}$$

$$\text{Composite BEP (in Rs)} = \frac{\text{Total Fixed Cost}}{\text{Composite P/V Ratio}}$$

#### **2.9.3.4 Applications of Break Even Analysis**

Break even concept can be used to formulate different policies in a business enterprise, some of these application are (Maheshwari, 2000:182):

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

#### **2.9.3.5 Assumption and Limitation of Break Even Analysis**

The assumptions and limitation underlying the construction of break even points are as follows(Maheshwari, 2000:168);

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

- Either the firm produces only one product or the product mix is constant at all level of output.
- General Price level will remain essentially stable in the short run.
- Changes in the opening and closing inventories are not significant.
- That the level of production and sales remain unchanged during the period.

#### **2.9.4 Margin of Safety**

Margin of safety is the excess of budgeted or actual sales over the break even sales volume. In other words, it is the difference between the budgeted or actual sales revenue and the break even sales revenue. It is a position above the breakeven point. It serves as a cushion or spring plate that enables a business firm to absorb the shocks of adverse business conditions. It indicates the extent to which sales may fall before suffering any loss i.e. greater the margin, safer the firm.

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

The margin of safety indicates the extent to which sales may fall before the firm suffers a loss. Larger the margin of safety, safer is 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 margin ratio. When the both the margin of safety and the cm ratio low, management should think of the possibilities of increasing the selling price, provided it does not adversely affect the sales volume, or reducing variable costs by bringing improvement in the manufacturing process(Maheshwari, 2000:240).

It gives management a feel for how close projected operations are to be organizations breakeven point. Managers often consider the size of the company's margin of safety when making decisions about various business opportunities. The larger is the safety margin, the greater is the chances for the company to earn profit (i.e. larger the margin of safety, safer the company)(Munakarmi,2003:127).

Margin of safety can be ascertained by using the following formula:

Margin of Safety (in Units) = Actual Sales (in units) - Break Even Sales (in units)

Margin of Safety (in Rs.) = Actual Sales (in Rs.) - Break Even Sales (in Rs.)

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

$$\text{Margin of Safety (in Rs.)} = \frac{\text{Profit}}{\text{P/VRatio}}$$

The relationship between margin of safety and actual sales is known as margin of safety

ratio, which is determined as follows (Munakarmi, 2003:127);

$$\text{Margin of Safety Ratio} = \frac{\text{Actual Sales} - \text{BE Sales}}{\text{Actual Sales}}$$

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

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

## **2.10 CVP Analysis for a Multi Product Firm**

Sales mix can be defined as the relative combination of two or more products represented in total. It is not only the sales revenue that makes profit. The proportion of the sales contributed by different products greatly changes the amount of profit. Managers try to achieve that combination, or mix, that will yield the greatest amount of profit. If a company sells more than one product, these may not be equally profitable. So the company's profit will depend upon the ratio of each products sale to total sales revenues. Profit will be greater if high margin items make up a relatively large proportion of total sales than if sales consist mostly of low margin items. Changes in sales mix can cause great variations in a company's profit. A shift to low margin items can cause the total profit to decrease even through total sales increase. In the contrary, a shift in the sales mix from low margin items to high margin items can cause the reverse effect; total profit may increase even though total sales decreases (Bajracharya, et al., 2005:260).

The relative proportion of sales of product is called the sales mix or the product mix. In the case of a multi product firm, the contribution for each product can be found out by deducting its variable costs from sales revenue. The breakeven 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 breakeven point can be calculated by dividing the total fixed costs by the contribution ratio for the firm. The multi-product firm's P/V Ratio will be the weighted average of the P/V Ratios for all the products, the weights being the relative proportion of each product's sale. 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 breakeven point and profit if each product has the same P/V Ratio. However, a change in the product mix will change the breakeven point and profit when products have unequal P/V Ratio (Maheshwari, 2000:187).

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

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

## 2.11 Break Even Point for Multi Product Firm

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

**Table 2. 5 For determination of breakeven point in terms of unit**

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

**Table 2. 6 For determination of breakeven point in terms of Rs**

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

Some Important Formula;

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

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

Product wise BEP (in Unit) = Overall BEP (in Unit) x Respective Proportion  
(from Sales Unit)

Product wise BEP (in Rs.) = Overall BEP (in Rs.) x Respective Proportion  
(from Sales Rs.)

$$\text{Required Sales for Profit (in Unit)} = \frac{\text{Total Fixed Cost} + \text{Desired Profit}}{\text{Weighted CM PU}}$$

$$\text{Required Sales for Profit (In Rs)} = \frac{\text{Total Fixed Cost} + \text{Desired Profit}}{\text{Weighted P/V Ratio}}$$

$$\text{Required Sales for Profit (in Unit)} = \frac{\text{Total Fixed Cost} + \text{Desired Profit} \frac{\text{DPAT}}{1-t}}{\text{Weighted CM PU}}$$

$$\text{Required Sales for Profit (in Rs)} = \frac{\text{Total Fixed Cost} + \text{Desired Profit} \frac{\text{DPAT}}{1-t}}{\text{Weighted P/V Ratio}}$$

## 2.12 Cost Volume Profit Analysis and Limiting Factors

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

## 2.13 CVP Analysis with a Single Constraint

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

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

the alternative uses on the basis of contribution per scarce resource (Munakarmi, 2003:146)

## **2.14 CVP Analysis with Multiple Constraints**

Where more than one scarce resource exist the optimum production programmed cannot easily be established by the simple process applied in single resource constraint. Under the circumstances simple allocation of resource or the basis of contribution margin per unit is neither feasible nor desirable. Contribution margin per unit of scarce resource may be different for different ranking of product, because production processes are affected by many constrains factors rather than single constraint. In such situation, linear programming technique may used to optimize product mix. The linear programming formulation is required to determine a production plan which maximizes contribution from the product mix. Linear programming is a mathematical technique which shows how to arrive the optimum results, allocation available resources in a meaningful manner. It is basically concerned with the problem of allocating limit resources among competitive activities in an optimum manner. It is a technique to optimize the allocation of scarce resources in product mix problems which provides a valuable extension to cost volume profit analysis (Munakarmi, 2003:148).

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

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

- There must be an objective the firm wants to achieve i.e. criterion in which alternatives are assessed e. g. profit maximization (which is our concern at present) or cost minimization. As profits are not linearly related to sales volume, contribution is the appropriate term to be used instead of profit.
- There must be alternative courses of action; one of which will assist in achieving the objective.
- Resources or facilities must be in limited supply The variables in the problem must be interrelated
- Objectives and constraints must be able to be expressed as mathematical equations or inequalities and these must be linear equations or inequalities.

## **2.15 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 significant fixing up of selling price. Management uses this as a convenient tool of profit planning with giving consideration of risk and uncertainty involved in it.

Our discussion of cost volume profit so far was based on the very assumptions that all costs and revenues were known with certainty. This assumption of single value estimate, which is far from reality naturally, limits the usefulness of CVP analysis for profit planning and other decision purposes. To prove it-self a better

tool in the hands of manager, CVP analysis should incorporate risk and uncertainty in its parameters.

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

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

The normal probability distribution approach can be used to further analyze the element of risk in cost volume profit analysis. The use of the normal probability distribution will enable the decision maker to have an idea of the probability of different expected values of sales or cost or profit, that is the probability of sales or cost or profit having the value of zero or less, greater than zero and within the range of two values and so on. Thus, the normal probability distribution is an important statistical technique in the hand of decision maker for evaluating the riskiness of a firm.

The parameters of the normal probability distribution are mean and standard deviation. A particular normal probability distribution can be completely determined, if its mean and standard deviations are known. The standard

deviation is a measure of dispersion of the distribution about its mean. The larger the standard deviation, the more spread out is the distribution.

### The Use of Normal Distribution in CVP Analysis

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

Though all the variables of the CVP analysis may be uncertain and random, still the sales volume is the most uncertain variables. In most of the cases in businesses the demand is uncertain. Assuming that sales quantity is random variables, we can apply the concepts of the normal distribution in CVP analysis problems.

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

- The probability of at least reaching the break even sales.
- The probability of making at least the required amount of profit.
- The probability of incurring losses, i.e. not achieving the BE sales volume etc.

### **2.16 Steps (Jumping) Fixed Cost and Multiple BEP**

Break-even point is determined by dividing the fixed cost by the contribution margin per unit. If the fixed cost is jumping one (i.e. step fixed) then it is required to consider a different amount of fixed cost corresponding to each step. As such BEP is computed for each level of fixed cost. Some of these compute BEP may not be feasible because they may violate the limit imposed by the

relevant range corresponding to the level of fixed cost considered in their computation. As a result real or actual BEP is determined through trial and error approach(Munakarmi, 2003:136).

## **2.17 Assumptions Underlying CVP Analysis**

Break even analysis is the most useful technique of profit planning and control. It is a device to explain the relationship between cost, volume and profit. The discussion of the CVP analysis (or break even analysis) so far is based on the following assumptions (Pandey, 1994:241).

### **A. Cost Segregation**

The total costs can be separated into fixed and variable components. Constant fixed cost is the total fixed cost that remains unchanged with changes in sales volume. Constant unit variable cost is the variable cost per unit is constant and total variable cost changes in direct proportion to the sales volume.

### **B. Constant Selling Price**

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

### **C. Constant Sales Mix**

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

### **D. Coordinated Production and Sales**

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

## **2.18 Limitations of CVP Analysis**

Assumptions limit the utility and general applicability of the CVP analysis. Therefore, the analysis should recognize these limitations and adjust data, wherever possible, to get meaningful results. The CVP analysis suffers from the following limitations(Pandey, 1999:214).

- It is difficult to separate costs into fixed and variable components.
- It is not correct to assume that total fixed cost would remain unchanged over the entire range of volume.
- The assumption of constant selling price and unit variable cost is not valid. It is difficult to use the break even analysis for a multi product firm.
- The break even analysis is a short run concept and has a limited use in long range planning.
- The break even analysis is a static tool.

## **2.19 Special Problems in CVP Analysis**

There are three special problems in CVP analysis that are as follows :(Fago, 2003:235-236)

### **A. The Activity Base**

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

### **B. The Change in Inventory**

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

- Management policy in inventory change is;
- Disregard the inventory changes.
- Included the inventory changes.

### **C. The Non-Operating Incomes and Expenses**

The non-operating income and expenses (extra ordinary gains and losses) cause another problem in CVP analysis.

The main problem is that whether they should be included or excluded in the analysis. Management policy may be too;

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

## 2.20 Sensitivity Analysis

Sensitivity analysis is the measurement of elasticity of the change in CVP factors on breakeven point or given profit. The strategist should focus more on the factor, which is more sensitive or responsive for profit. To measure the sensitivity of CVP factors one can see the impact of certain percentage or amount change in volume price or cost factors on net profit. In other words, sensitivity analysis is the measurement of responsiveness in outcome with the changes in determinant variables. We know that the goal of a business enterprise is to maximize profit. Profit is the excess of revenue over the total costs.

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

Or

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

So that, Profit = f<sub>x</sub>{sales volume, variable costs, fixed costs, taxes etc.}

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

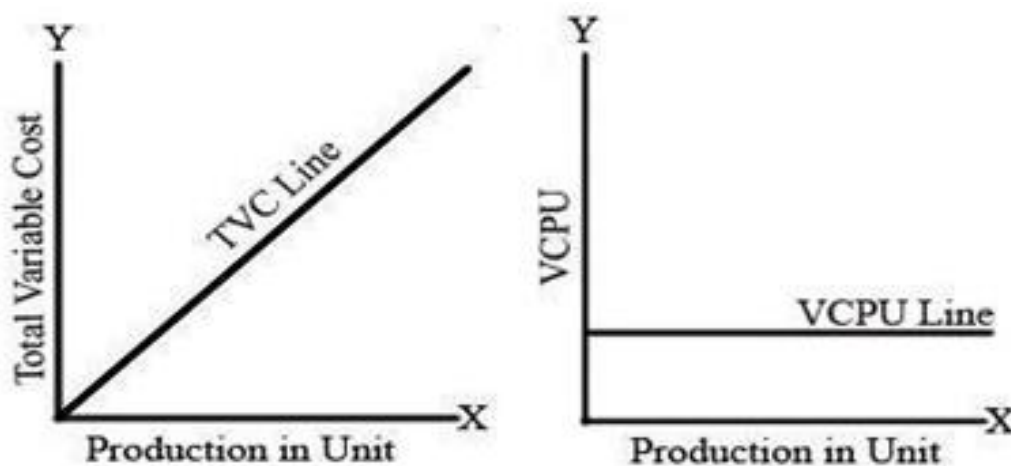
## 2.21 Cost Structure

There are three types of costs from their nature of variability. They are:

## 1. Variable Costs

Variable cost varies in direct proportion to change in activity level. If the level of activity increases by 50% the amount of the variable cost also increases by 50% as well. Variable cost in total increases or decreases if the activity level increase or decrease but remain constant if expressed on a per unit basis. Change of variable cost effects to p/v ratio, BEP and net income. When variable cost increase, net income, p/v ratio and margin of safety will be decreased but it helps to increase BEP. It will more be more understood clearly with the help of the diagram presented below

**Figure 2. 5 Variable Costs**

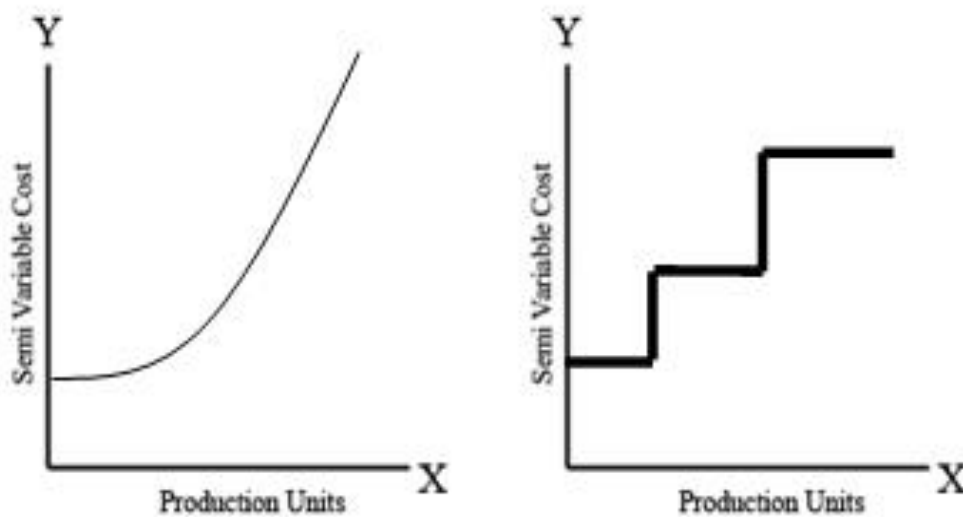


## 2. Fixed Cost

Fixed costs remain constant in total amount despite the changes in the level of activity. That is, the fixed cost remains unchanged in total as the activity varies. But the fixed cost per unit does changes as activity varies. Fixed cost per unit basis decrease as the level of activity increases and vice versa. When other factors remain unchanged, the change in fixed cost effects to BEP and net

income. When the fixed cost is increased, the volume of BEP increases but the net income decreases or vice versa. Fixed cost is also called capacity cost. The concept of fixed cost may be more understood with the help of the following diagram.

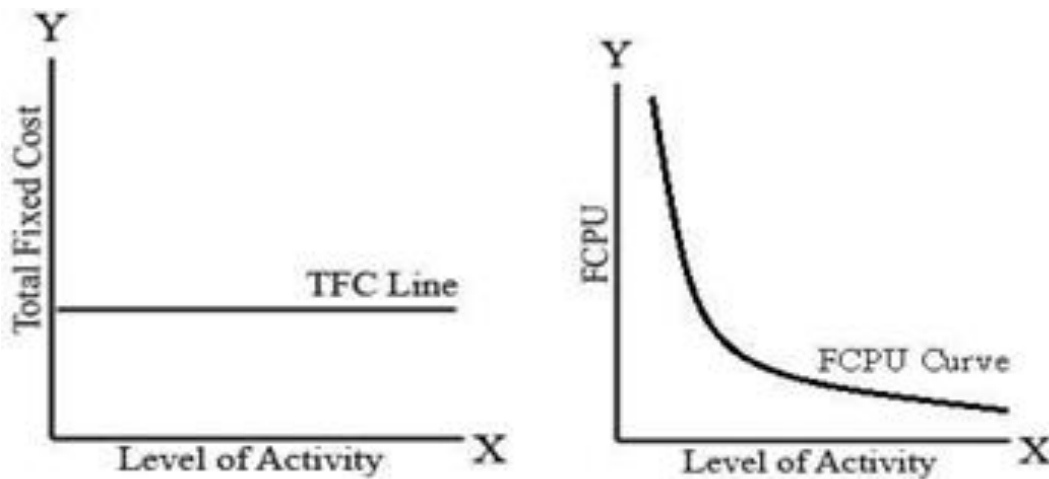
**Figure 2. 6 Fixed Costs**



### **3. Semi Variable Cost**

Expenditure that cannot be categorized as purely fixed or variables are termed as mixed cost or semi variable cost. Mixed cost contains both variables and fixed cost elements. Repair and maintenance, supervision, telephone, electricity charge are some examples of mixed cost. It should be separated into the variable and fixed elements for profit planning, cost control and decision making. In mixed cost, variable cost element is added to the fixed cost element as such mixed cost line slopes upward in the graphs.

**Figure 2. 7 Semi Variable Cost**



## **2.22 Risk Measurement: Operating Leverage and Break Even Point**

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

Operating leverage tells us how profit change in sales. It is evident that profit change more rapidly than sales. Why do profit change more rapidly than the

sales? It is because some costs do not change say if sales decline variable costs also decline in the same ratio so that contribution margin also decline proportionately. But fixed costs do not decline so, the net operating income decline more rapidly. The same thing applies in the case of increase well. Sales revenues changes but some parts of costs, known as fixed costs, remain unchanged. This usually net income changes more rapidly. This change is called the operating leverage.

Operating leverage can be measured in terms of the “Degree of operating leverage” (DOL). DOL shows the times of percentage change in net operating income of the given percentage change in sales. DOL may be defined as the percentage change in net operating income or EBIT associated with a given percentage change in sales(Pandey, 2004:245).

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

Alternatively,

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

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

Where, Q = Total Sales in units

SPPU = Selling Price per Unit

VCPU = Variable Cost per Unit

As we know,

$$\text{BEP (in Units)} = \frac{\text{Fixed Cost}}{\text{SPPU} - \text{VCPU}}$$

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

Higher fixed cost increases the DOL and they also increase the breakeven point, so there is close relationship between the degree of operating leverage and the breakeven point. A high DOL and high BEP both are indicators of higher risk (Bajracharya, 2004:24).

## **2.23 Segregation of Semi-Variable (Mixed) Costs**

Cost volume profit analysis requires segregation of all costs between two parts; fixed and variable. This means that the semi variable cost will have to be segregated into fixed and variable elements. This may be done by any one of the following methods (Maheshwori, 2000:162);

### **A. Levels of Output Compared to Levels of Expenses Method**

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

$$\text{Variable Element} = \frac{\text{Change in amount Expenses}}{\text{Change in Activity Level}}$$

## **B. Range Method**

This method is similar to levels of output compared to levels of expenses method except that only the highest and lowest point of output is considered out of various levels. This method also designated as “High and Low” method. The high low method is explained step by step as follows;

Step I - The highest pair and the lowest pair are selected.

Step II - The variable rate „b computed by using the following formula

$$\text{Variable Rate} = \frac{\text{Difference in Cost}}{\text{Difference in Activity}}$$

Step III - The fixed cost portion is computed as:

Fixed cost portion = total cost - variable cost

## **C. Degree of Variability Method**

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

## **D. Scatter - Graph Method**

In this method, the given data are plotted on a 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). The method is explained below.

- The volume of production is plotted on the horizontal axis and the costs are plotted on the vertical axis.

- Corresponding to each volume of production and costs are 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 amount of fixed element.
- 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 at 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 any objective test for assuring that the regression line drawn is the most accurate fit for the underlying observations.

### **E. Least square Method**

Least square method is a statistical method. It is an accurate and trusted method of segregation fixed and variable cost from mixed cost. In this method, first of all, variable cost per unit is calculated. After this, the fixed cost is calculated. The fixed cost and variable cost can be separated by adopting the stepwise process as shown below.

Step1 Assume the activity level or production units as „x“ and find out the summation of x i.e  $\sum X$ .

Step 2 Assume the Mixed cost as „Y“ and find out  $\sum Y$

Step 3 Multiply X and Y, and sum the product i.e. find out  $\sum XY$

Step 4 Convert x in to  $X^2$  and find out the sum of  $X^2$  i.e.  $\sum X^2$

Step 5 Using the following given below, find out unit variable cost (b):

$$b = \frac{N \sum XY - \sum X \sum Y}{N \sum X^2 - (\sum X)^2}$$

Step 6 Using the formula given below find out fixed cost (a):

$$a = \frac{\sum Y - b(\sum X)}{N}$$

Notes;

N = Number of Observations

## 2.24 Financial Statement Analysis

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

Income statement or trading and profit and loss account; it is prepared by a business concern in order to know the profit earned and loss sustained during a specified period.

Position statement or balance sheet; it is prepared by a business concern on a particular date in order to know its financial position.

The above mentioned statements collectively called financial statements of a company(Jain., 1991:VI/1).

Analysis is the process of critically examining in detail accounting information given in the financial statement. For the purpose of analysis, individual items are studied; their interrelationships with other related figures established, the data are sometimes rearranged to have better understanding of the information

with the help of different techniques or tools for the purpose. Financial analysis is helpful in assessing the financial position and profitability of a concern. This is done through the comparison of ratios over the period(Jain,1991:VI/4) .

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

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

### **2.24.1 Profitability Ratios**

Profitability ratios are of utmost importance for a concern. These ratios are calculated to enlighten the end results of business activities which are the sole criterion of the overall efficiency of a business concern. The following are the important ratios (Jain, 1991:VI/28) .

#### **a. Gross Profit Ratio:-**

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

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

**b. Operating Profit Ratio:-**

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

follows;

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

**c. Net Profit Ratio:-**

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

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

**d. Return on Shareholders' Investment Ratio:-**

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

$$\text{Return on Shareholder Investment Ratio} = \frac{\text{Net Profit after Tax}}{\text{Equity Shareholder Funds}} \times 100\%$$

Equity shareholders funds = Equity share capital + Capital reserves + Revenue reserves + Balance of profit and loss account - Fictitious assets

**e. Return on Total Assets:-**

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

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

### 2.24.2 Financial Ratios

These ratios are calculated to judge the financial position of the concern from long term as well as short term solvency point of view. The following are the ratios which are calculated in this respect (Jain, 1991:VI/39).

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

Current Assets = cash, bank balance, short term investment, bills receivables, trade debtors, inventories and prepaid expenses etc.

Current Liabilities = bank overdraft, bills payable, trade creditors, provision for taxation, proposed dividend, accrued interest on loans and debentures, outstanding expenses etc.

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

#### b. Quick Ratio:-

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

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

**c. Fixed assets to Capital Employed Ratio:-**

This ratio is calculated as under;

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

Capital employed = equity share capital + preference share capital + undistributed profit + reserve and surplus + long term liabilities - fictitious assets

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

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

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

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

**e. Debt to Equity Ratio:-**

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

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

## **f. Proprietary Ratio**

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

$$\text{Proprietary y Ratio} = \frac{\text{Shareholde rs Fund}}{\text{Total Assets}}$$

## **2.25 A Brief Review of Books**

The study of the interrelationship of sales costs and net income is usually called cost - volume profit analysis. CVP analysis examines the response of profit to changes in volume. It relies on linear cost analysis and on linear revenue assumptions. To gain understanding of CVP analysis, the common example of a firm which produces only single product will be used. The analysis will be expanded to cover firms with several products by multiple divisions (Fisher & Frank,:109).

CVP analysis consists essentially in examining the relationship between changes in volume (output) and changes in profit. The scope of C-V-P analysis ranges from the determination of the optimal output level of a single- product department to the determination of the optimal mix of large multi-product firm. All these decision reply of the simple relationship between changes in revenues and costs and changes in output levels (mixes). Output should be expanded or the output mix altered if the incremental revenue resulting from the change exceeds the incremental costs of making the change. Thus, all cost, volume and profit analysis is characterized by their emphasis on cost and revenue behavior over various ranges of output levels and mixes (Dopuch, et al., 1974:107).

Cost, Volume and Profit analysis includes the related concepts of (a) Contribution analysis and (b) Break even analysis. These concepts entered the mainstream of management accounting starting in the 1930"s, with major emphasis in the 1950"s. Both concepts rest upon the concept of cost variability (i.e. flexible or variable expenses budgets), Contribution analysis involves a series of analytical techniques to determine and evaluate the effects on profits of changes in sales volume, sales prices, fixed expenses and variable expenses. Basically, it applies the concept of a contribution margin income statement: Revenues minus variable expenses equals contribution margin, and contribution margin minus fixed expenses equals profit. Break-even analysis focuses on the breakeven point: Fixed expenses divided by the contribution margin equals break even sales volume (the point at which profit is zero because revenue equals total cost). The result of breakeven analysis is usually graphed to show the relationships between revenue (i.e. sales), fixed expenses, and variable expenses, within a relevant range of sales volume (Welsh,et al.,1992:531).

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

## **2.26 A Brief Review of Previous Research Work**

The profit planning in Nepal seems to be emerging sector for research and analysis. Very few researches have been made in the areas of profit planning and control. Out of them, very limited researches are able to go in the depth and detail of PPC. An attempt is made here to review some of the researches.

KamaleshYadav (2066),conducted a research entitled “Cost Volume and Profit Analysis in Nepal Aushadhi Limited”. MrYadav had concerned her study to examine the practice of profit planning and control in the manufacturing companies in Nepal. It was submitted to Shankar Dev Campus, TU, Kathmandu at May 2066.

### **The specific objectives of the study were:**

- The study of application of CVP analysis is NAL To evaluate the sensitivity of profitability
- To analyze the CVP and its impact in profitability of NAL. To study the profitability and financial position of NAL.

### **His major findings are as follows:-**

- NAL have not applied suitable scientific method of cost classification.
- NAL couldn't put stress on effective utilization of fixed cost so it bearing higher amount of unfavorable capacity variance.
- NAL have not considered the Cost Volume Profit relationship while fixing the price of its product.

### **His main recommendations were:**

- The industry should try to reduce the fixed cost.

- The industry should follow effective advertising policy.
- A system of periodical performance reports should be strictly followed to be conscious about poor performance and take corrective action immediately.

Deena Shakya (2065), had studied on the topic “A study on Cost Volume and Profit Analysis of Soaltee Hotel Limited”. Miss Shakya had concerned her study to examine the practice of profit planning and control in the hotel industry in Nepal. It was submitted to Shankar Dev Campus, TU, Kathmandu at 2065.

**The specific objectives of the study were:**

- To study the nature of direct and indirect cost and component of cost of Hotel.
- To evaluate the profitability, financial position and sensitivity of Soaltee Hotel's activities.

**Her major findings are as follows:-**

- The main focus of hotel is to maximizing revenue but hotel hasn't focus of cost planning and controlling.
- Soaltee Hotel Limited is service providing company but it hasn't given emphasis to reduce variable cost ratio.
- Market study on demand and pricing has not be carried out.

**Her main recommendations were:**

- Classification of cost into variable and fixed as well as controllable and non-controllable cost must be made within specific framework of responsibility centre and time.
- Soaltee Hotel Limited should consider BEP analysis while preparing revenue plan, operation plan and setting price of its services.
- Separate cost control department should be established for effective management of cost.

Kirshna Ram Sijakhwo (2065), had studied on the topic “A study on Application of Cost Volume-Profit Analysis as a Managerial Tool in Bhaktapur Craft Paper Limited”. Mr. Sijakhwo had concerned his study to examine the practice of profit planning and control in the craft paper industry in Nepal. It was submitted to Shankar Dev Campus, TU, Kathmandu at 2065.

**The specific objectives of the study were:**

- To study the relationship of cost, volume and profit of BCP Ltd.
- To analyze the impact of CVP of the company on productivity.
- To calculate the BEP, MOS and CM etc. and its impact on the profitability.

**His major findings are as follows:-**

- Cost classification is not systematic. There is no practice of segregating semi variable cost.

- Aggregate total incomes were in decreasing trend because company have not improved the total income by improving and using advance marketing skills for more products sales in existing and new market.
- Company has not focused to possibility of production of more varieties of papers.

**His main recommendations were:**

- There was high degree of positive correlation between sales revenue and profits; therefore it is necessary to analyze relationship changed between them.
- The company should separate expenses for research and development program which would help advancing BCPs function and production process with minimizing cost. Company's present poor performance should be improved by using management theory and principles like MBO, participating management activities etc.

Bijaya Raj Adhikari (2064), conducted a research entitled “Cost-Volume-Profit Analysis of Nepal Lube Oil Limited” Mr. Adhikari had concerned his study to examine the practice of CVP practice in the Monopoly industry. It was submitted to Shanker Dev Campus, TU, Kathmandu at 2064.

**The specific objectives of the study were:**

- Whether or not NLO Ltd. is practicing CVP analysis?
- In which areas of the business operation, CVP analysis can be applied to improve the competitiveness of the company?

- Which parts i.e. CM, BEP, MOS etc. of CVP analysis are mostly practiced and which are not practiced till now?

**His major findings are as follows:-**

- Different types of profit planning tools, which are used in the academic field, are not found applied by NLO.
- CVP analysis is not applied by NLO as no segregation of cost into fixed and variable, which is the hardcore of CVP analysis.
- Company has no clear-cut boundaries to separate cost into fixed and variable. The classification of cost is not scientific and systematic. So, NLO has not been able to use CVP analysis and make the realistic and smart budget.

**His main recommendations were:**

- NLO should minimize fixed cost by reducing interest expenses. Interest expenses has been increasing due to high increase in receivable from sales, increase of loan amount to be paid to the creditors for raw materials and other supplies. Therefore, company should adopt fast collection policy to reduce receivable with discount and other special offer to the debtors.
- As NLO is multi-product company more emphasis should be provided for the product having high contribution margin to generate more profit.
- NLO has spent a large amount on salaries & wages, it should reduce that by implementing proper manpower planning and use of latest information technology (i.e. computer software etc.) should

be made to reduce unnecessary paper work and improve productivity of manpower by providing training and deploying development program

Dozy Tater (2001), had submitted a dissertation on the topic“Profit Planning in Soft Drinks Industry (A case study of Bottlers Nepal Limited Balaju) (Unpublished Master Degree Dissertation Submitted to T.U.)” in March 2001. The period covered by her study was of 6 years that is from FY 1993/94 to FY 1999/2000 of the company. Necessary data were collected from primary and secondary sources. The basic objective of the study was to examine how far the different functional budgets were being applied as a tool of profit planning in business enterprises.

**The specific objectives of the study were:**

- To identify the BEP of the company.
- To examine the cost structure.
- To see the BN Ltd. in profit planning on the basis of overall managerial budgeting.
- To evaluate the variance between targets and actual of the BN Ltd.

**His Major findings were:**

- Specific goals and targets were not found to be defined clearly to achieve the basic objectives of BN Ltd. Co.
- There was lack of defined authority and responsibility. So there is no proper coordination between the various responsible departments.

- Inadequate profit planning due to lack of planning experts/planners. Financial performance of company was not satisfactory.

**His main recommendations were:**

- Adopt the comprehensive profit planning from the very beginning to the end.
- Fix a target of sales revenue and it should make an attempt to increase sales revenue adding of new product line or increasing the sales by increasing the customer.
- Analyze SWOT (strength, weakness, opportunity and threats) analysis to improve the company"s capability.
- Develop different functional, financial budgets in detail separating the costs variables/fixed, controllable/uncontrollable.

## **2.27 Research Gap**

I have gone through all of the above research works. I have found surgical CVP analysis of individual institutions only. There is no comparative CVP analysis of same nature of organizations especially manufacturing enterprises as a result the significance of CVP analysis is not illustrated comprehensively till now. There are hundreds of researches which are conducted mainly on profit planning and control and management accounting of public manufacturing enterprises. I have studied some thesis on the same topic (CVP analysis) but these are not able to extract the concrete idea about the application of CVP analysis in manufacturing companies because these theses are written making a case study of an individual enterprise. In most of the researches, profit -planning tools are analyzed in the one way but their impact is rarely explained. In my

view, the broad idea of application of CVP analysis on Profit Planning and Control of any enterprise can be generated if we make a comparative and comprehensive study of same nature of companies. We can compare, contrast and draw a conclusion about superiority and inferiority of application of CVP analysis. Therefore, the attempts made by previous researchers can be seen one sided and incomplete. In order to fulfill this gap or to complete this vacant, I have chosen this topic so that I could find something new on the same issue which may be beneficial to the stakeholders of the companies" as well new researchers along with government authorities to formulate effective public policies. Similarly, CVP analysis and the sensitivity of their variables in modern business is a current issue but these are rarely studied by the previous researchers. To eliminate this gap, I have decided to make a comparative CVP analysis of Himalayan Distillery Limited and Bottlers Nepal Limited. I think this is the first thesis that studies the CVP analysis of Public Manufacturing Company Limited and Private Manufacturing Company Limited.

## **CHAPTER - 3**

### **Research methodology**

#### **3.1 Introduction**

Research is the process of a systematic and in-depth study or search of any particular topic, subject or area of investigation backed by the collection, compilation, presentation and interpretation of the relevant details or data. It is a careful search or inquiry into any subject matter, which is an endeavourer to discover or find out valuable facts, which will be use full for further application or utilization. The research that involves the discovery of new techniques, a modification of old concepts or a knocking off an existing theories, concepts and techniques. It may develop a hypothesis and test it by establishing relationship between different variables and identify the means for problem solving.

Research methodology is a systematic way to solve the research problem. In other words research methodology describes the methods and process applied in the entire aspect of the study. It may be understand as a science of studying how research is dines scientifically. It help to analyze, examine and interpret various aspects of research works such as sales, cost and other aspects of CVP analysis, related to effective tools of profit planning. The objective of this study will be to analyze the CVP analysis of HDL and BNL

and thereby forward some measures to improve the situation. The major contents of research methodology followed in course of this study are;

## **3.2 Research Design**

Research design means defining procedures and techniques which guide to study and propound ways for research work. It is an analytical as well as descriptive approach to achieve the objectives. It is the arrangement of condition for collection and analysis of data relevance to the study purpose with economy in procedure. In order to make type of research, this fulfills the objectives of the study.

The research design is an organized approach and not a collection of loose unrelated parts. It is an integrated system that guides the researcher in formatting, implementing and controlling the study. Useful research design can product the answers to the proposed research questions. The research design is thus an integrated frame that guides the researcher in planning and executing the research works.

Data and information are the lifeblood or major portion of any study. This study would be attempted to show the relationship among cost, volume, profit and various functional budgets for solving the problems that has accrued in HDL and BNL. Cost - volume and profit analysis of HDL and BNL are presented and analyzed by descriptive research design and analytical method. A study design is the arrangement of the conditions for collection and analyze of data in manner that aims to combine relevance to the study purpose with the economy in producer. These studies will an intensive based on analysis of the past financial performance.

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

### **3.3 Research Population and Sample**

The large group about which the generalization is made is called the population under study, or the universe and small portion on which the study is made is called the sample of the study. Research population would be all manufacturing company of Nepal. Due to various circumstances it would not be possible to attempt all the number of research population regarding in this dissertation. To convenient the research, only one HDL and BNL will be taken for the research purpose.

### **3.4 Source and Type of Data**

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

### **3.5 Variables of Studies**

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

### **a) Independent (Explanatory) Variables:**

A variable is called independent variable if it is not influenced by any other variable under study. The independent variables are those, which are the basis of prediction. It is also known as explanatory variable because it explains partially or totally the estimated value of dependent variable.

### **b.) Dependent Variable:**

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

There are three factors (i.e. cost, volume and profit) of CVP analysis, which are interconnected and dependent on one another. So these factors are depending variables. But, testing relationship between these variable following criteria is assumed:

**Table 3. 1 Classification of Variables**

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

## **3.6 Method of Analysis & Presentation**

Analysis and presentation of the data is the core of each and every research work. In order to get the concrete results from this research, data are analyzed

by using different types of tools. Basically, following two techniques are used to explain the collected data.

### **3.6.1 Descriptive Techniques**

Descriptive technique is a fact-findings operation searching for adequate information. It is a type of study, which is generally conducted to assess the opinions, behaviors or characteristics of a given population and to describe the situation and events occurring at present. Descriptive technique is a process of accumulating facts. It does not necessary seek to explain relationships, test hypothesis, make predictions, or get at meanings and implications of a study.

### **3.6.2 Quantitative Techniques**

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

#### **3.6.2.1 CVP Analysis Tools**

CVP Analysis was included the following techniques:

Contribution Margin (CM) = Sales - Variable Cost

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

$$\text{Break Even Point (in Units)} = \frac{\text{Total Fixed Cost}}{\text{CMPU}}$$

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

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

$$\text{Required Sales for Desire Profit (in unit)} = \frac{\text{Fixed Cost} + \text{DP}}{\text{CMPU}}$$

$$\text{Required Sales for Desire Profit (In Rs)} = \frac{\text{Fixed Cost} + \text{DP}}{\text{PV Ratio}}$$

$$\text{Required Sales for Desire Profit after tax (in units)} = \frac{\text{Fixed Cost} + \frac{\text{DPAT}}{1 - t}}{\text{CMPU}}$$

$$\text{Required Sales for Desire Profit after tax (in Rs)} = \frac{\text{Fixed Cost} + \frac{\text{DPAT}}{1 - t}}{\text{PV Ratio}}$$

$$\text{Margin of Safety (in Units)} = \text{Actual Sales (in units)} - \text{BE Sales (in units)}$$

$$\text{Margin of Safety (in Rs.)} = \text{Actual Sales (in Rs.)} - \text{Break Even Sales (in Rs.)}$$

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

$$\text{Margin Safety (in Rs)} = \frac{\text{Profit}}{\text{PV Ratio}}$$

### 3.6.2.2 Statistical Tools

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

### **Bar Diagram:**

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

### **Mean:**

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

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

Where,

$\sum X$  = the sum of observations

N = no. of observation

### **Standard Deviation (S.D.):**

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

The SD is calculated by the following formula

$$\text{SD} = \frac{\sqrt{\sum (X - \bar{X})^2}}{N - 1}$$

### **Coefficient of Variation (CV):**

The relative measure of dispersion based on Standard Deviation is called Coefficient of

Standard Deviation. Thus,

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

100 times Coefficient of Standard Deviation is called Coefficient of Variation.

It is denoted by C.V. thus,

$$\text{CV} = \frac{\delta}{\bar{X}} \times 100\%$$

### **Correlation Analysis:**

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

It can be calculated by using following formula:

$$\text{Co-efficient of correlation (r)} = \frac{\sum(X - \bar{X})(Y - \bar{Y})}{\sqrt{\sum(X - \bar{X})^2 \sum(Y - \bar{Y})^2}}$$

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

### **Coefficient of determination (r<sup>2</sup>):**

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

Co-efficient of determination ( $r^2$ ) =  $r \times r$

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

## **CHAPTER - 4**

### **Presentation and Analysis of Data**

Planning sets the proper objectives and goals for an organization and profit planning develops the specific action plans to achieve the pre-determined goals and objectives. CVP analysis can be used to plan the profit and it also measures the effectiveness of profit planning and control. CVP analysis analyses the relation among the cost, revenue and profits. It helps the management in cost control and profit planning.

Use of CVP in profit planning is the basic objective of this study. It will examine the present practice of CVP analysis and identify the area where CVP analysis can be applied in HDL and BNL. For this purpose historical data of HDL and BNL are used in this study taken from the internal and final audit reports.

#### **4.1 Sales Plan of BNL& HDL**

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

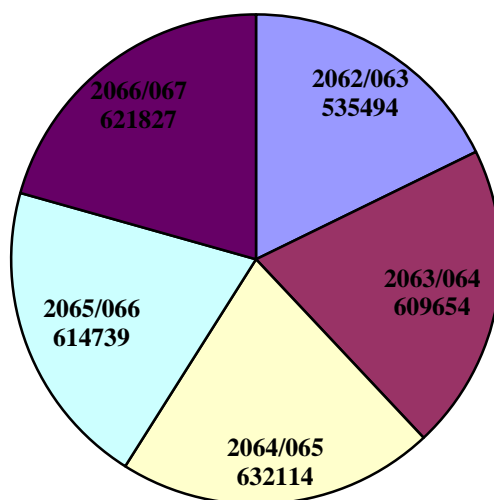
The following tables and pie charts show the sales target and achievement of BNL and HDL (in Rs) of five years from 2062/063 to 2066/067.

**Table 4. 1 Budgeted Sales and Actual Sales of BNL in Rs ‘000’**

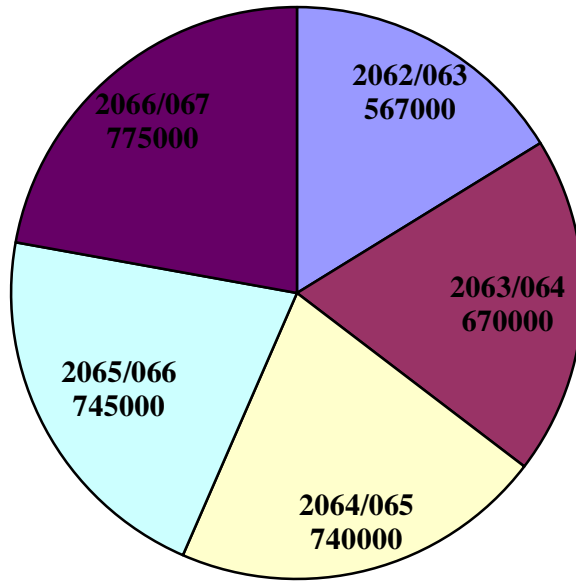
Year	Budgeted sales (x <sub>1</sub> )	Increase/ (Decrease) %	Actual Sales (Y <sub>1</sub> )	Increase/ (Decrease) %	Achievement %
2062/063	567000		535494		94.44%
2063/064	670000	18.17%	609654	13.85%	90.99%
2064/065	740000	10.45%	632114	3.68%	85.42%
2065/066	745000	0.66%	614739	-2.75%	82.52%
2066/067	775000	4.03%	621827	1.15%	80.24%

*Source : Appendix-I*

**Figure 4. 1 Pie Chart Representation of Budgeted and Actual Sales of BNL**



### Actual Sales



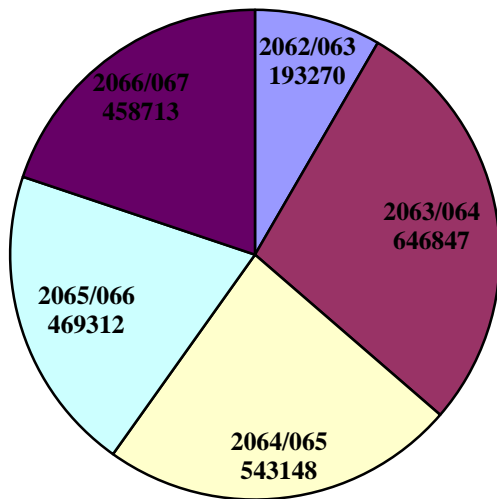
### Budgeted Sales

**Table 4. 2 Budgeted Sales and Actual Sales of HDL in Rs ‘000’**

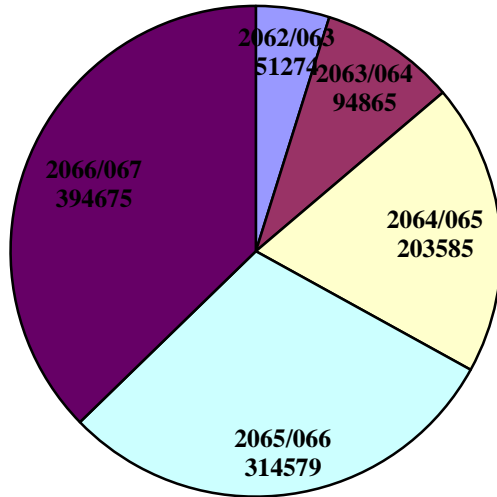
Year	Budgeted sales (x <sub>1</sub> )	Increase/(Decrease) %	Actual Sales (Y <sub>1</sub> )	Increase/(Decrease) %	Achievement %
2062/063	193270		51274		26.53%
2063/064	646847	234.69%	94865	85.02%	14.67%
2064/065	543148	-16.03%	20358	114.60%	37.48%
2065/066	469312	-13.59%	314579	54.52%	67.03%
2066/067	458713	-2.26%	394675	25.46%	86.04%

Source : Appendix-I

**Fig 4.2**  
**Pie Chart Representation of Budgeted and Actual Sales of HDL**



Budgeted Sales



Actual Sales

The above tables show that the budgeted sale of BNL is in increasing trend up to fiscal year 2066/067. But actual sale is in increasing trend up to fiscal year 2064/065 and it is decrease in the fiscal year 2065/066. The highest increasing

rates in budgeted and actual sales are 18.17% and 13.85% in fiscal year 2063/064 where as the budgeted sales of HDL is in decreasing trend up to fiscal year 2066/067 except 2063/064. The highest increasing rates in budgeted and actual sales are 234.69% and 114.60% in fiscal year 2063/064 and 2064/065 respectively.

The above table shows the sales target and sales achievement at the period of fiscal year 2062/063 to 2066/067. The table shows that the sales achievement is always less than the sales target but it is more than 80% achievement in almost years of BNL where as very poor achievement can be seen of HDL. In the fiscal year 2062/063 actual sales are 94.44% of budgeted sales that are the best result among the five years period and in the FY 2066/067 only 80.42% of budgeted sales achieved which is the poorest result among the five years period of BNL and 86.04% in FY 2066/067 is the best and 14.67% in FY 2063/064 is the poorest result among five years period of HDL.

In order to examine the nature of variability of actual sales and budgeted sales of different years, the arithmetic means, standard deviation, coefficient of variation, correlation coefficient, probable error, regression equation of best fit and coefficient of determination calculated in appendix one. From the result, we can conclude that sales achievements of both companies are less fluctuated than budgeted sales since the lower CV of actual sales than budgeted sales. Similarly, mean sales and standard deviation of actual sales are less than that of budgeted sales.

**Table 4.3**  
**Summary of Statistical Calculation of Sales Data of BNL**

Particulars	Budgeted sales ( $x_1$ )	Actual Sales ( $Y_1$ )
Mean	$\bar{X}_1=699400$	$\bar{Y}_1=602765.6$
Standard deviation (S.D <sub>1</sub> )	$\sigma_{x_1}=8342.419$	$\sigma_{y_1}=38538.766$
Coefficient of variation(C.V <sub>1</sub> )	11.92%	6.39%
Correlation coefficient ( $r_{x_1y_1}$ )	0.9240	
Problem error (P.E <sub>1</sub> )	0.0441	
Regression equation of best fit	$Y_1 = 304219 + 0.4269X_1$	
Coefficient of determination ( $r_1^2$ )	0.8538	

*Sources : Appendix-I*

**Table 4.4**  
**Summary of Statistical Calculation of Sales Data of HDL**

Particulars	Budgeted sales ( $x_1$ )	Actual Sales ( $Y_1$ )
Mean	$\bar{X}_1=460257.8$	$\bar{Y}_1=211795.6$
Standard deviation (S.D <sub>1</sub> )	$\sigma_{x_1}=168056.321$	$\sigma_{y_1}=45597.876$
Coefficient of variation(C.V <sub>2</sub> )	36.51%	21.53%
Correlation coefficient ( $r_{x_2y_2}$ )	0.6518	
Problem error (P.E <sub>2</sub> )	0.2572	
Regression equation of best fit	$Y_2 = 130399 + 0.1768X_2$	
Coefficient of determination ( $r_2^2$ )	0.4248	

*Sources : Appendix-I*

The above data shows that there is not a systematic and realistic sales plan of both companies. Budget is based on historical data only and seems that planning section of BNL& HDL ignores all other factors that affect the budget. Therefore, the planning section of both companies should be alert and try to search and consider those factors that can affect the budgetary process.

Here, value of correlation coefficient of BNL is 0.9240 which shows that there is high positive relationship between actual sales and budgeted sales whereas the correlation coefficient of HDL is 0.6518 which shows that there is moderate degree of correlation between actual sales and budgeted sales. The value of probable error shows that the calculated value of correlation

coefficient of BNL is highly significant, since Correlation Coefficient  $0.9240 > 0.2646$  ( $6 \times \text{P.E.}$ ). But the correlation Coefficient of HDL is highly insignificant since Correlation Coefficient  $0.6518 < 1.5432$  ( $6 \times \text{P.E.}$ ) The value of coefficient of determination of BNL is 0.8538 which shows that 85.38 % variation in Actual sales is explained by the variation in Budgeted sales whereas the value of coefficient of determination of HDL is 42.48 which show that 42.48% variation in actual sales is explained by the variation in budgeted sales.

To express the relationship between actual sales (Dependent variable) and Budgeted sales (Independent variable) regression equations are calculated. The regression equation of BNL and HDL are given by „ $Y_1 = 304219 + 0.4269X_1$  &  $Y_2 = 130399 + 0.1768X_2$  respectively. The estimated actual sales ( $\hat{Y}$ ) calculated in appendix one.

**Table 4.5**  
**Estimated Sales of BNL (in RS ‘000’)**

Year	Budgeted sales ( $x_1$ )	Actual Sales ( $Y_1$ )	Estimated Actual Sales $\hat{y}_1=304219+0.4269x_1$
2062/063	567000	535494	546271
2063/064	670000	609654	590242
2064/065	740000	632114	620125
2065/066	745000	614739	622260
2066/067	775000	621827	635067

*Sources : Appendix-I*

**Table 4.6**  
**Estimated Sales of HDL (in RS '000')**

Year	Budgeted sales ( $x_2$ )	Actual Sales ( $Y_2$ )	Estimated Actual Sales $\hat{Y}_2=10399+0.1768x_2$
2062/063	193270	51274	338389
2063/064	646847	94865	418581
2064/065	543148	203585	400248
2065/066	469312	314579	385425
2066/067	458713	394675	385319

*Sources : Appendix-I*

## 4.2 Sales - Profit Relation of BNL

The basic objectives of running any business organization are to earn profit. Profit is taken to measure the competency and efficiency of the management. In other words, profit is the primary measurement of business success in any economy. Profit is a residual income left after the payment for other factors of production. The difference between the outflow of expenses and inflow of incomes is called profit. It is a reward for business activities that directs and motivates entrepreneurs to conduct the business. Profit determines the strength of financial position of the company.

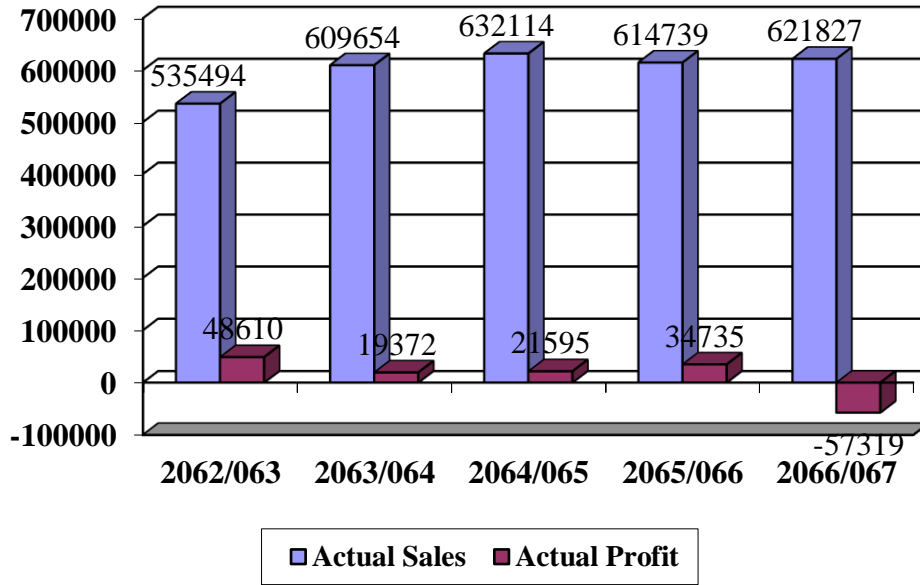
The uniformity or variability of net profit of both companies is analyzed and relations between actual sales and net profit is also studied under this topic. The actual sales and net profit of the company during the five years period has presented in the table below.

**Table 4.7**  
**Actual Sales and Actual Profit of BNL (in Rs. '000')**

Year	Actual Sales (x <sub>1</sub> )	Increase/ (Decrease) %	Actual Profit (Y <sub>1</sub> )	Increase/ (Decrease) %	Achievement %
2062/063	535494		48610		9.08
2063/064	609654	13.85%	19372	-60.15%	3.18
2064/065	632114	3.38	21595	11.48%	3.42
2065/066	614739	-2.75%	34735	60.85%	5.65
2066/067	621827	1.15%	-57319	-265.02%	-9.22

*Source : Appendix-II*

**Fig 4.3**  
**Bar diagram representation of Actual Sales and Actual Profit of BNL**

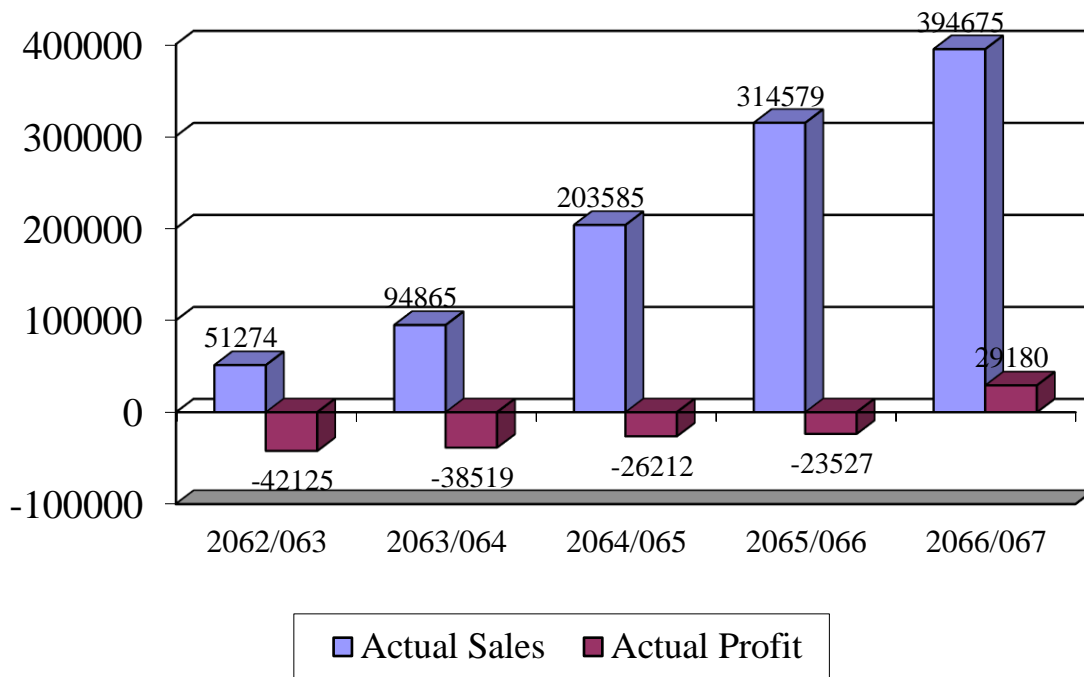


**Table 4.8**  
**Actual Sales and Actual Profit of HDL (in RS '000')**

Year	Actual Sales (x <sub>2</sub> )	Increase/ (Decrease) %	Actual Profit (Y <sub>2</sub> )	Increase/ (Decrease) %	Achievement %
2062/063	51274		-42125		-82.16
2063/064	94865	85.02%	-38519	8.56%	-40.60
2064/065	203585	114.60%	-26212	31.95%	-12.88
2065/066	314579	54.52%	-23527	10.24%	-7.48
2066/067	394675	25.46%	29180	224.03%	7.39

*Source : Appendix-II*

**Fig 4.4**  
**Bar diagram representation of Actual Sales and Actual Profit of BNL**



The above table shows that the actual sale of BNL is in increasing trend up to fiscal year 2064/065 and it is decrease in the fiscal year 2065/066 whereas the actual sales of HDL is in smoothly increasing trend. But the net profit of BNL is in fluctuating trend. The high increasing rate in actual sales is 13.85% in FY 2063/064 and the high increasing rate in actual profit is 60.85% in FY 2064/065. But the net profit of HDL is in increasing trend. The high increasing rate in actual sales is 114.60% in FY 2064/065 and the high increasing rate in actual profit is 7.39% in FY2066/067.

In order to examine the nature of variability of actual sales and actual profit of different years, the arithmetic means, standard deviation, coefficient of variation, correlation coefficient, probable error, regression equation of best fit and coefficient of determination calculated in appendix two. From the result, sales achievements of both companies are less fluctuated than actual profit being the lower CV of actual sales than actual profit.

**Table 4.9**  
**Summary of Statistical Calculation of Sales and Profit of BNL**

<b>Particulars</b>	<b>Budgeted sales (x<sub>1</sub>)</b>	<b>Actual Sales (Y<sub>1</sub>)</b>
Mean	$\bar{X}_1=602765.6$	$\bar{Y}_1=13398.6$
Standard deviation (S.D <sub>1</sub> )	$\sigma_{x1}=38538.766$	$\sigma_{y1}=41228$
Coefficient of variation(C.V <sub>1</sub> )	6.39%	307.7%
Correlation coefficient (r <sub>1</sub> )	-0.500	
Problem error (P.E <sub>1</sub> )	0.2262	
Regression equation of best fit	$Y_1 = 335812 - 0.5349X_1$	
Coefficient of determination (r <sub>1</sub> <sup>2</sup> )	0.25	

*Source : Appendix-II*

**Table 4.10**  
**Summary of Statistical Calculation of Sales and Profit of HDL**

<b>Particulars</b>	<b>Budgeted sales (x)</b>	<b>Actual Sales (Y)</b>
Mean	$\bar{X}_1=211795.6$	$\bar{Y}_1= -220240.6$
Standard deviation (S.D <sub>2</sub> )	$\sigma_{x1}=2248.2117$	$\sigma_{y1}= 144365.498$
Coefficient of variation(C.V <sub>2</sub> )	1.06%	-70.97%
Correlation coefficient (r <sub>2</sub> )	-0.500	
Problem error (P.E <sub>2</sub> )	-0.2262	

Regression equation of best fit	$Y_1 = 335812 - 0.5349X_1$
Coefficient of determination ( $r^2$ )	0.25

*Source : Appendix-II*

Here, value of correlation coefficient of BNL is -0.5 which shows that there is negative relationship between actual sales and actual profit whereas the value of correlation of HDL is

0.000157 which shows that there is positive but poor relationship between the actual sales and actual profit. The value of probable error of both companies show that the calculated value of correlation coefficient are not significant, since correlation coefficient ( $r$ ) of both companies are less than  $6 \times$  probable error ( $-0.5 < 0.2262 \times 6$  &  $0.000157 < 0.6745 \times 6$ ).

The value of coefficient of determination of BNL is 0.25 which shows that 25 % variation in actual profit of BNL is explained by the variation in actual sales, remaining 75% variation in actual profit is due to some other variables where as very nominal portion of variation in actual profit of HDL is explained by the variation in actual sales most of the variation in actual profit is explained by some other variables.

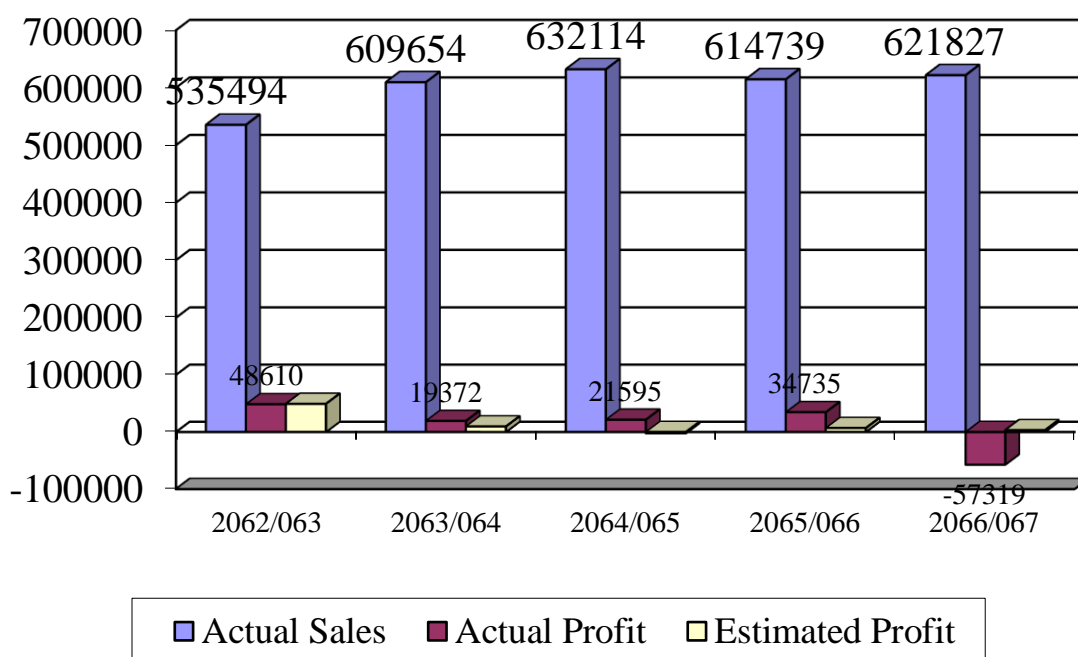
The regression equation „ $Y_1 = 335812 - 0.5349X_1$ “ &  $Y_2 = -20453.07 + 0.001003X_2$  show the relationship between actual profit (Dependent variable) and actual sales (Independent variable) of both companies. By the use of these regression equations we can estimate the value of Actual profit from the value of actual sales as illustrated below:

**Table 4.11 Estimated Profits of BNL (in RS ‘000’)**

Year	Actual Sales (x <sub>i</sub> )	Actual profit (Y <sub>1</sub> )	Estimated Actual profit $\hat{Y}_1=335812-0.5349x$
2062/063	535494	48610	49376
2063/064	609654	19372	9708
2064/065	632114	21595	-2306
2065/066	614739	34735	6988
2066/067	621827	-57319	3197

*Source : Appendix-II*

**Fig.4.5 Bar diagram representation of Actual Sales, Actual Profit and Estimated Actual Profit of BNL**

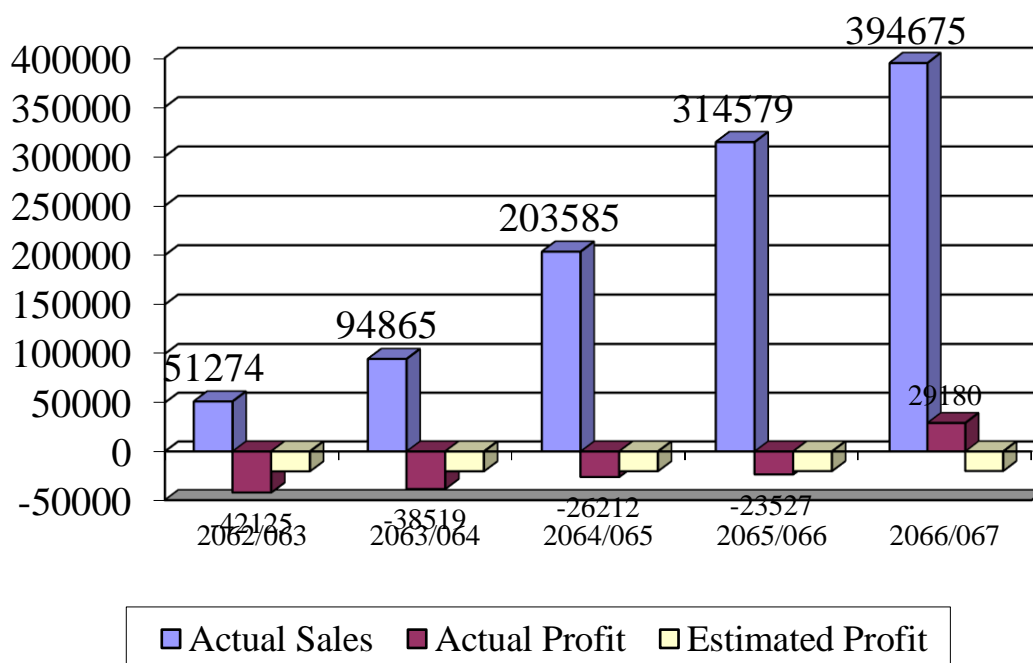


**Table 4.12 Estimated Profits of HDL (in RS ‘000’)**

Year	Actual Sales (x <sub>2</sub> )	Actual Sales (Y <sub>2</sub> )	Estimated Actual profit $\hat{Y}_2=335812-0.5349x$
2062/063	51274	-422125	-20401.64
2063/064	94865	-38519	-20357.95
2064/065	203585	-26212	-20248.87
2065/066	314579	-23527	-20137.55
2066/067	394675	29180	-20057.21

*Source : Appendix-II*

**Fig.4.6 Bar diagram representation of Actual Sales, Actual Profit and Estimated Actual Profit of HDL**



### **4.3 Analysis of Cost**

After analyzing of sales and profit of these companies, it is compulsory to analyze cost of the companies in order to draw the real relation between cost volume and profit. We know that cost is the amount of expenditure, actual (incurred) or notional (attributed), relating to a specific thing or activity the specific thing or activity may be product, job, service, process or any other activity. In the other words cost is the expenses which are given to the factors of production for their contribution in production of any goods of services.

Cost is the amount of resources given up in exchange for some goods or services. The term „cost itself is without any significant meaning, and therefore, it is always advisable to use it with adjectives or phrase.

Expenses are expired costs, incurred and totally used up in generation of revenue. Example of expired costs is cost of goods expenses, administrative expenses and selling and distribution expenses. Expenses need not necessarily have to be paid in cash immediately; even a promise to pay could be made for the benefits obtained. The manufacturing costs are capitalized in the form of finished goods inventory and when a sale is made, they expire (becoming expenses). The cost of unsold inventory which was an assets earlier, now becomes expenses (cost of goods sold) as it has contributed to the generation of revenue.

Factory (or manufacturing) overhead is treated as cost become this is included in the cost of finished goods inventory which is a current asset unless sales is made.

Conventional CVP analysis requires that cost be classified as earlier fixed or variable. Some costs are definitely fixed in nature. Other is strictly variable.

But, when costs are examined, some are observed to be neither completely fixed nor completely variable.

The companies do not have a practice of classification of costs into fixed cost and variable cost. However to fulfill the objectives of the study costs are classified into fixed costs and variable cost.

#### **4.3.1 Cost Heads and Their Variability**

Identification of the variability of cost is necessary in planning and control of the cost. Thus the knowledge of cost behavior is very important. Generally, costs behave in two ways with relation to the volume of output. One is fixed cost that remains constant in total for a certain level of output and the period. Second is variable cost that changes directly in total with the change of output level but remains constant in cost per unit of output.

In the case of both BNL & HDL, there is not any applicable basis of cost classification into variable and fixed cost. To segregate the mixed cost into fixed and variable cost the company has provided the information about the degree of variability of the cost. All semi variable costs have segregated on the basis of the given information and details of segregation have presented in appendix Three. Table 3g shows information about the degree of variability of cost provided by the companies.

##### **4.3.1.1 Analysis of Fixed Costs**

A fixed cost remains unchanged in total amount over a wide range of production levels. In the other words, fixed cost is that cost which doesn't volatile in total with the change of output level. For example, if the factory building is rented for, say \$1000 per month, this cost remains the same whether the factory operates on a one-shift, two shift, or an around the clock basis. Likewise, the

cost is the same whether one hundred units of product are produced in a month, one thousand units are produced, or any other number up to the full production capacity of the plant. Note; however that while the total amount of a fixed cost remains constant as the level of production changes, fixed cost per unit of product decrease as volume increase. For example, if rent is \$1000 per unit and two units of product are produced in a month, the rent cost per unit is \$500, but if production is increased to 10 units per months, rent cost per unit decreases to 500 units per months. The total fixed cost appears on the graph as a parallel of x-axis.

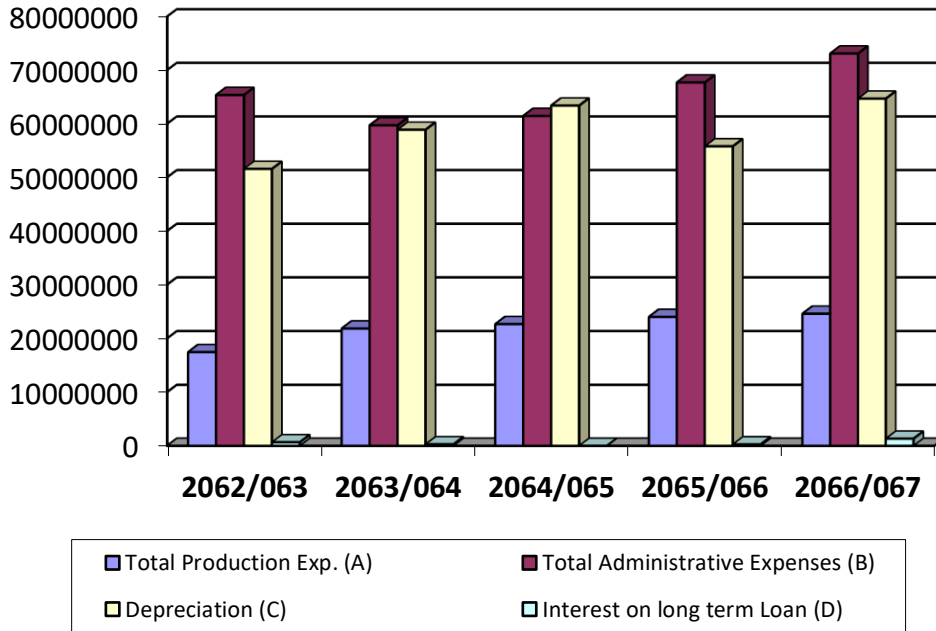
**Table 4.13 Statement of Detail Fixed Costs of BNL**

<b>Particulars</b>	<b>2062/063</b>	<b>2063/064</b>	<b>2064/065</b>	<b>2065/066</b>	<b>2066/067</b>
<b><u>Production Expenses :</u></b>					
Production Cost	15944000	19757000	20221000	21460000	21154000
Water and Electricity	34000	31000	21000	24000	31000
Repair and Maintenance	1446000	2032000	2396000	2500000	3382000
<b>Total Production Exp. (A)</b>	<b>17424000</b>	<b>21820000</b>	<b>22638000</b>	<b>23984000</b>	<b>24567000</b>
<b><u>Administrative and selling &amp;</u></b>					
Salaries, wages and other	23156000	26691000	26560000	27881000	32743000
Contribution to provident fund	3814000	2906000	2876000	976	2543000
Rent	626000	1007000	628000	402000	1381000
Repair and maintenance	1446000	2032000	2396000	2500000	3382000
Security expenses	1570000	32000	12000	382000	
Audit fees	220000	220000	220000	220000	220000

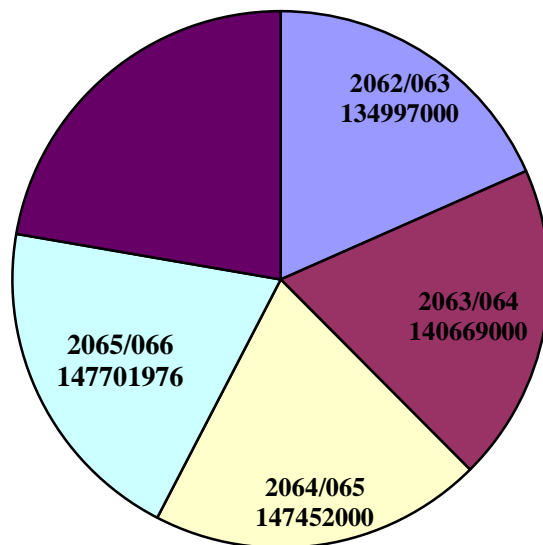
Legal and professional fees	266000	261000	3887000	324000	566000
Rates and taxes	492000	133000	182000	187000	352000
Bank charges	4853000	153000	672000	307000	288000
Staff Bonus	5717000	2977000	4445000	4387000	309600
General meeting expenses	25000	21000	35000	48000	52000
Insurance premium	215000	2740000	941000	87000	180000
Communication	4568000	2974000	3321000	6160000	494400
Printing and stationary	499000	476000	569000	500000	919000
Advertisement	3781000	3797000	2680000	1967000	139500
Accommodation expenses	3328000	1724000	2574000	2540000	179300
Training	8000	110000	502000	921000	567700
Uniform	505000	307000	517000	476000	613000
Obsolete stock and fixed assets	397000	556000	2655000	5805000	717000
Distribution expenses	7515000	7247000	726000	5921000	508600
Management fees	1425000	2817000	4421000	6276000	664300
Miscellaneous expenses	918000	516000	619000	384000	485000
<b>Total Administrative Expenses (B)</b>	65344000	59697000	61438000	67675976	73075000
<b>Depreciation (C)</b>	51566000	58868000	63372000	55777000	64668000
<b>Interest on long term Loan (D)</b>	663000	284000	4000	265000	1329000
<b>Total Fixed costs (A+B+C+D)</b>	134997000	140669000	147452000	147701976	163639000

*Source : Appendix-III*

**Fig.4.7 Bar Diagram representation of Components of Total Fixed Cost of BNL**



**Fig.4.8 Pie Chart representation of Total Fixed Cost of BNL**



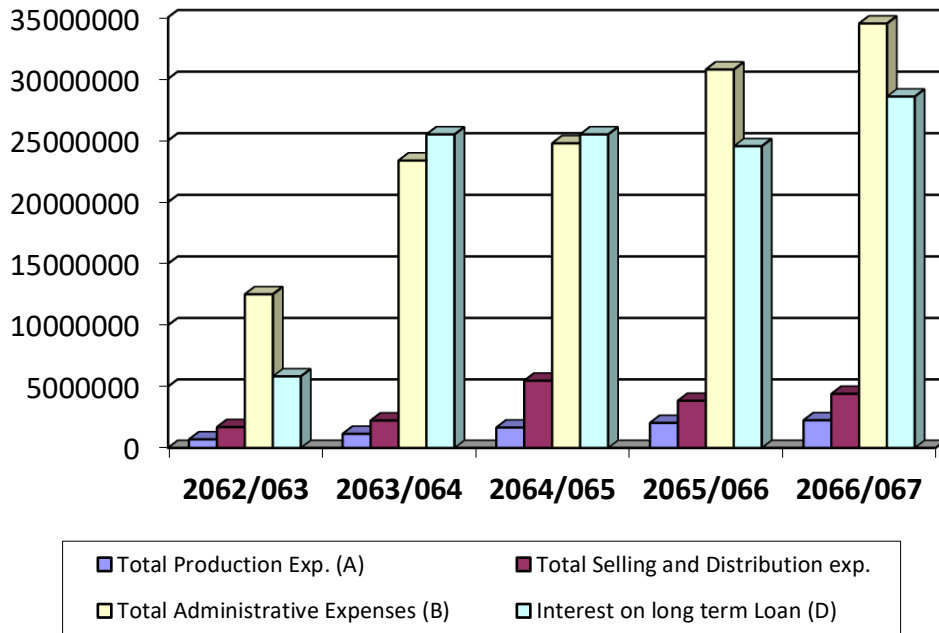
**Table 4.14 Statement of Detail Fixed Costs of HDL**

<b>Particulars</b>	<b>2062/063</b>	<b>2063/064</b>	<b>2064/065</b>	<b>2065/066</b>	<b>2066/067</b>
<b><u>Production Expenses :</u></b>					
Salary	301798	735390	907036	1359046	1433510
Water and Electricity	181715	275133	383072	339920	401235
Repair and Maintenance	210042	135801	371129	339863	421000
<b>Total Production Exp. (A)</b>	<b>693555</b>	<b>1146324</b>	<b>1661237</b>	<b>2038829</b>	<b>2255745</b>
<b><u>Selling and Distribution Exp.</u></b>					
Advertisement	1694605	2233518	5107918	2780922	3050246
Hoarding Board Rental	-	-	-	604915	802526
Distributions Meeting Exp.	-	-	370671	460576	553621
<b>Total selling and Distribution Exp. (B)</b>	<b>1694605</b>	<b>2233518</b>	<b>5478589</b>	<b>3846413</b>	<b>4406393</b>
<b><u>Administrative and selling &amp;</u></b>					
Salary and Allowance	5684396	7959503	8327639	1119153	1253708
P/F Contribution	58108	221475	217661	271503	301405
Printing and stationary	257471	364575	429685	518615	556245
Water and Electricity	33218	44637	201038	266592	314521
Communication Expenses	1159870	1539852	1284442	2610051	2812450
Bank Charges	317657	246594	403446	636796	658421
Repair And Maintenance	245179	1077383	1295111	2878677	3025623
meeting fee	19500	48552	75000	65000	74000
Traveling expenses	372645	1673583	2781221	2896891	3256424

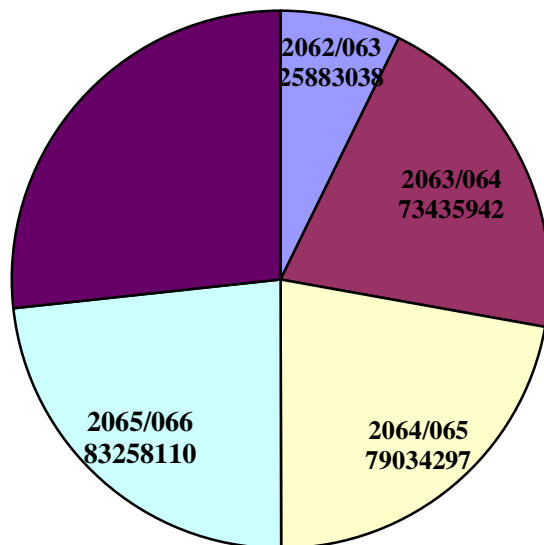
Conveyance and fuel exp.	699048	741053	794174	1825888	2145741
Computer software exp.	-	-	90000	24000	30000
AGM Expenses	-	13000	143964	43456	49520
Rent	629507	716588	659823	1057164	1085210
Tax and fee	215937	134992	263902	376100	406000
Audit Fee	80000	80000	80000	90000	90000
Guest Entertainment	364995	364184	459053	660584	700000
Notice and publication expenses	3360	-	39375	80137	90000
Security expenses	-	1046404	1049886	1135035	1526305
Members fees and subscription	96443	132553	88704	139438	154560
Legal and professional fees	473462	2609119	3141898	1621147	1856214
Insurance premium	1437253	3292833	2161014	2079253	2510320
Training and Recruitment Exp.	34500	17500	30246	8000	12000
Miscellaneous expenses	337436	1048448	759968	288469	302154
<b>Total Administrative Expenses (C)</b>	12519955	23372728	24774250	30764327	34494200
<b>Depreciation (D)</b>	5144651	2119003	2162688	2207274	2561456
<b>Interest on long term Loan (E)</b>	5830242	25493333	25493333	24535798	28564732
<b>Total Fixed costs (A+B+C+D+E)</b>	25883038	73435942	79034297	83258110	95335634

*Sources : Appendix -III*

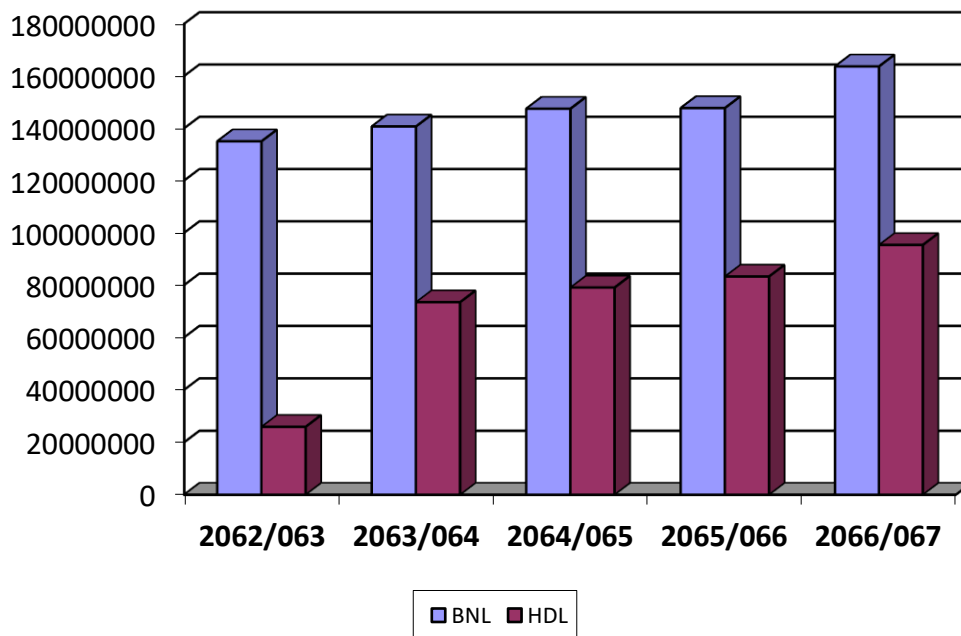
**Fig.4.9 Bar Diagram representation of Components of Total Fixed Cost of HDL**



**Fig.4.10 Pie Chart representation of Total Fixed Cost of HDL**



**Fig.4.11 Bar Diagram representation of Components of Total Fixed Cost of BNL &HDL**



The items included in the fixed production expenses of both companies salary; production cost; water electricity repair and maintenance are semi variable cost. But the salary of production department of HDL is totally fixed in nature. The amount shown in the table above regarding production expenses, water and electricity and repair and maintenance were segregated into fixed cost. Similarly, the items included in the fixed selling and distribution expenses and administrative expenses, all are fixed cost in nature.

Water and electricity of production department of BNL & HDL is increasing trend up to FY 2066/067 except FY 2065/066. Whereas the Repair and maintenance costs of BNL is in increasing trend however the Repair & Maintenance cost of production department of HDL is fluctuating condition. In aggregate it is in increasing trend.

The total fixed administrative and Selling & Distribution expenses of both companies seem to be in increasing order in aggregate. However the administrative and Selling & Distribution expenses of BNL is more volatile since it fluctuate over the years where as administrative and Selling & Distribution expenses of HDL is fully increasing trend. The items of administrative expenses where salary and allowance was included salary of office staff, their allowances and allowances for directors of the company. Salary and allowance, and P/F contribution were increasing trend. Printing and stationary, and water and electricity were also increasing trend. In aggregate administrative expenses were increasing annually.

The amount of depreciation of both companies seems to be increased over the years. The trend of increment of HDL is higher than the trend of BNL. The amount of deprecation of HDL is increased up to FY 2066/067 where as the deprecation expenses of BNL are also increased up to FY 2066/067 except FY 2064/065. And interest on long term loan of BNL is more fluctuating over the years.

In aggregate, total fixed costs of both companies are highly increasing annually. The Advertisement, salary and allowance, communication expenses, insurance premium, depreciation and interest on long term loan were taken higher portion of total fixed costs. The trend of increasing fixed costs highly of both companies do not indicate good signal until the companies are able to utilize their capacity fully

### 4.3.2 Analysis of Variable Cost

A variable cost changes in total amount as production volume changes. The cost which tends to be change with the change of output level is called variable cost. However it remains to be unchanged in per unit cost. In the other words, the cost which increases with the increment of output level and vice versa. For example, the cost of the materials that enters in to a product is a variable cost. If material cost are \$20 is required in the production of one unit of product is manufactured, \$40 if two units are manufactured, \$60 if three units are manufactured, and so on up for any number of units. In other words, the variable cost per unit of production remains constant while the total amount of variable cost changes in to direct proportion to changes in the level of production. Variable costs appear on a graph as a straight line with a positive slope; the line rises as the production volume increases.

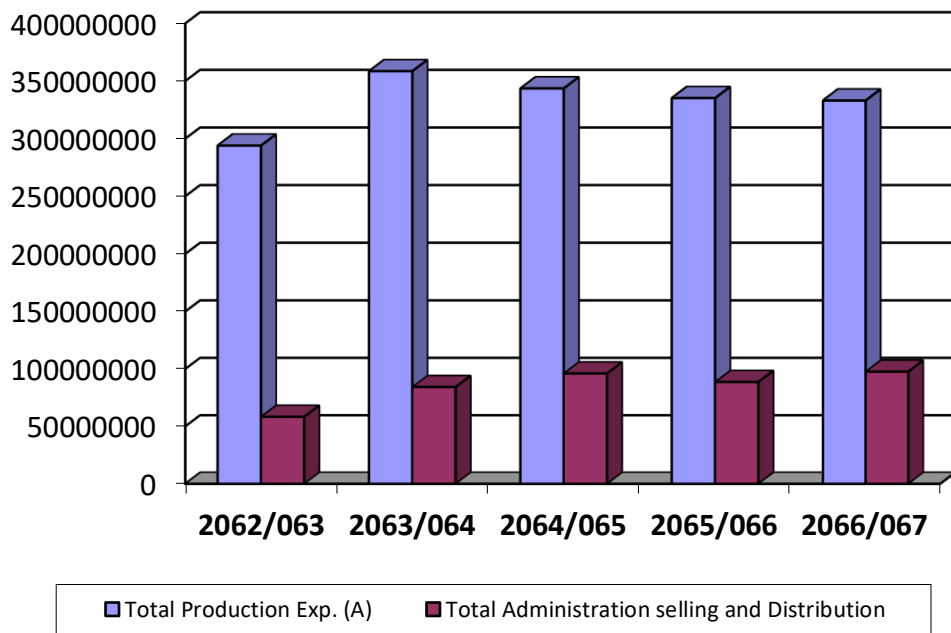
**Table 4.15 Statement of Detail Variable Costs of BNL**

<b>Particulars</b>	2062/063	2063/064	2064/065	2065/066	2066/067
<b><u>Production Related Expenses :</u></b>					
Direct Material	255194000	310318000	293944000	282559000	280234000
Production cost	37203000	46999000	47183000	50075000	49358000
Water and Electricity	138000	124000	82000	94000	125000
Repair and Maintenance	1446000	2031000	2397000	2500000	3382000
<b>Total Production Exp. (A)</b>	<b>293981000</b>	<b>358572000</b>	<b>343606000</b>	<b>335228000</b>	<b>333099000</b>
<b><u>Administrative and selling &amp;</u></b>					
	17536000	16902000	16939000	13815000	11869000

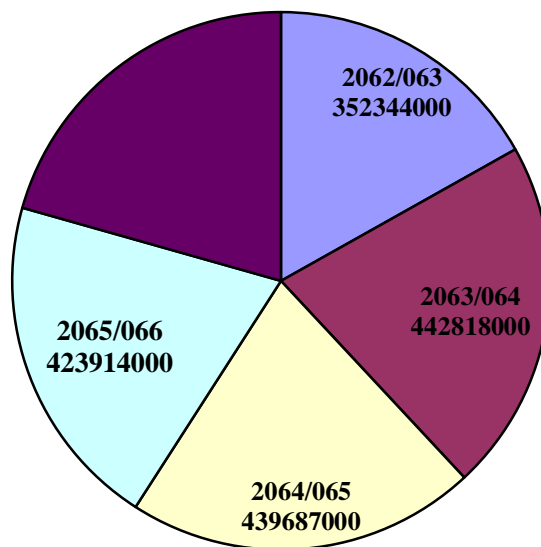
Distribution Expenses	1717000	1363000	1847000	3240000	6790000
Travelling expenses					
SAP related expenses	267000	260000	3888000	324000	6291000
Legal and professional fees	18959000	44572000	52573000	51340000	565000
Trade discount	507000	331000	369000	684000	56673000
Communication	214000	204000	244000	215000	549000
Printing and stationary	3782000	3767000	2680000	1966000	394000
Advertisement	5162000	5082000	3958000	1787000	1395000
Sales promotion expenses	3000	47000	215000	395000	2433000
Training	33000	47000	94000	124000	139000
Charity and donation	7897000	4201000	6710000	6638000	1902000
Rejection and breakages	1367000	6502000	5945000	7774000	6780000
Product transfer fees	919000	515000	619000	384000	486000
Miscellaneous expenses					
<b>Total Administrative selling &amp;</b>	<b>58363000</b>	<b>84246000</b>	<b>96081000</b>	<b>88686000</b>	<b>97654000</b>
<b>Total variable cost (A+B)</b>	<b>352344000</b>	<b>442818000</b>	<b>439687000</b>	<b>423914000</b>	<b>430753000</b>

*Sources : Appendix -III*

**Fig.4.12 Bar Diagram representation of Components of Total Variable Cost of BNL**



**Fig. 4.13 Pie Chart representation of Total Variable Cost of BNL**



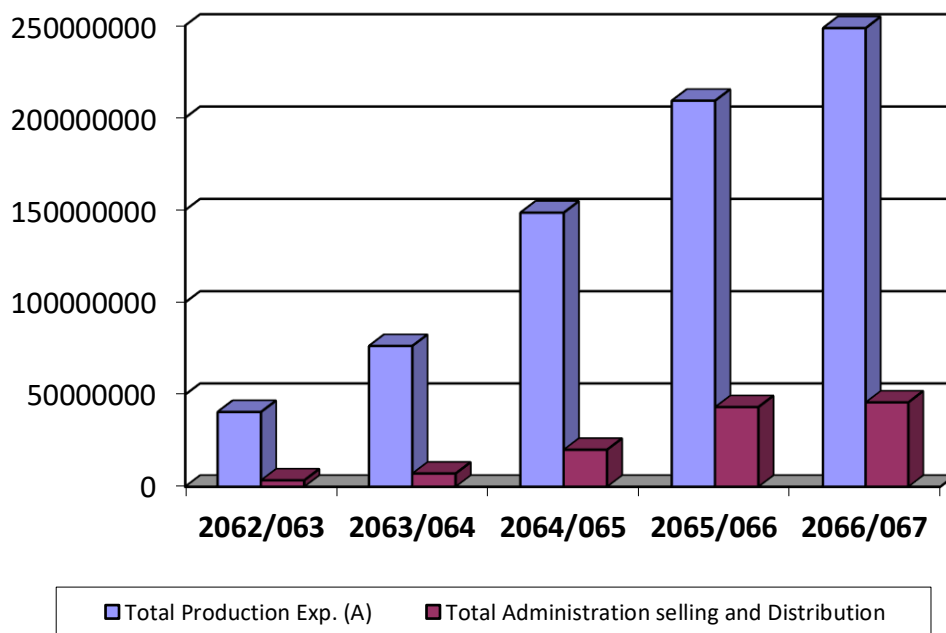
**Table 4.16 Statement of Detail Variable Costs of HDL**

<b>Particulars</b>	<b>2062/063</b>	<b>2063/064</b>	<b>2064/065</b>	<b>2065/066</b>	<b>2066/067</b>
<b><u>Production Related Expenses :</u></b>					
Materials Consumed	27938129	52791589	100430437	110696440	140562160
Direct Expenses of purchase	-	-	-	27624338	305231100
Salary and wages	1207194	2941560	3628142	5436182	6045130
Royalty	7037660	16677566	39353267	59558440	65124500
Water and Electricity	1332578	2017644	2809196	2492744	2543651
Repair and Maintenance	840170	543205	1484517	1359451	1523140
Blending charge	2038204	1317783	720270	1281035	1426542
Other Expenses	197965	127993	174894	799610	812653
<b>Total Production Exp. (A)</b>	<b>40591900</b>	<b>76417340</b>	<b>148600753</b>	<b>209248240</b>	<b>248560876</b>
<b><u>Administrative and Selling Distribution Exp.</u></b>					
Transportation & Insurance	1295691	1589167	4473749	8588130	9056840
Travelling Exp. of salesman					
Complementary Expenses	1056124	2258036	2457080	2869649	3021453
Sales promotion Expenses	373047	130733	2696753	4300342	4521540
Leakage and breakage	661655	2671160	9513773	23138079	24587418
Other expense	85039	476803	947845	4343515	4521457
	15244	53932	3120	-	60100

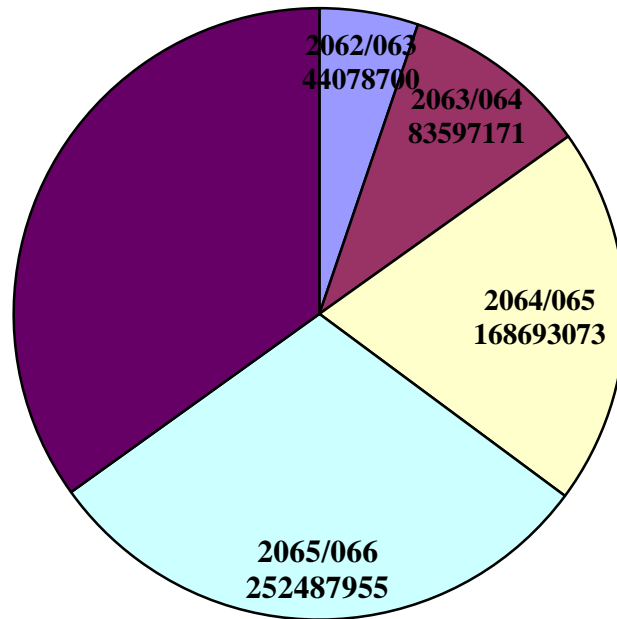
<b>Total Administrative, Selling &amp; Distribution Expenses (B)</b>	3486800	7179831	20092320	43239715	45768808
<b>Total variable Costs (A+B)</b>	44078700	83597171	168693073	252487955	294329684

*Sources : Appendix -III*

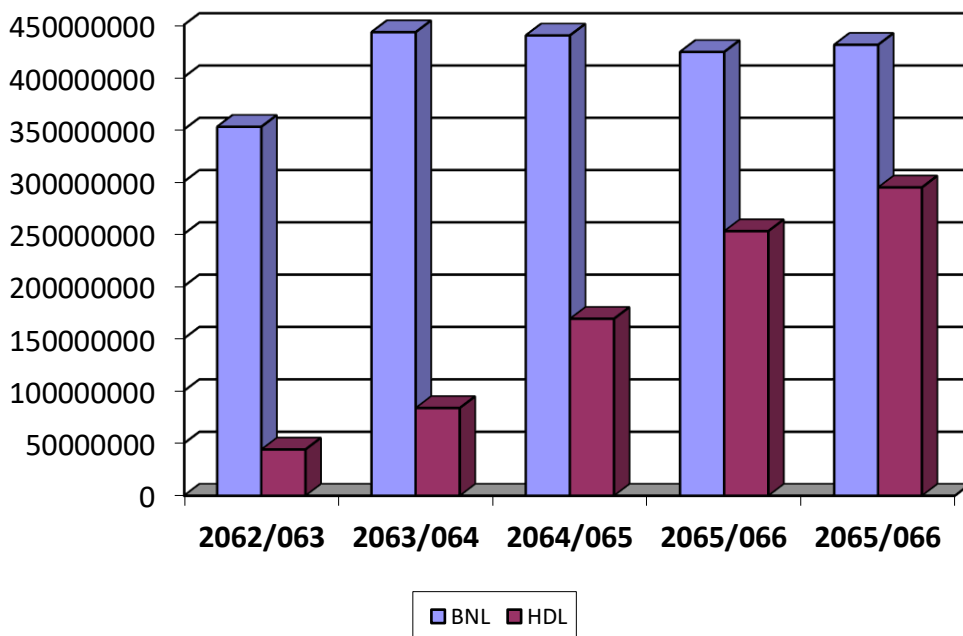
**Fig.4.14 Bar Diagram representation of Components of Total Variable Cost of HDL**



**Fig. 4.15 Pie Chart representation of Total Variable Cost of HDL**



**Fig.4.16 Bar Diagram representation of Components of Total Variable Cost of BNL & HDL**



The cost of material consumed (Direct Material of BNL & HDL) includes raw materials and packaging material. The cost of material consumed of HDL was included in direct expenses of purchase is shown separately in the FY 2065/066 & 2066/067. However the direct expenses of purchase were included clearing and forwarding, custom duty, freight, local development tax and special duty of raw material as well as packaging material. Salary and wages, water and electricity, repair and maintenance were semi-variable cost nature. It was separated as fixed and variable cost; and variable cost portion is shown in the table above. The total variable production cost of HDL is in highly increasing trend since it is increasing rapidly increasing over the years where as the total variable production cost of BNL is in decreasing nature in aggregate because of the cost reduction strategy.

Similarly, all items included under selling and distribution expenses were variable cost nature. The total Admin, Selling & Distribution expenses of both companies are in highly increasing trend since it is increasing year by year however the total Admin, Selling & Distribution expenses of BNL is decreased in FY 2066/067. The trend of increasing total variable Admin, Selling & Distribution expenses do not indicate good position of both companies. It indicates that both companies are falling behind to apply cost reduction policy vividly.

Material consumed salary and wages, royalty, transportation and insurance expenses, travelling expenses of sales, sales promotion expenses, leakage and breakage of both companies are increasing annually. Water and electricity are fluctuating over the year. Similarly Repair and maintenance, and complementary expenses were in fluctuation condition. Blending charges was decreased up to 2065/066 and increased at FY 2066/067. Other expenses of cost

of goods, and selling and distribution expenses were increasing and decreasing respectively.

Higher portion of total variable cost was covered by material consumed, direct expenses of purchase, royalty, sales promotion activities, transportation and insurance expenses, salary and wages, leakage and breakage and complementary expenses, travelling expenses, and water and electricity items.

#### **4.4 Cost Volume Profit Analysis of BNL& HDL**

The relationship among cost, revenue and profit is known as cost volume profit analysis. CVP analysis is a powerful instrument in management decision making especially in cost control and profit planning. It helps to determine the idle production volume to avoid losses and the production volume at which the targeted profit amount of the company will be achieved. Profit planning can be done only when the management has information about the cost of products, both fixed and variable costs and the selling price of the product. CVP analysis is especially applied for profit planning and control. The cost volume profit relationship will be established by break even analysis.

#### **Break Even Analysis of BNL : Income Statement for the year 2062/063 to 2066/67 in Rs ‘000’**

<b>Particulars</b>	<b>2062/063</b>	<b>2063/064</b>	<b>2064/065</b>	<b>2065/066</b>	<b>2066/067</b>
Production revenue	535494	609654	632114	614739	621827
Less: variable cost	<b>352344</b>	<b>442872</b>	<b>439687</b>	<b>423915</b>	<b>430753</b>
Contribution margin	183150	166782	192427	190824	191074

Less : fixed cost	145594	149166	160827	150345	163497
Earning before tax	37556	17616	31600	40479	27577
Profit volume ratio	0.34	0.27	0.30	0.31	0.31
Break even production	428218	552467	518779	484984	527410
Percent of breakeven	80	91	82	79	85
Margin of safety	107276	57187	113317	129785	94417
margin of safety ratio	20	10	18	21	15

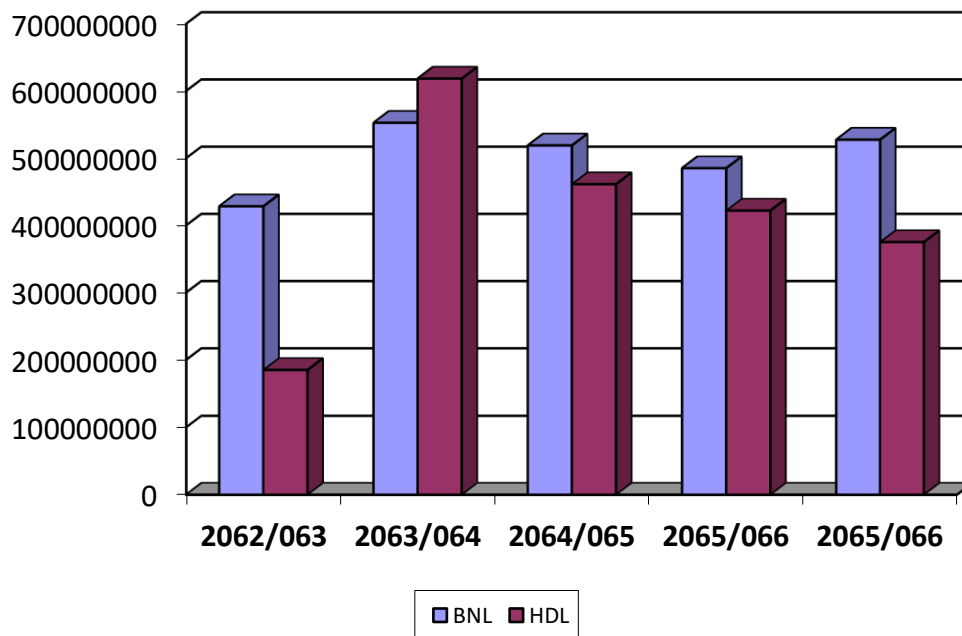
*Sources : Appendix -III*

**Break Even Analysis of HDL :Income Statement for the year 2062/063 to 2066/067 in Rs**

<b>Particulars</b>	<b>2062/063</b>	<b>2063/064</b>	<b>2064/065</b>	<b>2065/066</b>	<b>2066/067</b>
Production	51274070	94865090	203585108	314578626	394675000
Less: variable	<b>44078700</b>	<b>83597171</b>	<b>168693073</b>	<b>252487955</b>	<b>294329684</b>
Contribution	7195370	11267919	34892035	62090671	100345316
Less : fixed cost	35883038	73435942	79034297	83258110	95335634
Earnings before	18687668	-62168023	-44142262	-21167439	5009682
Profit volume	0.14	0.12	0.17	0.20	0.25
Break even	184878843	618260324	461142662	421822174	374971078
Percent of break	360.57	651.73	-	134.09	95.01
Margin of safety	-	-	-126.51	-	19703921.6
margin of safety	-260.57	-551.73		-34.091	4.99

*Sources : Appendix -III*

**Fig.4.17 Representation of comparative study of Break Even Point (BEP) cost of BNL & HDL**



### Contribution Margin

The difference between production amount and variable cost is known as the contribution margin. In other words, fixed cost plus the amount of profit is equivalent to contribution margin. Contribution margin can be expressed by

$$\text{Contribution margin} = \text{production volume} - \text{variable cost}$$

The above income statements show the calculation of contribution margin of BNL & HDL for the five year period. Contribution margin of BNL for the period is in fluctuated trend since it increases/decreases year by year. It does not indicate the good position of BNL. Whereas the trend of increment of Contribution margin of HDL is very high. It shows that if the company is able to reduce its fixed cost rationally the company may enjoy heavy profit.

## **Profit Volume Ratio**

It establishes a relationship between the contribution and production volume. The factors profit and volume are interconnected and dependent with each other. Profit depends upon production. It can be expressed by

$$\text{Profit volume ratio} = \frac{\text{contribution margin}}{\text{Production}}$$

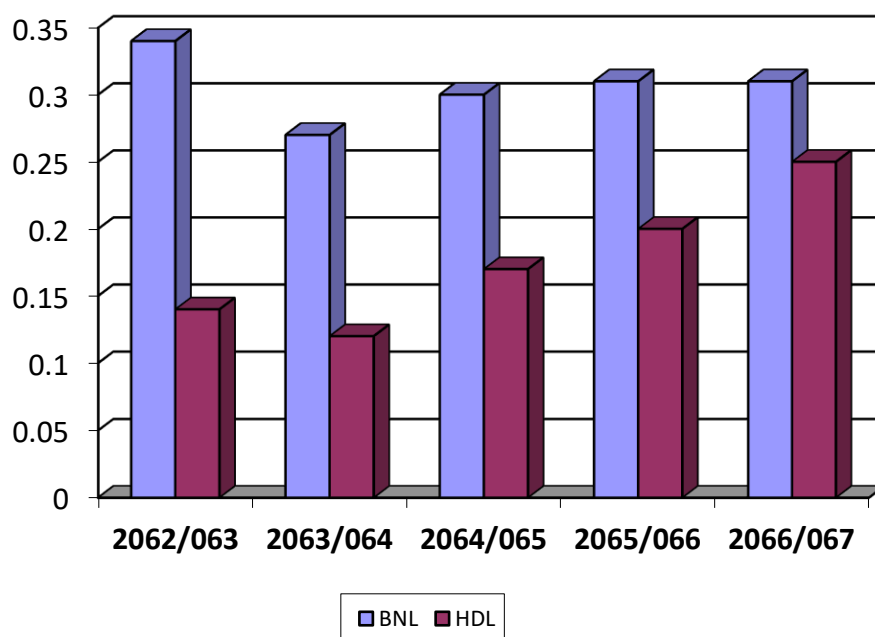
The above income statements show the calculation of profit volume ratio of BNL for the five year period. An increase in contribution margin would mean increase in profit only because fixed costs are assumed to be constant at all levels of production. This ratio would remain constant at different levels of production since variable costs as a proportion to production remain constant at various levels. Management should try to increase the value of the ratio by reducing the variable costs or by increasing the selling price. It is clear that the profit volume ratio of both companies is not good since no profit volume ratio of both companies in any year exceeds 50%. It indicates that the operating profit of both companies is either very nominal or negative. In comparison between two companies in case of profit volume ratio BNL seems to be holding a good position than HDL.

**Table 4.17 Profit Volume Ratio of BNL & HDL**

Year	Profit Volume Ratio (in %)	
	BNL	HDL
2062/063	0.34	0.14
2063/064	0.27	0.12
2064/065	0.30	0.17
2065/066	0.31	0.20
2066/067	0.31	0.25

*Sources : Appendix -III*

**Fig.4.18 Representation of Bar Diagram of Profit Volume Ratio of BNL & HDL**



## **Break Even Point**

The point which breaks the total costs and selling price evenly to show the level of output or production, at which there shall be neither profit nor loss, is regarded as break -even point. Through contribution margin approach, break-even point can be expressed by

$$\text{Breakeven point in Rs.} = \frac{\text{Fixed Costs}}{\text{P/V Ratio}}$$

Break even sales of BNL& HDL are given in the above table for the five year period. Break even sales of BNL is highest in the FY 2063/064 and lowest in the FY 2062/063. It is more in the FY 2066/067 than FY 2065/066. The Break even sale of BNL is highly volatile since fluctuating year by year. Similarly the break even sale of HDL is the highest in FY 2063/064 and the lowest in the FY 2062/063. And it is in decreasing order since it decreases year by year.

## **Margin of Safety**

It is the difference between the actual sales revenue and the break even sales revenue. It can be expressed by:

$$\text{Margin of safety} = \text{actual production} - \text{break even production}$$

The above income statements show the margin of safety of BNL is in fluctuated trend. The higher margin of safety indicates the better profitability of the company. It is highest in the FY 2065/066 and it is lowest in the FY 2066/067. Whereas the Margin of safety of HDL seems to be negative in most of the years. It indicates that the company is not in good position from profit view point. The highest margin of safety of the company is in 2065/066 and the lowest is in 2062/063.

## Break Even Ratio

Total sales revenue consist two part: Break even sales and Margin of Safety.

Actual Sales = Break Even Sales + Margin of Safety

The proportion of Break even sales is BE Ratio.

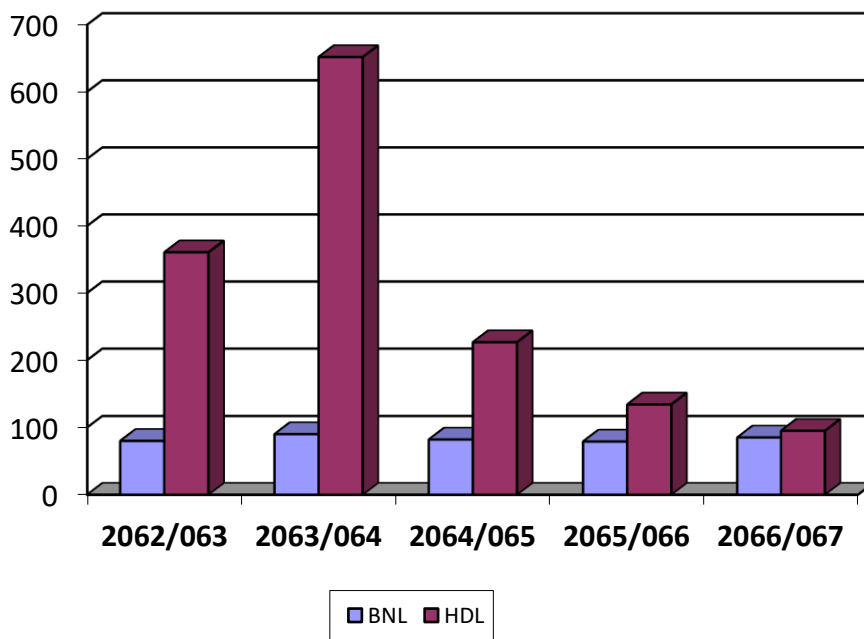
$$\text{BE Ratio} = \frac{\text{Break Even Sales}}{\text{ActualSales}}$$

**Table 4.18 Break Even Ratio of BNL & HDL**

Year	Break Even Ratio (in %)	
	BNL	HDL
2062/063	80	360.57
2063/064	90	651.73
2064/065	82	226.51
2065/066	79	134.09
2066/067	85	95.01

*Sources : Appendix -III*

**Fig.4.19 Representation of Bar Diagram of Break Even Ratio of BNL & HDL**



### Margin of Safety Ratio

The proportion of Margin of Safety sales is MOS Ratio. The contribution margin obtained from Margin of safety is operating profit for company. MOS Ratio shows the part of profit earning sales volume of the company.

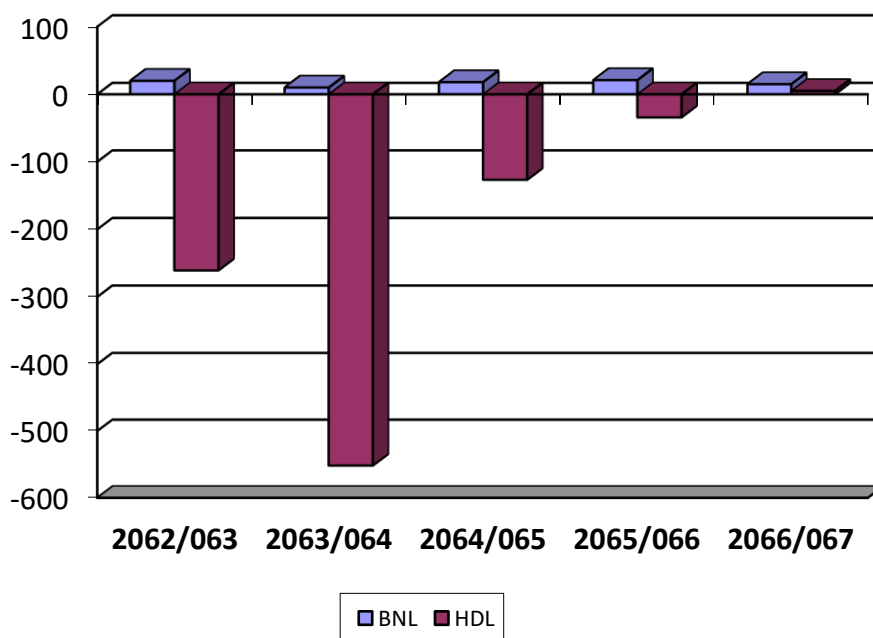
$$\text{MOS Ratio} = \frac{\text{Margin of safety sales}}{\text{Actual Sales}}$$

**Table 4.19 Margin of Safety Ratio of BNL& HDL**

Year	Margin of safety Ratio	
	BNL	HDL
2062/063	20	-260.57
2063/064	10	-551.73
2064/065	18	-126.51
2065/066	21	-34.09
2066/067	15	4.99

*Sources : Appendix -III*

**Fig.4.20 Representation of Bar Diagram of Margin of Safety Ratio of BNL & HDL**



## 4.5 Major Finding

The major finding of this study based on the analysis of available secondary data is pointed out as follows:

- The both companies do not have a practice of classification of costs in to fixed costs and variable cost,
- The total fixed costs of the companies are increasing annually,
- Advertisement, salary and allowance, communication expenses, insurance premium, depreciation and interest on long term loan are higher portion of total fixed cost and the amount of these items are highly incremental condition,
- The variable costs are also at increasing trends, and vital items were material with direct expenses on purchase, royalty, sales promotion expenses, transportation and insurance expenses, salary and wages, leakage and breakage, complementary expenses, travelling expenses, and water and electricity,
- The semi-variable or semi-fixed costs are classified into fixed and variable cost on the basis of estimation or assumption,
- The actual sales of the company have not reached at BEP as a whole,
- The CM ratio of companies is less than 50% which is much low to cover up its Fixed
- Cost,

- Both companies have not maintained the broad and long range objectives and periodic report and objectives are limited to the high ranking official only.
- Relevant internal and external market variables are not fully explored by both companies.
- Sales and production targets of both companies are not achieving because there is not an effective forecasting system.
- Both Enterprises have no financial plan; they have only sales and production plan in term of required target.
- The companies production trend is in an increasing trend.
- There is no any effective plan for cost reduction and control
- There is lack of effective cost control programmed or techniques.
- The profit trend of the company is not satisfactory as compared to profit proportion is very low with fluctuated trend.
- The companies have not detailed and systematic expenses plan. The fixed, variable and mixed expenses plan is the necessary elements for profit planning and control.
- In the both companies there is no effective inventory policy. The inventory management, raw material handling and controlling system are not efficient and effective.
- Management information system is not performance based.
- There are no any proper criteria for performance evaluation for financial tools.

- The P/V analysis alternatives might be helpful for profit planning and corresponding sales etc.
- For profit achievement, the company should be adjusted fixed costs, variable cost, sales and profit by P/V Analysis,
- For profit achievement, the company should be adjusted fixed costs, variable cost, sales and profit by P/V Analysis,
- The P/V analysis alternatives might be helpful for profit planning and corresponding sales etc.
- There were negative correlation between actual sales and budgeted sales of BNL whereas positive but very poor correlation between actual sales and budgeted sales of HDL.

## **CHAPTER - 5**

### **Summary, conclusion and recommendations**

#### **5.1 Summary**

Profit planning of the companies and firms has become very important and necessary tools for both deficit and surplus units of the growing financial markets 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. It is one of the most important mechanisms for planning and controlling business operations. The effective operation of a business concern resulting into the excess of income over the expenditure fully depends upon as to what extent the management follows proper planning, effective coordination and dynamic control.

Management can effectively achieve organizational objectives through the efficient use of scarce available resources in a changing environment of business. Future is uncertain which creates risk and only the good management can reduce it. CVP analysis is an analytical technique for studying the relationship between volume, costs and profit which helps manage future costs and profit. Profit planning is management technique and it is a written plan in all aspect of business operation for definite future period. CVP analysis is a technique used to determine the usefulness and effectiveness of profit planning process of the organization. In fact, the entire field of profit of profit planning has become associated with the CVP inter relationship.

The main objective of the present research was to examine the use of cost - volume-profit analysis to plan the profit. So, this study was undertaken to evaluate CVP analysis of the company. It has observed that BNL and HDL have succeeded in living up to the expectation of general position and main producer company of soft drinks, beverages and hard drinks for all over the country. As per the nature of the study, the secondary data have been used and related other information has collected by informal interviews for production analysis, costs analysis, inventory analysis, contribution margin analysis, P/VRatio analysis, BEP analysis.

From the analysis, the cost-volume-profit analysis shows that the both companies have low contribution margin, low p/v ratio, high BEP and low margin of safety. The sensitivity test of cost- volume-profit analysis shows that the increase in costs (i.e. variable and fixed), increase the BEP and the decrease in costs, decreases the BEP. But increase of selling price decreases the BEP. It indicates the relationship between selling price and BEP is negative correlate. To fulfill the companies objectives, it takes burden of all types of fixed costs but not control effectively. Companies profit condition isn't satisfactory. Lack of details information and extra cost burdens are main reasons behind not practicing profit planning and control tools like a CVP analysis.

## **5.2 Conclusions**

Different types of theoretical tools and techniques of profit planning have not been applied by both BNL & HDL. It shows gap between the theory and practice. The both companies have not applied cost-volume-profit analysis and segregation of costs into fixed and variable. Increasing operating and

maintenance cost in each year is another remarkable problem for BNL & HDL. They have not adopted the cost control programmed. Companies have no clear cut boundaries to separate cost into fixed and variable. The classification of cost is not scientific and systematic. Therefore, both companies (BNL & HDL) have not been able to CVP analysis and make the realistic budget.

After analyzing in detail the present practice on the field of profit planning in both companies, the following matters can be concluded.

### **Lack of Clear Cut Objective**

The objectives of the companies are not clearly defined. There is not a long term strategic plan to achieve the unclear defined objectives. There is not complete and comprehensive budgeting system. Both companies have not prepared long term strategic profit plan but has prepared only short term profit plan in terms of budget for each year.

### **Lack of Skilled Planner and Budgeting Experts**

There is not a scientific budgeting system. Budgets are prepared on traditional basis. There is no planning of materials and production of goods. All overhead expenses are shown in general expenditure budget.

### **Lack of Participatory Management**

The plans are prepared from top level and later it is communicated to the lower level in terms of required target but not in the term of the action plan. There is lack of authorities to formulate various plans in lower level management.

### **Lack of Analyzing System of SWOT**

Company has not analyzed its strength and weakness. Quality products, local manpower, latest production technology etc are the strength whereas high

production costs, market competition, difficulties to import raw materials; high fixed costs etc are the weakness of the company.

### **Ineffective Budgetary Control System**

Fixed cost and non manufacturing cost are growing high. Past year actual cost is taken as a budget for the current year and there is not any programmed to study about variation between budget and actual expenditures.

### **Not Optimum Utilization of Fixed Cost**

There is not the optimum utilization of fixed cost because the fixed cost are growing higher with out any reason and from this situation the relation between actual sales and actual profit has become and unpredictable relation.

### **Lack of Systematic Accounting and Classification of Cost**

There is no systematic classification of cost as fixed and variable components. There is not the system of analysis of cost and clear cut policy to separate semi variable cost into fixed and variable. The costs are roughly classified and such classification is not scientific and appropriate.

### **Lack of Suitable Inventory Policy**

Both companies have not a good inventory policy. The finished goods inventory levels have been fluctuating each year.

### **Lack of Systematic and Complete Profit Planning Programmed**

Total sale achievement and production of both companies are fluctuating year after year. Similarly gross profit margin and net profit margin are in fluctuating trend. So, the rate of trend and growth is not stable. The company has not developed the alternative plan to earn profit.

There is significant correlation between sales target and sales achievement similarly productions target and production achievement. It indicates that increased in targeted sales will also increase achievement sales similarly also affected in production plan. The regression line about sales of BNL& HDL indicates a positive trend. Coefficient of determination of sales and production shows that there are some other factors are affecting the forecasting of sales and production. But BNL & HDL has not searched those factors to make its profit plan complete and systematic.

### **5.3 Recommendations**

On the basis of the study of use of CVP analysis to plan the profit of BNL, it seems necessary to develop, implement and improve the process of CVP analysis from beginning to end with PPC. Nepal is proceeding towards globalization with membership of WTO. Nepalese companies should fit with the global environment with best fitted managerial strategies. For better utilization of the limited resources and achieve goal through strong competition, application of advance profit planning and control tools can be of great help. Thus the recommendations based on the findings of the research study are as follows;

#### **To Formulate the Clear Objectives**

The objectives are the basic guidelines of the company therefore both companies should clearly define its broad objectives, similarly duties and responsibilities of employees should be clearly defined.

#### **To Analyze the SWOT**

For long life of the company it should analyze its strengths and weaknesses in internal environment of company and its opportunities and threats in external environment of the company.

### **To Apply Participatory Management System**

The participative management can play the important role in implementation of decisions. Therefore the companies should try to involvement of more personnel in decision making process as far as possible. The CVP and PPC manuals should be communicated from top to lower levels of the company.

### **To Apply Budgetary Control System**

To strengthen the competitiveness of the companies and to carry out PPC activities, the companies should use the profit planning and controlling tools. For budgeting activities tools like CVP analysis should consider for planning.

### **To Proper Account and Analysis of Cost**

Cost control department should establish separately which will identify and analyze the variability and controllability of cost correctly that may give the right ideas to control the cost. From this uneconomical and idle costs will decrease automatically.

### **To Classify the Variability of Cost**

Classification of expenses and cost from their nature of variability is very essential. From this application of CVP analysis and preparation of flexible budgets becomes exact and easier.

### **To Optimize Utility of Fixed Cost**

BNL has invested huge amount of capital in fixed cost. Therefore the companies should try to maximum and effective utilization of fixed cost to generate profit.

### **To Use Effective Inventory Policy**

The ending inventory of the companies does not show the any inventory policy. Therefore the companies should apply the effective inventory management policy, raw material handling and controlling system for continuous production and selling of the product.

### **To Use Systematic and Complete Profit Planning Programmed**

A systematic and complete profit planning programmed should be followed to generate more profit. From this the efficiency and profitability of the company may be improved.

### **To Use Performance Report**

Finally, a system of periodical performance reports should be strictly followed to be conscious about poor performance and take corrective actions immediately.

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## Appendix One

Table 1a: Calculation of statistical measurements of Actual sales and Budgeted Sales (in Rs. '000' of BNL

Year	Budgeted sales ( $X_1$ )	Actual Sales ( $y_1$ )	$x_1 - \bar{x}_1$	$y_1 - \bar{y}_1$	$x_1 - \bar{x}_1 \times y_1 - \bar{y}_1$	$(x_1 - \bar{x}_1)^2$	$(y_1 - \bar{y}_1)^2$
2062/063	567000	535494	-132400	-67271.6	8906759840	17529760000	4525468167
2063/064	670000	609654	-29400	6888.4	-202518960	864360000	47450054.56
2064/065	740000	632114	40600	29348.4	1191545040	1648360000	861328582.6
2065/066	745000	614739	45600	11973.4	545987040	2079360000	143362307.6
2066/067	775000	621827	75600	11973.4	1741041840	5715360000	363336970
Total	3497000	3013828	0	0	11882814800	27837200000	5940946082

Table 1b: Calculation of statistical measurements of Actual Sales and Budgeted Sales(in

RS '000')of HDL

Year	Budgeted sales ( $X_1$ )	Actual Sales ( $y_1$ )	$x_2 - \bar{x}_2$	$y_2 - \bar{y}_2$	$x_2 - \bar{x}_2 \times y_2 - \bar{y}_2$	$(x_2 - \bar{x}_2)^2$	$(y_2 - \bar{y}_2)^2$
2062/063	567000	535494	-132400	-67271.6	8906759840	17529760000	4525468167
2063/064	670000	609654	-29400	6888.4	-202518960	864360000	47450054.56
2064/065	740000	632114	40600	29348.4	1191545040	1648360000	861328582.6
2065/066	745000	614739	45600	11973.4	545987040	2079360000	143362307.6
2066/067	775000	621827	75600	11973.4	1741041840	5715360000	363336970
Total	3497000	3013828	0	0	11882814800	27837200000	5940946082

$$\text{Mean Budget Sales } (\bar{x}) = \sum \frac{X}{N}$$

$$\text{For BNL } (\bar{X}_1) = \sum \frac{X_1}{N} = \frac{349700}{5} = 69940 \approx \text{RS}699400000$$

$$\text{For HDL } (\bar{X}_2) = \sum \frac{X_2}{N} = \frac{2301289}{5} = 460257.8 \approx \text{RS}460257800$$

$$\text{Mean Budget Sales } (\bar{y}) = \sum \frac{Y}{N}$$

$$\text{For BNL } (\bar{Y}_1) = \sum \frac{Y_1}{N} = \frac{3012828}{5} = 60275.6 \approx \text{RS}602765600$$

$$\text{For HDL } (\bar{Y}_2) = \sum \frac{Y_2}{N} = \frac{1058978}{5} = 211795.6 \approx \text{RS}211795600$$

$$\text{Standard Deviation of Budgeted sales } (\delta_x) = \sqrt{\frac{\sum (X - \bar{X})^2}{N - 1}}$$

$$\text{For BNL } (\delta_{x1}) = \sqrt{\frac{\sum (X_1 - \bar{X}_1)^2}{N - 1}} = \sqrt{\frac{27837200000}{5 - 1}} = 83422.419 \approx \text{RS}83422419$$

$$\text{For HDL } (\delta_{x2}) = \sqrt{\frac{\sum (X_2 - \bar{X}_2)^2}{N - 1}} = \sqrt{\frac{112971707928}{5 - 1}} = 168056.321 \approx \text{RS}168056321$$

$$\text{Standard Deviation of Actual Sales } (\delta_y) = \sqrt{\frac{\sum (Y - \bar{Y})^2}{N - 1}}$$

$$\text{For BNL } (\delta_{y1}) = \sqrt{\frac{\sum (Y_1 - \bar{Y}_1)^2}{N - 1}} = \sqrt{\frac{5940946082}{5 - 1}} = 38538.766 \approx \text{RS}38538766$$

$$\text{For HDL } (\delta_{y2}) = \sqrt{\frac{\sum (Y_2 - \bar{Y}_2)^2}{N - 1}} = \sqrt{\frac{8316665495}{5 - 1}} = 45597.876 \approx \text{RS}45597876$$

$$\text{Coefficient of Variation of Budgeted Sales } (CV_x) = \frac{\delta_x}{\bar{x}} \times 100\%$$

$$\text{For BNL } (CV_{x1}) = \frac{\delta_{x1}}{\bar{X}_1} \times 100\% = \frac{83422.419}{69940} \times 100\% = 11.92\%$$

$$\text{For HDL } (CV_{x2}) = \frac{\delta_{x2}}{\bar{X}_2} \times 100\% = \frac{168056.31}{460257.8} \times 100\% = 36.51\%$$

$$\text{Coefficient of Variation of Actual Sales } (CV_y) = \frac{\delta_y}{\bar{y}} \times 100\%$$

$$\text{For BNL } (CV_{y1}) = \frac{\delta_{y1}}{\bar{Y}_1} \times 100\% = \frac{38538.766}{602765.6} \times 100\% = 6.39\%$$

$$\text{For HDL } (CV_{y2}) = \frac{\delta_{y2}}{\bar{Y}_2} \times 100\% = \frac{45597.876}{211795.6} \times 100\% = 21.53\%$$

$$\text{Correlation Coefficient } (r_{xy}) = \frac{\sum (x - \bar{x})(y - \bar{y})}{\sqrt{\sum (x - \bar{x})^2 \sum (y - \bar{y})^2}}$$

$$\text{For BNL } (r_{x1y1}) = \frac{\sum (X_1 - \bar{X}_1)(Y_1 - \bar{Y}_1)}{\sqrt{\sum (X_1 - \bar{X}_1)^2 \sum (Y_1 - \bar{Y}_1)^2}} = \frac{11882814800}{\sqrt{27837200000 \times 5940946082}} = \mathbf{0.9240}$$

$$\text{For HDL}(r_{x_2y_2}) = \frac{\Sigma(x_2 - \bar{x}_2)(1 - \bar{y}_1)}{\sqrt{\Sigma(x_2 - \bar{x}_2)^2 \Sigma(y_2 - \bar{y}_2)^2}} = \frac{11882814800}{\sqrt{11297107928 \times 8316665495}} = 0.6518$$

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

$$\text{For BNL (P.E.)} = 0.6745 \times \frac{1 - 0.9240^2}{\sqrt{5}} = 0.0441$$

$$\text{For HDL (P.E.)} = 0.6745 \times \frac{1 - 0.6518^2}{\sqrt{5}} = 0.2572$$

Coefficient of determination ( $r^2$ )

$$\text{For BNL} = (r_{x_1y_1})^2 = (0.9240)^2 = 0.8538$$

$$\text{For DHL} (r_{x_2y_2})^2 = (0.6518)^2 = 0.4248$$

Regression equation of Actual Sales (Y) on Budgeted Sales (X) is given by:

For BNL

$$Y_1 - \bar{Y}_1 = r_{x_1y_1} \frac{\sigma_{y_1}}{\sigma_{x_1}} (x_1 - \bar{x}_1)$$

$$Y_1 - 602765.6 = 0.9240 \times \frac{38538.766}{83422.419} (X_1 - 699400)$$

$$Y_1 = 304219 + 0.426X_1$$

For DHL

$$Y_2 - \bar{Y}_2 = r_{x_2y_2} \frac{\sigma_{y_2}}{\sigma_{x_2}} (x_2 - \bar{x}_2)$$

$$Y_2 - 211795.6 = 0.6518 \times \frac{45597.876}{168056.321} (X_2 - 460257.8)$$

$$Y_2 = 130399 + 0.1768X_2$$

Calculation of Estimated Sales :

For BNL ( $\hat{Y}_1$ ) & HDL ( $\hat{Y}_2$ )

$$2062/063 (\hat{Y}_1) = 304219 + 0.4269X_1 \quad (\hat{Y}_1) = 304219 + 0.4269 \times 567000 = 546271$$

$$(\hat{Y}_2) = 304219 + 0.1768X_2 \quad (\hat{Y}_1) = 304219 + 0.4269 \times 670000 = 590242$$

$$2063/064 (\hat{Y}_1) = 304219 + 0.4269X_1 \quad (\hat{Y}_1) = 304219 + 0.4269 \times 670000 = 590242$$

$$(\hat{Y}_2) = 13099 + 0.1768X_2 \quad (\hat{Y}_1) = 304219 + 0.4269 \times 646846 = 4185781$$

$$2064/065 (\hat{Y}_1) = 304219 + 0.4269X_1 \quad (\hat{Y}_1) = 304219 + 0.4269 \times 740000 = 620125$$

$$(\hat{Y}_2) = 13099 + 0.1768X_2 \quad (\hat{Y}_1) = 304219 + 0.1768 \times 543148 = 400247$$

$$2065/066 (\hat{Y}_1) = 304219 + 0.4269X_1 \quad (\hat{Y}_1) = 304219 + 0.4269 \times 745000 = 622260$$

$$\begin{aligned}
\widehat{Y}_2 &= 13099 + 0.1768X_2 & \widehat{Y}_1 &= 304219 + 0.1768 \times 459312 = 385425 \\
2066/067 \widehat{Y}_1 &= 304219 + 0.4269X & \widehat{Y}_1 &= 304219 + 0.4269 \times 775000 = 635067 \\
\widehat{Y}_1 &= 13099 + 0.1768X_2 & \widehat{Y}_1 &= 304219 + 0.1768 \times 458713 = 385319
\end{aligned}$$

## Appendix Two

**Table 2 (a) Calculation of statistical measurements of Actual sales and Actual Profit (in RS '000') of BNL**

Year	Actual Sales ( $x_1$ )	Actual Profit ( $y_1$ )	$x_1 - \bar{x}_1$	$y_1 - \bar{y}_1$	$x_1 - \bar{x}_1 \times y_1 - \bar{y}_1$	$(x_1 - \bar{x}_1)^2$	$(y_1 - \bar{y}_1)^2$
2062/063	535494	48610	67271.6	35211.4	2368727216	4525468167	1239842690
2063/064	609654	19372	6888.4	5973.4	41147168.56	47450054.56	35681507.56
2064/065	632114	21595	29348.4	8196.4	240551225.8	861328582.6	67180972.96
2065/066	614739	34735	11973.4	21336.4	254701141.4	143362307.6	455241965
206/067	621827	-57319	19061.4	70717.6	1347976461	363336970	5000978950
<b>Total</b>	<b>3013828</b>	<b>66993</b>	<b>0</b>	<b>0</b>	<b>3180304141</b>	<b>5940946082</b>	<b>6798926085</b>

**Table 2 (b) Calculation of statistical measurements of Actual Sales and Actual Profit (in RS '000') of HDL**

Year	Actual Sales ( $x_2$ )	Actual Profit ( $y_2$ )	$x_2 - \bar{x}_2$	$y_2 - \bar{y}_2$	$x_2 - \bar{x}_2 \times y_2 - \bar{y}_2$	$(x_2 - \bar{x}_2)^2$	$(y_2 - \bar{y}_2)^2$
2062/063	51274	-42125	-160522	21884.4	3512927657	25767312484	478926963.4
2063/064	94865	-38519	-116931	18278.4	2137311590	13672858761	334099906.6
2064/065	203585	-26212	-8210.6	-5971.4	49028776.84	67413952.36	35657617.96
2065/066	314579	-23527	-102783	-3286.4	337787365.8	10564427316	10800424.96
206/067	394675	29180	182879.4	49420.6	9038009676	33444874944	2442395704
<b>Total</b>	<b>1058978</b>	<b>-101203</b>	<b>0</b>	<b>0</b>			
<b>Total</b>					<b>15075065065</b>	<b>83516887457</b>	<b>3301880617</b>

$$\text{Mean Actual Sales } (\bar{X}) = \sum \frac{X}{N}$$

$$\text{For BNL } (\bar{X}_1) = \frac{\sum X_1}{N} = \frac{3013828}{5} = 602765.6 \approx \text{Rs. } 602765600$$

$$\text{For HDL } (\bar{X}_2) = \frac{\sum X_2}{N} = \frac{1058978}{5} = 211795.6 \approx \text{Rs. } 211795600$$

$$\text{Mean Actual Profit } (\bar{Y}) = \sum \frac{Y}{N}$$

$$\text{For BNL } (\bar{Y}_1) = \frac{\sum Y_1}{N} = \frac{66993}{5} = 13398.6 \approx \text{Rs. } 13398600$$

$$\text{For HDL } (\bar{Y}_2) = \frac{\sum Y_2}{N} = \frac{(101203)}{5} = (20240.6) \approx \text{Rs. } (20240600)$$

#### Standard Deviation of Actual Sales

$$\text{For BNL } (\sigma_{x1}) = \sqrt{\frac{\sum (X_1 - \bar{X}_1)^2}{N-1}} = \sqrt{\frac{5940946082}{5-1}} = 38538.766 \approx \text{Rs. } 38538766$$

$$\text{For HDL } (\sigma_{x2}) = \sqrt{\frac{\sum (X_2 - \bar{X}_2)^2}{N-1}} = \sqrt{\frac{83516887457}{5-1}} = 2248.2117 \approx \text{Rs. } 72248221$$

#### Standard Deviation of Actual Profit

$$\text{For BNL } (\sigma_{y1}) = \sqrt{\frac{\sum (Y_1 - \bar{Y}_1)^2}{N-1}} = \sqrt{\frac{678926085}{5-1}} = 41228 \approx \text{Rs. } 41228000$$

$$\text{For HDL } (\sigma_{y2}) = \sqrt{\frac{\sum (Y_2 - \bar{Y}_2)^2}{N-1}} = \sqrt{\frac{3301880617}{5-1}} = 14365.498 \approx \text{Rs. } 14365498$$

#### Coefficient of Variation of Actual Sales (C.V.)

$$\text{For BNL } = \frac{\sigma_{x1}}{X_1} \times 100\% = \frac{38538.766}{602765.6} \times 100\% = 6.39\%$$

$$\text{For HDL } = \frac{\sigma_{x2}}{X_2} \times 100\% = \frac{41228}{211795.6} \times 100\% = 1.06\%$$

#### Coefficient of Variation of Actual Profit (C.V.)

$$\text{For BNL } = \frac{\sigma_{y1}}{Y_1} \times 100\% = \frac{41228}{1333398.6} \times 100\% = 307.7\%$$

$$\text{For HDL } = \frac{\sigma_{y2}}{Y_2} \times 100\% = \frac{14365.498}{(20240.6)} \times 100\% = (70.97\%)$$

$$\text{Correlation Coefficient } (r_{xy}) = \frac{\sum (X - \bar{X})(Y - \bar{Y})}{\sqrt{\sum (X_1 - \bar{X}_1)^2 \sum (Y_1 - \bar{Y}_1)^2}}$$

$$\text{For BNL } (r_{x1y1}) = \frac{\sum (X_1 - \bar{X}_1)(Y_1 - \bar{Y}_1)}{\sqrt{\sum (X_1 - \bar{X}_1)^2 \sum (Y_1 - \bar{Y}_1)^2}} = \frac{-3180304141}{\sqrt{5940946082 \times 678926085}} = -0.500$$

$$\text{For HDL } (r_{x2y2}) = \frac{\sum (X_2 - \bar{X}_2)(Y_2 - \bar{Y}_2)}{\sqrt{\sum (X_2 - \bar{X}_2)^2 \sum (Y_2 - \bar{Y}_2)^2}} = \frac{1507506506}{\sqrt{8351688747 \times 3301880617}} = 0.000157$$

#### Probable Error (P.E)

$$\text{For BNL } = 0.6745 \times \frac{1 - r_{x1y1}^2}{\sqrt{N^1}} = 0.6745 \times \frac{1 - (-0.500)^2}{\sqrt{5}} = 0.2262$$

$$\text{For HDL } = 0.6745 \times \frac{1 - r_{x2y2}^2}{\sqrt{N^2}} = 0.6745 \times \frac{1 - (0.000157)^2}{\sqrt{5}} = 0.6745$$

Coefficient of Determination

$$\text{For BNL } (r_1^2) = (-0.500)^2 = 0.25$$

$$\text{For HDL } (r_2^2) = (-0.000157)^2 = 0.000000246$$

Regression equation of Actual Profit ( $Y_1$ ) on Actual Sales ( $X_1$ ) is given by :

For BNL,

$$Y_1 - \bar{Y}_1 = r_{x_1y_1} \frac{\sigma_{y_1}}{\sigma_{x_1}} (X_1 - \bar{X}_1)$$

$$Y_1 - 13398.6 = 0.500 \times \frac{42228}{38538.766} (X_1 - 602765.6)$$

$$Y_1 = 335812 - 0.5349X_1$$

For HDL,

$$Y_2 - \bar{Y}_2 = r_{x_2y_2} \frac{\sigma_{y_2}}{\sigma_{x_2}} (X_2 - \bar{X}_2)$$

$$Y_2 - (-20240.6) = 0.000157 \times \frac{14365.498}{2248.2117} (X_2 - 211795.6)$$

$$Y_2 + 20240.6 = 0.001003X_2 - 212.47$$

$$Y_2 = -20453.07 + 0.001003X_2$$

**Calculation of Estimated Profit :**

$$2062/063 (\hat{Y}_1) = 335812 - 0.5349X_1 \quad (\hat{Y}_1) = 335812 - 0.5349 \times 5354940 = 49376$$

$$(\hat{Y}_2) = -20453.07 + 0.001003X_2 \quad (\hat{Y}_2) = 20453.07 + 0.001003 \times 51274 = -20401.64$$

$$2063/064 (\hat{Y}_1) = 335812 - 0.5349X_1 \quad (\hat{Y}_1) = 335812 - 0.5349 \times 609654 = 9708$$

$$(\hat{Y}_2) = -20453.07 + 0.001003X_2 \quad (\hat{Y}_2) = 20453.07 + 0.001003 \times 94865 = -20357.95$$

$$2064/065 (\hat{Y}_1) = 335812 - 0.5349X_1 \quad (\hat{Y}_1) = 335812 - 0.5349 \times 632114 = (2306)$$

$$(\hat{Y}_2) = -20453.07 + 0.001003X_2 \quad (\hat{Y}_2) = 20453.07 + 0.001003 \times 203585 = -20248.87$$

$$2065/066 (\hat{Y}_1) = 335812 - 0.5349X_1 \quad (\hat{Y}_1) = 335812 - 0.5349 \times 614739 = 6988$$

$$\widehat{Y}_2 = -20453.07 + 0.001003X_2 \quad \widehat{Y}_2 = 20453.07 + 0.001003 \times 314579 = -20137.55$$

$$2066/067 \widehat{Y}_1 = 335812 - 0.5349X \quad \widehat{Y}_1 = 335812 - 0.5349 \times 621827 = -3197$$

$$\widehat{Y}_2 = -20453.07 + 0.001003X_2 \quad \widehat{Y}_2 = 20453.07 + 0.001003 \times 394675 = -20057.21$$

**APPENDIX – THREE**

**Table No. 3a : Income Statement In Rs. 000**

<b>Particulars</b>	<b>2062/063</b>	<b>2063/064</b>	<b>2064/065</b>	<b>2065/066</b>	<b>2066/067</b>
<b>Sales</b>	535494	609654	632114	614739	621827
<b>Less; cost of production</b>	306480	376263	358377	357350	351080
<b>Gross profit</b>	<b>229014</b>	<b>233391</b>	<b>273737</b>	<b>257389</b>	<b>270747</b>
<b>Other income</b>	1611	1263	90	1161	859
<b>Business expenses :</b>					
Distribution expenses	25051	24156	24199	19736	16955
Administration expenses	103272	127854	144572	137461	155663
<b>Profit from operation</b>	<b>102302</b>	<b>82644</b>	<b>105056</b>	<b>101353</b>	<b>98988</b>
Interest	663	284	4	265	1329
Depreciation and amortization	51566	58868	63372	55777	64668
Dividend received from subsidiary company	-16447	-10985	-10985	-5492	
(profit)/ loss on sale of fixed assets		1	638	-	-2861
Provision for staff quarter	3328	1724	2574	2540	1793
Provision for bonus	5717	2977	4445	4387	3096
<b>Total expenditure</b>	<b>44827</b>	<b>52869</b>	<b>60048</b>	<b>57477</b>	<b>68025</b>
<b>Profit before tax</b>	<b>57475</b>	<b>29775</b>	<b>45008</b>	<b>43876</b>	<b>30963</b>
Provision for tax	8865	4103	7208	8503	5539
Provision for special fees	--	-		638	462
<b>Net profit after tax</b>	<b>48610</b>	<b>25672</b>	<b>37800</b>	<b>34735</b>	<b>24962</b>
Balance brought forward	304834	333955	343583	365178	399913
Provision for tax in respect to earlier year		6300	16205	-	24332
Depreciation expenses for earlier year	-	-	-	-	57949

<b>Profit for distribution</b>	<b>353444</b>	<b>353327</b>	<b>365178</b>	<b>399913</b>	<b>342594</b>
Proposed dividend	19489	9744	-	-	-
<b>Balance of profit transferred to</b>	<b>333955</b>	<b>343583</b>	<b>365178</b>	<b>399913</b>	<b>342594</b>
<b>balance sheet</b>					

source: Audit Report; BNL

**Table 3b :Budgeted sales and actual sales (in RS '000')**

<b>Year</b>	<b>Budgeted sales</b>	<b>Actual sales</b>
2062/063	567000	535494
2063/064	670000	609654
2064/065	740000	632114
2065/066	745000	614739
2066/067	775000	621827

**Table 3c: Budgeted production and actual production at cost (in RS '000')**

<b>Year</b>	<b>Budgeted production</b>	<b>Actual production</b>
2062/063	320000	308341
2063/064	405000	376174
2064/065	425000	371348
2065/066	460000	380282
2066/067	483000	382395

**Table 3d: Cost Heads and Their Variability**

<b>Cost Heads</b>	<b>Cost Variability</b>	<b>Cost Heads</b>	<b>Cost Variability</b>
Direct material	Variable	Rates and taxes	Fixed
Production cost	30% fixed	Bank charges	Fixed
Distribution expenses	30% fixed	General meeting expenses	Fixed
Interest expenses	Fixed	Insurance premium	Fixed
Depreciation and amortization	Fixed	Communication	90% Fixed
Accommodation expenses	Fixed	Printing and stationary	70% Fixed
Staff bonus	Fixed	Advertisement	50% Fixed
Salaries, wages and other employees cost	Fixed	Production promotion expenses	70% Fixed
Contribution to provident fund, gratuity	Fixed	Training	70% Fixed
Security expenses	Fixed	Charity and donation	Variable
Trade discount	Variable	Uniform	Fixed
Rent	fixed	Rejection and breakages	Variable
Repair and maintenance	50% fixed	Management fees	Fixed
Electricity, fuel and water	20% fixed	Obsolete stock and fixed assets written off	Fixed
Traveling expenses	Variable	Product transfer fees	Variable
Audit fees	Fixed	Miscellaneous expenses	50% fixed
Legal and professional fees and expenses	50% fixed	SAP related expenses	Variable

Source: Audit Reports; BNL

**Table 3e: Details of cost variability and segregation of semi variable cost of BNL (in RS '000')**

Cost heads	Cost variability	2062/063			2063/064			2064/065			Total
		Total	FC	VC	Total	FC	VC	Total	FC	VC	
Direct material	Variable	255194		255194	310318		310318	293944		293944	282559
Production cost	30% fixed	53147	15944	37203	65856	19757	46099	67404	20221	47183	71535
Distribution expenses	30% fixed	25051	7515	17536	24156	7247	16902	24199	7260	16939	19736
Interest expenses	Fixed	663	663	284	284	4	4	265			265
Depn and amortization	Fixed	51566	51566	58868	58868	63372	63372	55777			55777
Accommodation expenses	Fixed	3328	3328	1724	1724	2574	2574	2540			2540
Staff bonus	Fixed	5717	5717	2977	2977	4445	4445	4387			4387
Salaries and wages	Fixed	23156	23156	26691	26691	26560	26560	27881			27881
Contribution to P. Fund	Fixed	3814	3814	2906	2906	2876	2876	976			976
Security expenses	Fixed	1570	1570	32	32	12	12	382			382
Trade discount	Variable	18959	18959	44572	44572	52573	52573	51340	52573		51340
Rent	fixed	626	626	1007	1007	628	628	402			402
Repair and maintenance	50% fixed	2892	1446	1446	4063	2032	2031	4793	2397	2397	5001

Electricity, fuel and water	20% fixed	172	34	138	155	31	124	103	82	82	118
Traveling expenses	Variable	1717	1717	1363	1363	1847	1847	3240	1847		3240
Audit fees	Fixed	220	220	220	220	220	220	220			220
Legal expenses	50% fixed	533	266	267	521	261	260	7775	3887	3888	648
Rates and taxes	Fixed	492	492	133	133	182	182	187			187
Bank charges	Fixed	4853	4853	153	153	672	672	307			307
General meeting expenses	Fixed	25	25	21	21	35	35	48			48
Insurance premium	Fixed	215	215	274	274	941	941	87			87
Communication	90% Fixed	5075	4568	507	3305	2974	331	3690	3321	369	6844
Printing and stationary	70% Fixed	713	499	214	680	476	204	813	569	244	715
Advertisement	50% Fixed	7563	3781	3782	7534	3767	3767	5360	2680	2680	3933
Prodn promotion exp.	70% Fixed	17205	12043	5162	18607	13025	5582	13195	9237	3958	5955
Training	70% Fixed	11	8	3	157	110	47	717	502	215	1316
Charity and donation	Variable	33	33	47	47	94	94	124			124
Uniform	Fixed	505	505	307	307	517	517	476			476
Rejection and breakages	Variable	7897	7897	4201	4201	6710	6710	6638			6638
Management fees	Fixed	1425	1425	2817	2817	4421	4421	6276			6276

Fixed assets written off	Fixed	397	397	556	556	2655	2655	5805			5805
Product transfer fees	Variable	1367	1367	6502	6502	5945	5945	7774			7774
Miscellaneous expenses	50% fixed	1837	918	919	1031	516	515	1238	619	619	768
SAP related expenses	Variable										
<b>Total</b>		<b>497938</b>	<b>145594</b>	<b>352344</b>	<b>592038</b>	<b>149166</b>	<b>442872</b>	<b>600514</b>	<b>160827</b>	<b>439687</b>	<b>574260</b>

**Table 3f: Statement of Detail Fixed Costs of HDL**

<b>Particulars</b>	<b>2062/063</b>	<b>2063/064</b>	<b>2064/065</b>	<b>2065/066</b>	<b>2066/067</b>
<b><u>Production Expenses :</u></b>					
Salary	301798	735390	907036	1359046	1433510
Water and Electricity	181715	275133	383072	339920	401235
Repair and Maintenance	210042	135801	371129	339863	421000
<b>Total Production Exp. (A)</b>	<b>693555</b>	<b>1146324</b>	<b>1661237</b>	<b>2038829</b>	<b>2255745</b>
<b><u>Selling and Distribution Exp.</u></b>					
Advertisement	1694605	2233518	5107918	2780922	3050246
Hoarding Board Rental	-	-	-	604915	802526
Distributions Meeting Exp.	-	-	370671	460576	553621
<b>Total selling and Distribution Exp. (B)</b>	<b>1694605</b>	<b>2233518</b>	<b>5478589</b>	<b>3846413</b>	<b>4406393</b>
<b><u>Administrative and selling &amp;</u></b>					
Salary and Allowance	5684396	7959503	8327639	1119153	1253708
P/F Contribution	58108	221475	217661	271503	301405
Printing and stationary	257471	364575	429685	518615	556245
Water and Electricity	33218	44637	201038	266592	314521
Communication Expenses	1159870	1539852	1284442	2610051	2812450
Bank Charges	317657	246594	403446	636796	658421
Repair And Maintenance	245179	1077383	1295111	2878677	3025623
meeting fee	19500	48552	75000	65000	74000

Traveling expenses	372645	1673583	2781221	2896891	3256424
Conveyance and fuel exp.	699048	741053	794174	1825888	2145741
Computer software exp.	-	-	90000	24000	30000
AGM Expenses	-	13000	143964	43456	49520
Rent	629507	716588	659823	1057164	1085210
Tax and fee	215937	134992	263902	376100	406000
Audit Fee	80000	80000	80000	90000	90000
Guest Entertainment	364995	364184	459053	660584	700000
Notice and publication expenses	3360	-	39375	80137	90000
Security expenses	-	1046404	1049886	1135035	1526305
Members fees and subscription	96443	132553	88704	139438	154560
Legal and professional fees	473462	2609119	3141898	1621147	1856214
Insurance premium	1437253	3292833	2161014	2079253	2510320
Training and Recruitment Exp.	34500	17500	30246	8000	12000
Miscellaneous expenses	337436	1048448	759968	288469	302154
<b>Total Administrative Expenses (C)</b>	<b>12519955</b>	<b>23372728</b>	<b>24774250</b>	<b>30764327</b>	<b>34494200</b>
<b>Depreciation (D)</b>	<b>5144651</b>	<b>2119003</b>	<b>2162688</b>	<b>2207274</b>	<b>2561456</b>
<b>Interest on long term Loan (E)</b>	<b>5830242</b>	<b>25493333</b>	<b>25493333</b>	<b>24535798</b>	<b>28564732</b>
<b>Total Fixed costs (A+B+C+D+E)</b>	<b>25883038</b>	<b>73435942</b>	<b>79034297</b>	<b>83258110</b>	<b>95335634</b>

Sources : Audit Report HDL

**Table 3g: Statement of Detail Variable Costs of HDL**

<b>Particulars</b>	<b>2062/063</b>	<b>2063/064</b>	<b>2064/065</b>	<b>2065/066</b>	<b>2066/067</b>
<b><u>Production Related Expenses :</u></b>					
Materials Consumed	27938129	52791589	100430437	110696440	140562160
Direct Expenses of purchase	-	-	-	27624338	305231100
Salary and wages	1207194	2941560	3628142	5436182	6045130
Royalty	7037660	16677566	39353267	59558440	65124500
Water and Electricity	1332578	2017644	2809196	2492744	2543651
Repair and Maintenance	840170	543205	1484517	1359451	1523140
Blending charge	2038204	1317783	720270	1281035	1426542
Other Expenses	197965	127993	174894	799610	812653
<b>Total Production Exp. (A)</b>	<b>40591900</b>	<b>76417340</b>	<b>148600753</b>	<b>209248240</b>	<b>248560876</b>
<b><u>Administrative and Selling Distribution Exp.</u></b>					
Transportation & Insurance	1295691	1589167	4473749	8588130	9056840
Travelling Exp. of salesman					
Complementary Expenses	1056124	2258036	2457080	2869649	3021453
Sales promotion Expenses	373047	130733	2696753	4300342	4521540
Leakage and breakage	661655	2671160	9513773	23138079	24587418
Other expense	85039	476803	947845	4343515	4521457
	15244	53932	3120	-	60100

<b>Total Administrative, Selling &amp; Distribution Expenses (B)</b>	3486800	7179831	20092320	43239715	45768808
<b>Total variable Costs (A+B)</b>	44078700	83597171	168693073	252487955	294329684

Sources : Compiled by the researcher based on Annual Reports of HDL (FY 2062/063 to 2066/067)

**Income Statement of HDL for the year 2062/063 to 2066/67 in Rs**

<b>Particulars</b>	<b>2062/063</b>	<b>2063/064</b>	<b>2064/065</b>	<b>2065/066</b>	<b>2066/067</b>
Production	51274070	94865090	203585108	314578626	394675000
Less: variable	<b>44078700</b>	<b>83597171</b>	<b>168693073</b>	<b>252487955</b>	<b>294329684</b>
Contribution	7195370	11267919	34892035	62090671	100345316
Less : fixed cost	35883038	73435942	79034297	83258110	95335634
Earning before	18687668	-62168023	-44142262	-21167439	5009682
Profit volume	0.14	0.12	0.17	0.20	0.25
Break even	184878843	618260324	461142662	421822174	374971078
Percent of break	360.57	651.73	-	134.09	95.01
Margin of safety	-	-	-126.51	-	19703921.6
margin of safety	-260.57	-551.73		-34.091	4.99

*Sources : Audit Reports : HDL*

**Income Statement of BNL for the year 2062/63 to 2066/67 in Rs ‘000’**

<b>Particulars</b>	<b>2062/063</b>	<b>2063/064</b>	<b>2064/065</b>	<b>2065/066</b>	<b>2066/067</b>
Production revenue	535494	609654	632114	614739	621827
Less: variable cost	<b>352344</b>	<b>442872</b>	<b>439687</b>	<b>423915</b>	<b>430753</b>
Contribution margin	183150	166782	192427	190824	191074
Less : fixed cost	145594	149166	160827	150345	163497
Earning before tax	37556	17616	31600	40479	27577
Profit volume ratio	0.34	0.27	0.30	0.31	0.31
Break even production	428218	552467	518779	484984	527410
Percent of breakeven	80	91	82	79	85
Margin of safety	107276	57187	113317	129785	94417
margin of safety ratio	20	10	18	21	15

*Sources : Audit Report BNL*



## Appendix Four

Dear Sir/Madam,

I would like to request you kindly fill up the following questionnaire prepared for collection of your views as valuable resources for my research work.

This research is concluded for partial fulfillment of requirement of Masters of Business Studies (M.B.S) Degree. I am conducting a research work “CVP Analysis of public limited companies a comparative analysis between Bottlers Nepal Limited (BNL) and Himalayan Distillery Limited (HDL)

I would be very much appreciating if you kindly spare few of your busy and valuable time for my research work. Your views are purely used in my academic purpose only and would not be public.

Thanking you for the anticipation.

Sachin Gupta

## QUESTIONNAIRE

“C-V-P Analysis of Public Limited Companies a comparative analysis between Bottlers Nepal Limited (BNL) and Himalayan Distillery Limited (HDL)

(Please tick the answer which ever in your view is most appropriate and please write your suggestion and opinion in open end questionnaires.)

Q1. When and where had your Company established?

.....

Q 2. What are the main objectives to establish your company?

a).....

b).....

c).....

d).....

e) Others

Q3. What are the transactions of the company to achieve objectives?

a).....

b).....

c).....

d).....

e) Others

Q4. What are the Products and services of the Company?

a).....

b).....

c).....

d).....

e) Others

Q 5 What kinds of technology are being used by company?

.....

Q 6 Who are the suppliers of Technology and raw materials?

a) Indigenous b) Foreign

Q 7 How the goods are produced (Production Process)?

Q 8 What type of plant and machinery has been installed?

a) Automatic

b) Semi-automatic

Q 9 How many employees are engaged in your company?

Q 10 What is the area covered by company?

.....

Q 11 What is the process of managerial decision making?

a) Top to bottom

b) Bottom to up

c) Participating all staffs

Q 12 Is the company practicing CVP analysis tools to forecast cost ,volume and profit?

a) Yes

b) No

c) Occasionally

Q 13 How the management of the company segregates cost?

a) By operation

b) By behaviors

c) By operation

Q 14 What criteria does the management adopt to classify semi -variables or semi-fixed cost?

- a) High-low method
- b) Range method
- c) Degree of variability method
- d) Least square method
- e) Others

Q 15 How does the company measure and controls the overall performance at the end of the accounting year?

- a) P/L account made by the company
- b) Budgeting control
- c) Standard costing
- d) Ratio analysis
- e) Others, please specify

Q 16 What techniques do the company practice for pricing of your goods and services?

- a) Cost based pricing
- b) Going rate pricing
- c) Target return on investment pricing
- d) Activity based pricing
- e) Others, please specify

Q 17 What are the major difficulties faced when practicing CVP analysis?

- a).....
- b).....
- c).....
- d).....
- e) Others

Q 18 Is the company going to drop or continue new launch of any products and services?

a) Yes b) No

Q 19 Since, Nepal got the membership of WTO how do you assess export potential?

Q 20 What are the problems faced by beverage Industry?

..... Q 21 Does the company fulfilling the demand of the people?

.....

Q 23 What is the treatments to reduce the unnecessary cost?

.....